CME - 01 Bioinformatics- a Revolutionizing Discipline in Biomedical Science

Dr. O.N. Tripathi,
SCIENTIST (DIRECTOR GRADE) & HEAD (EX), PHYSIOLOGY DIVISION & DBT-BIOINFORMATICS CENTER, CENTRAL DRUG RESEARCH INSTITUTE, LUCKNOW

Recent years have seen an enormous increase in the amount of biological data side by side with unprecedented advances in information technology. The new specialty of BIOINFORMATICS evolved in order to be able to deal with such mammoth biological data. Bioinformaitcs has been variously defined and could be summed up as the branch of technology that deals with storage, management, mining and transfer of biological data using computers and development of algorithms for the same. Medical Bioinformatics is the branch of bioinformatics that covers the data generated from basic biomedical research and clinical research.

It is convenient to identify two major sub-divisions of bioinformatics, viz. (1) Data-centered bioinformatics, and (2) Technology-centered bioinformatics. Data-centered bioinformatics gives primary emphasis on the type of data constituting a particular database. Major examples for this are genome databases, SNP databases, and functional genomics databases. The genome databases contain protein-coding sequences. Functional databases largely consist of mRNAs (transcriptome), proteins (proteome), and ultimate end products of genes (metabolome). Primary databases, e.g. GenBank and EMBL deal with organized sequences while secondary databases, e.g. SwissProt help in the interpretation of primary data. It is now a common practice to compute genes from the databases on gene products like receptors, ion channels and enzymes etc. The databases are either large (LDB) or very large (VLDB). All these databases are of utmost importance to basic biomedical research, new drug development programs as well as for treatment of diseases. Some of these databases are in public domain and available free.

The technology-centered bioinformatics is concerned primarily with the hardware and software required for preparing the databases and their storage and manipulation. Rapid advances in computer technology, particularly miniaturization of highly capable devices, and sophistication of communication technology with very high rate of data transfer have revolutionized the field of bioinformatics by facilitating storage and transfer of data intercontinentally all over the globe. Internet in particular has been of great help in the development of databases. Bioinformatics has been a great asset to basic biomedical research, understanding of the causation of diseases and new drug discovery. In conclusion it will be fair to say that bioinformatics is all set to change our fundamental understanding of various medical disciplines and usher us in a new era of knowledge-based health care.

AW-01 Autonomic Responses in Stress Susceptible Subjects

KK Deepak, MD, PhD, Additional Professor and In-charge, Autonomic Function Laboratory, Department of Physiology, All India Institute of Medical Sciences, New Delhi 110029, e-mail : kkdeepak@hotmail.com

Background: This study was aimed at finding out autonomic reactivity (responsiveness), autonomic activity (resting tone) and psychological correlates (trait anxiety) in students who exhibited frank extrovert physiological manifestation of increased anxiety (through pinna hyperemia) during Objective Structured Practical Examinations (OSPE). **Methods:** Fifty-six undergraduate students from Physiology Dept. of AIIMS were observed during OSPE and classified as Responders and Non-responders on the basis of pinna-hyperemia to stress-response. The responders were further grouped as mild, moderate or severe depending upon the intensity of hyperemia. Students were observed during OSPE and their autonomic functions both autonomic tone (Heart rate variability and QT:QS_2 ratio) and reactivity (Deep breathing test, Valsalva maneuver test, Hand grip test, Cold pressor test and Postural challenge test), and psychophysiological parameters were studied. **Results**: The resting autonomic parameters (Blood pressure, BP; RR interval and QT_c: QS_2 ratio) were not different among the three stress-responder groups in lying-rest condition. However, the resting (sitting) systolic BP was significantly higher in moderate to severe group than the mild group. It was highly significant in the two pre-test measurements, i.e. before Handgrip test ($p < .007$, $f = 5.95$) and before Cold pressor test ($p < .002$, $f = 7.79$). Surprisingly, the resting (sitting) diastolic BP did not show any difference in these groups. During Handgrip test at 1st minute, 2nd minute and 4th minute, the moderate-to-severe group showed a significant rise in systolic BP as compared to mild group. At 4th minute of handgrip the systolic BP

was highest in moderate to severe group and was significantly different from the non-responder group. The systolic BP response in moderate-to-severe responder-group showed a significant rise even to the mildest stimulus like changing the posture to sitting from lying one. There occurs a heightened compensatory rise in systolic BP to the postural challenge. This clearly indicates the tendency in students to manifest rise in blood pressure to simple non-threatening stimuli.

Conclusion: From autonomic functions viewpoint, the students who develop significant pinna hyperemia during OSPE are different from those who do not. The students with moderate to severe pinna hyperemia manifest a significantly higher rise in systolic blood pressure. This response to stress appears to be the combined and additive effect of increased sympathetic drive to vasculature and decreased vagal drive. These observations suggest that pinna hyperemia could be a useful physiological marker of stress and possibly a pathognomic marker of diseases involving autonomic nervous system. The research was funded by AIIMS research fund.

AW-02 SIMPLIFIED CALCULATION OF MEAN QRS VECTOR (MEAN ELECTRICAL AXIS OF HEART) OF ELECTROCARDIOGRAM

P.N. SINGH* M.SAJJAD ATHAR**
DEPARTMENT OF PHYSIOLOGY*: FACULTY OF MEDECINE DEPARTMENT OF PHYSICS** FACULTY OF SCIENCE AMU ALIGARH ALIGARH –202002, INDIA

In clinical practice assessment of the mean QRS axis (MQRSA) provides information related either with hypertrophy of the ventricles or conduction blocks. The method adopted by the clinicians i.e the inspection of the QRS voltage in six of the limb leads has inherent element of subjectivity of approximately 10^0 .Moreover, incertain conditions, particularly, when there is ambiguty about differentiation of left axis deviation assessed by inpection method in to either hypertrophy of left ventricals or complete / hemi block of the left bundle branches, accurate measurement of the axis becomes necessary to arrive at the correct diagnosis .Though a formula based on the calculation of area under R wave of the electrocardiogram (ECG) and S-wave has been derived for acccurate measurement of axis,primarily for use in the computer software, working with ordinary electrocardiograph the only method accurate measurement of axis is possible by plotting the net voltage in Lead-I and Lead-III, which is not practiciable in the clinical setting. Though, MQRSA calculation by area method gives an accurate assessment, some authours still prefer assessment of axis by votage plotting method , as in cases of right vetricular hyprtrophy with broad S wave larger area under the S wave may give erronious results. Hence, to obtain correct measurement of MQRSA, we have derived a simplified formula based on the net voltage of QRS complexes in Lead-I and Lead-III. The formula is

$\mathrm{Tan}\theta = \frac{I + 2III}{\sqrt{3}\, I}$ where *I* and *III* represent net voltage in Lead –I and Lead –III, è the angle subtended by the axis on Lead –I. The value of è can be found by using scientific calculator or table . In case the net voltage of QRS complex in Lead –I is negative, the value of the è should be subtracted from 180 to find out the angle of mean QRS vector.

AW-03 Yoga Therapy as a useful psychotherapeutic intervention in Breast Cancer patients undergoing conventional treatment.

Raghavendra Rao M*, Nagarathna R*, Nagendra H.R*, Telles S, Vinay C*, Chandrashekara S*, Srinath B.S**, Gopinath K.S.**, Ramesh B.S.**, Ravi B Diwakar**, Shekar Patil**, Nalini Rao**.**
* SWAMI VIVEKANANDA YOGA ANUSANDHANA SAMSTHAN, NO-9, APPAJAPPA AGRAHARA, CHAMARAJPET, BANGALORE-560018. ** BANGALORE INSTITUTE OF ONCOLOGY, RAJA RAM MOHAN ROY EXTENSION, BANGALORE-560027.
*** M.S. RAMIAH MEDICAL TEACHING HOSPITAL, M.S.R.I.T NAGAR, GOKULA, BANGALORE-560054.

Sixty Nine Females diagnosed with breast cancer of stage II and III who were decided on the regime

of Primary Surgery followed by adjuvant radiotherapy and chemotherapy were included into the study. Subjects were randomly allocated to either yoga group (Intervention) (n=32) or supportive therapy (controls) (n=37) prior to their primary treatment. The two groups were homogenous with respect to their age, stage of disease, node status and conventional treatment regimen. Subjects in yoga group were imparted relaxation techniques with Breathing exercises, Pranayama, OM meditation, Cyclic Mediation, Mind sound resonance technique and Pranic energisation technique as a integrated module acting at physical, mental emotional, and spiritual levels during the course of chemotherapy. Subjects in control group were imparted "Supportive Counseling" sessions. Baseline assessments were taken prior to surgery and subsequent assessments were carried out before, during and after radiotherapy and chemotherapy. Assessments included structured questionnaires for assessing affective states such as Anxiety (state trait anxiety inventory) and depression (beck's depression inventory), pain scores (visual analogue Scale), quality of life byt (functional living index of cancer) and conventional treatment toxicity was assessed using WHO common toxicity criteria. Blood draws for evaluation of cytokines (sIL2r, TNF Alpha, IFN Gamma), CD56 counts and serum immunoglobulin assessments (IgG, IgM and IgA) were also carried out. Yoga group reported significant improvement in affective states, less distress and improved quality of life as compared to control group. Systemic/Organ toxicity and side effects during chemotherapy significantly decreased in the yoga group as compared to controls ($p<0.0001$). subjects in the yoga group had lower levels of IgA indicating reduced disease activity and higher levels of sIL2R and CD56 counts envisaging effective anti-tumour immune response. Yoga therapy serves to be a useful psychotherapeutic intervention in reducing psychological morbidity, treatment toxicity and improving quality of life and antitumour immune responses in breast cancer patients undergoing conventional treatment for cancer.

Key words : Cytokines, Immune responses, Yoga, Meditation, Pranayama, Psychooncology, Breast Cancer, Quality of Life.

AW-04 Post-task p3-changes following a brief, rigorous visual task indicate individual differences in the task-specific ability.

Sabyasachi Sircar, Sujata Gautam, Om Prakash Tandon.
DEPARTMENT OF PHYSIOLOGY, UNIVERSITY COLLEGE OF MEDICAL SCIENCES, DELHI-110095

The P3 latency in an auditory oddball ERP paradigm is known to get prolonged after a few hours of mental task. The present study shows that it takes merely a few minutes of challenging visual mental activity to produce significant prolongation in P3 latency in the visual oddball ERP paradigm. However, the mental activity results in a shortening of P3 latency almost as often as it results in its prolongation. Similarly, the post task P3 amplitude is higher or lower with nearly equal incidences. The same is true for the progression of P3 latency changes through the midline electrode sites, occurring bidirectionally through the anteroposterior axis. Following the task, the reaction tiem shortens as often as it prolongs. It seems that the P3 changes and their variations through electrode sites signify individual differences in the amount and extent of additional neuronal resources tapped by the subject in coping with the challenging task and that it leaves an aftereffect for several minutes after the mental workload is withdrawn. These aftereffects get indexed in the P3 wave characteristics of a much simpler ERP paradigm, and correlate significantly with the ability scores in the preceding task, with more change occurring in the better performers. In the clinical context, these observations raise doubts about the diagnostic value of P3 latency or amplitude without concomitant knowledge of the immediate history of mental workload-conscious or subconscious.

AW-05 Studying neurodegeneration and cognition: From molecule to man

T. Ramakrishana

Neurodegenerative changes seen in the brains of patients with Alzheimer's disease (AD) include neuritic plaques and neurofibrillary tangles. The key molecular events in the generation of either plaques or tangles appear to be conformational changes in beta amyloid peptide or microtubule-associated tau protein respectively. We have used circular dichroism (CD) spectroscopy to study these conformational changes at the molecular level. Our in vitro experimental approach has involved monitoring changes in the signature

spectra of "native" molecules induced by agents such as aluminium. These experiments suggest mechanisms by which the pathological hallmarks of AD might be generated. We have shown that the aggregation of tau protein is a plausible mechanism for the formation of fibrillary tangles whereas a conformational change from a predominantly alpha-helical structure to a less-soluble, beta-pleated sheet conformation may lead to the formation of amyloid plaques. Our in vitro studies have also extended to the role of molecules such as borate or betaine in reversing the "pathological" conformation in beta amyloid peptide.

In vivo studies indicate structural perturbations leading to the loss of dendritic connectivity in the rat hippocampus, after treatment with aluminium. These abnormalities in dendritic structure could be reversed by dietary supplementation of pyridoxine. Furthermore, neuronal burst activity, recorded from hippocampal sub-fields also showed attenuation under aluminium toxicity which could be reversed by pyridoxine. Behavioural experiments showed significant impairments in learning scores after aluminium treatment. Dietary supplementation with betaine, a precursor of acetylcholine ameliorated these impairments in learning.

The identification of a dietary risk factor for AD is a major focus of our studies in the human population. The importance of these studies derives from the possibility that early identification of such risk factor(s) may lead to development of intervention(s) such as dietary supplementation by vitamins B12/folate. The Oxford Project to Investigate Memory and Ageing (OPTIMA) has reported that higher serum homocysteine levels were associated with increased risk of developing AD. We used an identical battery of cognitive tests to study elderly volunteers in Malappuram district of Kerala. Based on these tests, we could stratify the risk of development of AD in our study population. Further studies in collaboration with OPTIMA will investigate the relationship between serum homocysteine levels and risk of AD in the Indian population.

AW-06 INHALED NITRIC OXIDE THERAPY: REDEFINING TREATMENT OF HIGH ALTITUDE PULMONARY EDEMA

Lt Col (Mrs) G Himashree*, Mr PK Chattopadhyaya, Dr W Selvamurthy, Dr PK Banerjee

DEFENCE INSTITUTE OF PHYSIOLOGY AND ALLIED SCIENCES, LUCKNOW ROAD, TIMARPUR, DELHI – 110 054

In the respiratory tract Nitric Oxide (NO) plays an important signaling role in the physiological control of airway function and in the patho-physiology of airway diseases. High altitude pulmonary edema (HAPE) is a life threatening condition, which occurs on rapid ascent to altitudes higher than 2500m. The main pathology in this disease is hypoxia induces pulmonary vasoconstriction followed by hydrostatic imbalance and edema. Any therapy, which achieves pulmonary vasodilatation, is sure to cause reversal of pulmonary edema and improvement in symptoms. Inhaled Nitric Oxide (INO) with oxygen has shown to be of immense therapeutic value in patients of HAPE. NO has found a place in treatment of multitude of diseases. Another advantage of NO is that it does not produce any change in systemic arterial pressure or systemic vascular resistance making NO the first seemingly selective pulmonary vasodilator. The current applications of INO include Hypoxic respiratory failure in neonates, pediatric pulmonary hypertension, acute respiratory distress syndrome in all age groups, primary pulmonary hypertension, cardiac transplants, lung transplants, post surgery right ventricular dysfunction in congenital heart disease, and HAPE. The commercially available INO machines are not suitable for patients of HAPE. These patients require a machine that can deliver NO without a ventilator. We have designed a machine for spontaneously breathing patients and this will be very useful in treatment of HAPE.

Key words: Inhaled nitric oxide, High altitude pulmonary edema, Nitric oxide delivery systems

AW-07 NEUROSCIENCE -A FOUR NEURONAL PERSPECTIVE

T.R. Raju, Department of Neurophysiology, NIMHANS, Bangalore-29

I have used Ganglion Cells of the retina, Motor neurons of the spinal cord, Mitral cells of the olfactory bulb and CA3 pyramidal neurons of the hippocampus as model systems to understand the development and differentiation of CNS, Pathogenesis of motor neuron disease, CNS regeneration and neuronal plasticity

respectively. My interest in these neurons has been translated into several research projects. I will be presenting our results with regards to :

1. The factors governing the survival and differentiation of CNS neurons,
2. Events involved in the pathogenesis of motor neuron disease and neuroprotection,
3. Possibility of inducing stem cell to become a projection neuron in the adult resulting in CNS repair and
4. The ability of an adult neuron to undergo morphological, physiological and functional changes will be presented.

Our findings have potential applications for

AW-08 A NOVEL TECHNIQUE FOR MEASUREMENT OF PULSATILI CHANGES IN A TRIAL VOLUME IN INTACT HEART. "If:

M.Fahim, Dept. Of Physiology, V. P. Chest Institute, University of Delhi, Delhi-II 0007, India.

Summary: Pressure-volume relationships of the left atria were studied in thoracotomised artificially ventilated dogs anaesthetized with sodium pentobarbitone. Controlled volumes of saline were injected into the left atrial appendage during the period of V wave of the left atrial pressure wavefonn. This was achieved by developing a technique by which R wave of the nonnal e.c.g. triggered the injections, The resulting change in the amplitude of the V wave was found to be linearly related to the injected volume. Such observations made while the pulmonary artery was occluded revealed that this linearity in the pressure-volume relationship of the atrium extended down to a volume of 1.0 ml.

Introduction : Due to nonavailability of technique for the measurement of atrial volume, atrial pressure has been suggested to be an index for atrial volume. However, experimental evidence for any relationship between pressure and volume during atrial diastole in a single cardiac cycle. Such infonnation is desired for example, in studies on natural stimulus o(atrial type B receptors is not available, which play an important role in the regulation of body fluid volume and heart rate. Pressure-volume relationships of the cardiac atria have been studied in isolated heart preparations (Blinks, 1961; Little, 1949) and in the intact anaesthetized dog (Little, 1960; Opdyke et al. 1948). The latter group includes studies by Little (1960) who studied the pressure-volume relationship of the left heart pulmonary vascular segment as a whole using asystolic ventricle and by Opdyke et al. (1948), who detennined only the quasi-volume elasticity', that is, the relationship between rate of infusion and atrial pressure, the infusion being made over several minutes at constant rate. Therefore, in the present study pressure-volume relationships of the left atrium were studied in thoracotomised positive pressure ventilated anaesthetized dogs, In order to inject known volumes of saline during the filling phase of left atrium an electronically controlled mechanical injection system was designed, fabricated and used to examine true relationship in the pressure developed in the left atrium on injection of known volumes of nonnal saline.

INV.LECT-01 ROLE OF ADENOSINE IN ASTHMA.

S. Jamal Mustafa and M. Fan.
DEPARTMENT OF PHARMACOLOGY, EAST CAROLINA UNIVERSITY, BRODY SCHOOL OF MEDICINE, NC 27858, USA

Adenosine (AD), an important mediator in asthma, produces bronchoconstriction (B) in asthmatics only. AD causes its effects by activating four subtypes (A_1, A_{2A}, A_{2B}, A_3) of adenosine receptors (AR). AD causes B and airway inflammation in ragweed sensitized and challenged mice (S) (*Pulm. Pharmacol. Ther.* 15: 147, 2002). We report the involvement of AR's in this model. B to AD agonists was measured by whole body plethysmography (Penh). Aerosol challenge of S with NECA (non-selective AR agonist) elicited a significantly greater increase in Penh than controls. Enprofyline (A_{2B} AR antagonist) partially blocked the increase in Penh due to NECA. Cl-IB-MECA (A_3 AR agonist) and NECA responses were blocked by MRS-

1523 (A_3 AR antagonist). The lack of B with CPA (A_1 AR agonist) and CGS-21680 (A_{2A} AR agonist) ruled out the involvement of A_1 and A_{2A} AR in NECA-induced B. 24 hrs after the last ragweed challenge, mouse lungs were collected for RT-PCR for AR transcripts. In S, A_1 AR mRNA levels were down regulated and A_{2A} AR mRNA levels did not change compared to controls. However, A_{2B} and A_3 AR mRNA levels were up regulated in S. We conclude that AR-induced B is due to A_{2B} and A_3 AR's.

INV.LECT-02 Locomotor Capacity of the Spinal Cord and Recovery of Motor Function after Spinalisation

Yu. P. Gerasimenko, V. Avelev, I. Lavrov, T. Moshonkina, O. Nikitin and V. Selionov
PAVLOV INSTITUTE OF PHYSIOLOGY, ST.PETERSBURG, RUSSIA

In mesencephalic cats the epidural spinal cord stimulation (SCS) with frequency of 5-10 Hz of L4-L5 segments evoked the hindlimbs stepping. For recovery of motor function in chronically spinalised (Th6) cats we used the SCS in combination with treadmill training. The special biomechanical device was applied for eliciting of the forced stepping movements. After daily training for four weeks the cats were able to perform stepping movements. The morphological examination have shown that the motoneurons of isolated region of spinalised untrained rats are sclerotic, looked not viable. In contrast, in trained spinalised rats the motoneurons below and above the site of injury practically did not distinguish. In paraplegic patients the SCS with sustained stimulus (8-10 V, 30-50 Hz) can elicit step-like EMG activity and locomotor synergies as well. Stepping movements were observed most frequently when the cathode was over L2-L3 segments. The SCS in combination with leg muscles vibration was effective approach for recovery of locomotor function of the spinal cord. (Supported by RFBR grants ¹ 01-04-49204, 02-04-48437.)

INV.LECT-03 Overview of tile Innovative Teaching Methods Initiated at the Department of Physiology, GMCH, Chandigarh

K. Srinageshwari ,
PROF. & HEAD, DEPARTMENT OF PHYSIOLOGY, GMCH, CHANDIGAR

A number of innovative teaching techniques emphasizing the interactive form of learning have been initiated by us for making the subject of Physiology more interesting. The medical students undergo vertical orientation programme so as to understand the pathophysiology of various clinical ailments in a better manner. The students are taken to clinical departments, like Department Of Transfusion Medicine- for safe blood transfusion procedures and a live demonstration, Dept. of Pulmonary Medicine -to learn about soplusticated, computerized pulmonary function tests, Dept. of Medicine to get familiarized with Houlter , Stress ECG wld Echocardiography. The Physioquiz is conducted for each system in which 12students (4teams,3 each,) participate actively .Six students also take part as Quiz masters, for marking the score and for monitoring time(2 each). There are 6 rounds consisting Question-Answers and Definitions, Jumbled words and Multiple Choice Questions, Graphs and Flow diagrams (indicate the missing link) , Match the columns, Clinica) problems and Rapid fire round. The quiz conducted by students inculcates team spirit, leadership, better organizing abilities and interest and better comprehension of the subject.

Students also prepare Undergraduate projects on recent topics through web search.

INV.LECT-04 EFFECT OF STRESS ON PHYSI0LOGICAL ALTERATI0NS.

Gautam Palit.
DIVISION OF PHARMACOLOGY, CENTRAL DRUG RESEARCH INSTITUTE, LUCKNOW- 1,

Stress is an internationally recognized phenonmenon and it has been realized that stress is playing a causative role in precipitating several diseases. The present experiment was carried out to understand the stress induced alterations in the behavioural, biochemical and histopathological parameters after different natures of stresses. The stress was given in the form of immobilization for 150 minutes once only in acute stress (AS) where as repeated for seven consecutive days in chronic predictable stress (CS). In chronic unpredictable stress (CUS) the rats were treated with two different stressors for seven consecutive days in

an unpredictabfe manner. Immediately after stress regime the animals were sacrificed and blood was collected through cardiac puncture, Brain, adrenal gland and stomach were dissected out immediately for estimation of respective neurotransmitter levels, histopathological changes and ulcer index, Exploratory behaviour was studied with the help of Digiscan animal activity monitor, The serum was separated out and the level of serum glucose, triglyceride, cholesterol and creatinephosphokinase (CPK) was estimated using Beckman CX-5 auto-analyzer,

There was a significant reduction in the exploratory behaviour after AS, CS and CUS in comparison to the control group. The stress exposure leads to significant gastric comparison in CS and CUS. There was a significant increase in the adrenal gland weight in all stress groups, The serum glucose and Insulin levels were significantly Increased in acute stress only but the serum triglyceride and cholesterol level was decreased after CS and CUS. Serum CPK activity level was significantly high in all the stress groups. The levels of biogenic amines in different brain regions were significantly increased. The histopathological studies revealed that the AS as well as CUS induced adrenal hypertrophy is the result of the medullary region of adrenal gland with high vascularity in CUS, CS leads to the hypertrophy in the cortex.

Theretore, stress research in laboratory animals has assumed an important role in physiological alterations of stress and undoubtedly assumes a prime importance in the management of health and disease.

INV. LECT-05 "Sports Medicine An Emerging Branch Of Medical Science"

AK De

Sports medicine is a comparatively new branch of medical science which deals with the overall welfare of sportsmen and women to improve upon the performance in sports and games and their fitness including the preventive, curative, and rehabilitative aspects of injury, special diets of various events of sports to search for ergogenic aids (which help for better performance) to help the entrance, for selection in sports events in which they have potentiality to acquire more proficiency by scientific training .Further, for non-sportsmen and women this branch of medical science also takes care regarding their physical and mental fitness and to improve upon, to guide for their early recovery after heart attack or stroke or for rehabilitation of patients who are suffering from diseases of lungs ,joints, psychiatric ailments, orthopedically and neurologically handicapped.

Categories of sports may also be different for (a) elite sportsmen (b) sports for all, (c) disabled, (d) recreative / fun sports –children and adults.

The various aspects of sports medicine are –

(1) Sports Physiology
(2) Biochemistry
(3) Anatomy (including anthropometrics and body typing)
(4) Nutrition
(5) Psychology
(6) Bio mechanics
(7) Traumatology
(8) Rehabilitation (physical and mental)
(9) Ergogenic aids
(10) As a therapy
(11) For handicapped (orthopedically and neurologically)
(12) Doping
(13) Administration

INV. LECT-06 Neurophysiology of Mammalian Spinal Locomotion

Dr. GerasimenkoPetrovich
ASSOCIATE PROFESSOR, IPPAVLOV INSTITUTE OF PHYSIOLOGY
ACADEMY OF PHYSICAL EDUCATION & SCIENCES, ST. PETERSBURG, RUSSIA

INV. LECT-08 Neurophysiology mechanism of action of epidural stimulation of spinal cord

Dr. Avelov Valery Dimitrivich
PH.D., ASSOCIATE PROF. INSTITUTE OF PHYSIOLOGY ACADEMY OF PHYSICAL EDUCATION & SCIENCES, ST. PETERSBURG, RUSSIA

SYN-01 THE ROLE OF 5-HT$_{1B/1D}$ RECEPTOR AGONISTS IN RELIEVING MIGRAINE HEADACHE

Maloy B Mandal
DEPARTMENT OF PHYSIOLOGY, INSTITUTE OF MEDICAL SCIENCES, BANARAS HINDU UNIVERSITY, VARANASI-221005

Approximately 15% of the world population is believed to suffer from migraine headache. The colossal loss of man-hour on account of migraine is therefore a global socioeconomic concern. It has been long recognized fact that serotonin (5-hydroxytryptamine, 5-HT) depletion is associated with migraine. The progress in serotonin receptors research and better understanding of pathophysiology of migraine in recent years helped the development of 5-HT$_{1B/1D}$ receptor agonists (triptans) that is now considered to be a major break through for the treatment of migraine.

Advancement in knowledge on pathophysiology of migraine revealed three important mechanisms involved in this kind of headache a) Activation of sensory trigeminovascular system b) Intracranial extracerebral vasodilation c) Increased sensitivity in nociceptive transmission. All these responses can be diminished through 5-HT$_1$ receptors, 5-HT$_{1B}$ and 5-Ht$_{1D}$ types are implicated in migraine headache. The 5-HT$_{1B}$ receptors have been demonstrated in human meningeal blood vessels and serotonin was observed to induce constriction in this vasculature to help reducing migraine headache. Both 5-HT$_{1B}$ and 5-HT$_{1D}$ have been located in the trigeminal ganglia and trigeminal nerves. Activation of these receptors inhibit the release of vasoactive peptides and prevent vasodilatation of intracranial extracerebral blood vessels to ameliorate the migraine pain and other associated symptoms. However, only 5-HT$_{1D}$ receptors have been identified in the trigeminal nerve fibres projecting centrally in to the brainstem trigeminal neuclei and peripherally to dural vasculature. The the 5-HT$_{1D}$ agonists decrease the firing rate of the fibres and interrupt afferent nociceptive signals, indicating its role in relief of migraine pain by desensitization of the central and peripheral nociceptive transmission. Clinically, triptans (5HT$_{1B/1D}$ receptor agonists) have been proved to be effective in relieving migraine headache and its associated symptoms like nausea, vomiting, photophobia etc. Sumitriptan was the first triptan to be developed and approved for clinical use. There after a number of more potent triptans with fewer adverse effects and better bioavailability (Zolmitriptan, Naratriptan), faster acting (Rizatriptan) and longer acting (Frovatriptan) properties have been developed.

SYN-02 Atherogenic lipoproteins and homocysteine in coronary artery disease

Shyam Singh,
CENTRAL DRUG RESEARCH INSTITUTE, LUCKNOW-226001

Atherogenic lipoproteins and homocysteine have been implicated in the pathogenesis of atherosclerosis. Both lipid and protein components of ox-LDL differ substantially from those of native LDL. Present study was aimed to characterize molecular species of lipids in the plasma and LDL contributing to the oxidizability of plasma lipoproteins. Elevated levels of oxidized lipids, apoproteins, lipoprotein(a) and homocysteine were found in CAD subjects. It is observed that elevated levels of homocysteine and lipoprotein(a) together put an

individual at very high risk and provide an opportunity for early manifestation of arterial diseases. Oxidized form of homocysteine accelerates both atherogenesis and thrombosis. Therefore, while aiming at good metabolic control by a single or combination of OHA, homocysteine levels in circulation should be monitored and be kept at its basal level.

SYN-03 Ion Channels and patch-clamp technique- an overview

Dr. O.N. Tripathi,
SCIENTIST (DIRECTOR GRADE) AND HEAD (EX), PHYSIOLOGY DIVISION, CENTRAL DRUG RESEARCH INSTITUTE, LUCKNOW

The electrical events like ECG, EEG, and EMG etc are due to the currents carried by physiologically important ions like Na, K, Ca, and Cl across the cell membrane in various tissues. Energy for this ionic flux is provided by ionic concentration gradient that exists normally across the cell membrane. Major paths for the ionic flux are provided by specialized membrane-spanning proteins having a central hydrophilic pore for electrolyte flow. The pore also possesses a selectivity filter that allows flow of specific ionic species and offers the channels their ionic specificity. Three major categories of ion channels are identified depending on their activation (gating) parameters, viz. voltage-gated, ligand-gated and mechano-gated channels. The voltage-gated channels generally have a high order of ionic specificity that determines their nature. Thus Na channels (blocked by xylocaine), Ca channels (blocked by verapamil, diltiazem and nifedipine) and K channels are named according to their ionic specificity. Examples of ligand-gated channels are nicotinic acetylcholine receptors, GABA and glycine receptor channels etc. Mechano-gated channels play crucial role in sensory perception. Ion channels are important targets for new drug discovery and are associated with several disorders including channelopathies.

Initial studies on ion channels were carried out by Hodgkin & Huxley (1952) using voltage-clamp technique on giant single neurons. The technique involves clamping of the transmembrane potential to specific amplitudes and durations and simultaneous recording of the membrane current flowing thereby. The kinetics and other biophysical parameters of the channels are studied by analyzing the ionic currents. This technique was applied successfully to very large cells. Although multicellular preparations were also studied using this technique major revolution in ion channel studies followed invention of the patch-clamp technique by Neher & Sakmann (1976) and Hamill et al (1981). With the help of this sophisticated technique, several versions of which are available now, ion channels in very small individual cells like smooth muscle, glands, RBCs and even microbes could be studied. Patch-clamp allows study of the current flowing through single channel molecule or through an ensemble of ion channels in a cell. It has a great advantage of allowing changes in intracellular and extracellular milieu at will. It has also proven highly useful for the study of isolated ion channel molecules reconstituted in artificial membrane systems. Transmembrane action potentials in multicellular and single cell preparations also provide very meaningful information on ion channels. A demonstration of these recording techniques will also be provided.

Syn - 04 Role of Natural Products in Develppment of Drugs

Dr. Rakesh Maurya
MEDICINAL CHEMISTRY DIVISION, CDRI, LKO

SYN-05 Herbal Remedies in Modern Perpective " Role and Strategies of CDRI in Development

Dr. O. P. Asthana
CLINICAL MEDICINE DEPARTMENT, CDRI, LUCKNOW

SYN-06 **Pharmacovigilance in Herbal Medicine**

Prof. K. C. Singhal
DEPTT. OF PHARMACOLOGY, JNMC, AMU, ALIGARH

SYN-07 **Effect of Electrical Acupuncture on Pain Management**

Prof. Usha Singhal
DEPTT. OF PHYSIOLOGY, JNMC, ALIGARH

SYN-08 **Effects of protons and cellular signal transduction on TTX resistant sodium channels in rat dorsal root ganglion neurons**

Mamta Gautam and Peter W. Reeh
INSTITUTE FOR PHYSIOLOGY, UNIVERSITY OFERLANGEN-NUREMBERG, D 91056 GERMANY

TTX resistant sodium channels are selectively expressed in DRG neurons that exhibit nociceptive properties. These are of two types, Navl.8 and Navl.9, contributing to initiation of action potentials in DRG neurons and to maintenance of the resting membrane potential, respectively. Inflammatory mediators are reported to lower the threshold and increase the conductance of these voltage-gated channels. Serotonin, bradykinin, PGE2 cause this by increasing the phosphorylation of the channel protein at specific sites which is mediated by the activation of protein kinase A or protein kinase C. Protons are also present in increased concentration in inflamed tissue but their effects on TTX resistant sodium channels have not yet been investigated. In the present study on cultured DRG neurons we investigated the effect of protons on TTX resistant as well as on total sodium current using the whole cell configuration of the patch-clamp technique, and we also studied the interaction of protons with PKC and PKA activation as caused by inflammatory mediators during tissue acidosis. Our results show that protons inhibit TTX resistant as well as total sodium currents. Direct activation of PKC by phorbolester, caused a leftward shift of the activation part of the I-V curve. Direct activation of PKA by forskolin hardly increased the TTX resistant peak current but shifted the activation part of the I-V curve to the left. In presence of a moderately high proton concentration (pH 6.4), PKC activation maintained its sensitizing effect on TTX resistant Na channels but this did not compensate for the general loss of excitability due to the proton block of the sensory neurons.

SYN-09 **INVOLVEMENT OF TRPVI IN INFLAMMATORY PAIN: DESENSITIZATION OF TRPVI IS REGULA TED BY PKA-MEDIA TED PHOSPHORYLATON**

D.P. Mohapatra and C. Nan
DEPARTMENT OF ANESTHESIOLOGY, FRIEDRICH-ALEXANDER-UNIVERSITY, ERLANGEN, GERMANY

Proinflammatory prostaglandin E2 is known to sensitize sensory neurons to noxious stimuli. This sensitization is mediated by the cAMP-dependent protein kinase (PKA) signal pathway. The Capsaicin receptor TRPV1 is a non-selective cation channel predominantly expressed insensory neurons. TRPV1 is activated by heat, protons, capsaicin and the endocannabinoid anand~ide and integrates these stimuli when applied simultaneously. Studies on TRPV1-gene knockout mice confirmed involvement of TRPV1 in the sensation of pain and thermal hypersensitivity to noxious stimuli following tissue injury.

TRPV1 has been discussed as target for PKA-mediated phosphorylation. The amino acid sequence of TRPV1 contains putative PKA phosphorylation sites. TRPV1 exhibits desensitization upon prolonged or repeated activation by capsaicin. This desensitization is a Ca2+-dependent process. We investigated the influence of phosphorylation at PKA consensus sites on Ca2+-dependent desensitization of capsaicin-activated currents. By using site-directed mutagenesis, we created point mutations at PKA consensus sites and studied wild-type (WT) and mutant channels transiently expressed in HEK293t cells under whole-cell voltage clamp.

We found that forskolin, a stimulator of adenyl ate cyclase, decreased desensitization of TRPV1- WT. The selective PKA inhibitor H89 inhibited this effect. Mimicking phosphorylation at PKA consensus sites by replacing SI16, T144, T370 or S502 with aspartate (D) resulted in three mutations (SI16D, T144D and T370D) that showed decreased desensitization as well. However, disrupting phosphorylation by replacing SI16, T144, T370, or S502 with alanine (A) resulted in mutations with desensitization properties resembling those of the aspartate mutations. F orskolin failed to decrease desensitzation in S 116 and T370 point mutant channels. We suggest that S 116 and T370 of TRPV1 are the key amino acids responsible for PKA-dependent modulation. Decreased desensitization following TRPV1 phosphorylation might contribute to increased pain sensitivity during inflammatory conditions.

SYN-10 SPINAL POLYSYNAPTIC REFLEXES *IN VITRO* IS A MODEL TO EVALUATE THE NMDA-SENSITIVE COMPONENT OF PAIN

Shripad B. Deshpande

DEPARTMENT OF PHYSIOLOGY, INSTITUTE OF MEDICAL SCIENCES, BANARAS HINDU UNIVERSITY, VARANASI-221005

The existence of nociceptor, a primary sensory neuron that is activated by painful stimuli capable of causing tissue damage has been proposed by Sherington long back (*Sherrington, 1906, The Integrative action of the Nervous system, Scribner, New York*). According to his version, nociceptors have characteristic threshold for sensitivities that distinguish them from the other sensory nerve fibres. The nociceptor stimulation by painful stimuli evoke withdrawal reflexes which involve polysynaptic pathways in the spinal cord. The polysynaptic reflexes can also be recorded in spinal cord preparations *in vitro* (*Deshpande et al., FAASEB, 1: 478, 1987)*. In this preparation, stimulation of dorsal root evoke temporally dispersed reflex potentials in the corresponding segmental ventral root. First of the reflex potential have a latency of about 5 msec and is considered as monosynaptic reflex (MSR). Subsequent reflexes have a latency around 15 msec involve polysynaptic pathways and known as polysynaptic reflexes (PSR). Our results show that PSRs were abolished in the presence of Mg^{2+} or N-methyl-D-aspartate (NMDA) receptor antagonist, DL-2-amino-5-phosphonovaleric acid (APV) in the medium. NMDA receptor complex has two major subunits, glutamate binding site and glycine binding site. The glycine binding site is distinct from the strychnine sensitive-glycine inhibitory receptors and the glycine binding site is blocked by 7-chlorokynurinic acid (*Dansyz and Parsons, Pharamacol Rev. 50:597, 1998*). D-serine is an agonist at this site. Our results show that 7-chlorokynurinc acid blocked the polysynaptic reflexes which could be reversed by D-serine (*Singh and Deshpande, Neuroscience, 2002*). Glutamate is the predominant excitatory transmitter at peripheral and central sites of nociception and the central site involve the processing at spinal cord. Further, all the primary sensory nociceptors make synaptic connections with the neurons in the grey matter (dorsal horn) of the spinal cord. Subsets of dorsal horn neurons in turn project axons and transmit pain messages to higher centres. Thus, the neural circuitry within the dorsal horn is incredibly complex. Understanding of subclasses of primary sensory nociceptors and the spinal circuits that are involved in pain will be of great help for relieving pain. The present preparation is a good model to study the neuronal circuitry including the role of NMDA receptors and its modulation by other neurotransmitters, neuropeptides or toxins such as 5-HT, substance P, GABA, *Ptychodiscus brevis* toxin, anoxia, etc. The influence of these agents using the above preparation will be discussed.

SYN-11 Sensory transduction in nociceptors

Peter W. Reeh

Institute of Physiology and Experimental Pathophysiology, University of Erlangen-Nuremberg, Universitätsstr. 17, D-91054 Erlangen, Germany

Discovery of heat-activated ion channels and of the TRPV1-3 channels in sensory neurons of the spinal ganglion has shed essentially new light on the transduction mechanisms by which inflammatory mediators and chemical irritants excite nociceptors and contribute to pain. Prostaglandin E_2, histamine, ATP, and most potently bradykinin and low pH as well as capsaicin, mustard oil, phorbol esters and formalin (in

low concentration) induce a prominent sensitization to heat of nociceptors which includes recruitment of previously unresponsive terminals. Various membrane bound receptors and alternative second-messenger pathways, including cAMP, calcium influx and proteinkinases, are involved in the transduction of the sensitizing effect. Different heat-activated ion channel entities, including the capsaicin receptor recruited by inflammation, are the target of the sensitizing action that is mediated by protein phosphorylation.

With bradykinin and acid buffer administration it can be shown that the nociceptor thresholds, that normally exceed 40°C, rapidly drop into the range of room temperatures which enables the actual tissue or body temperature to drive a vivid discharge with a high temperature coefficient in primary afferent nerve fibers. This apparently chemically but actually thermally induced activity is then subject to classical nociceptor adaptation and to the more or less slow inactivation or desensitization of the transduction pathway. However, even with bradykinin whose apparent excitatory effect fades within minutes, nociceptor thresholds stay well below body temperature in a very sustained manner which can be shown to depend on secondary prostaglandin formation induced by bradykinin. By that, nociceptor sensitization, resulting hyperalgesia and ongoing discharge are maintained for as long as the mutually potentiating mediators are present in the inflamed tissue.

Excitation by thermal sensitization may also be a mechanism to drive deep visceral nociceptors as well as ectopic discharge in C-fiber axons. As a prerequisite, these nerve fibers (in the sciatic nerve) are established with a well graded responsiveness to capsaicin, low pH and noxious heat which results in a calcium-dependent release of the pro-inflammatory neuropeptide CGRP. These axonal sensitivities are partly (in-)dependent on the capsaicin receptor TRPV1, as in general the functional expression pattern of this channel is highly differentiated throughout the body.

A novel unifying theory of previously diverse and multiple nociceptive mechanisms may provide new targets for pharmaceutical development as soon as the molecular elements, heat-activated ion channels, will all be identified.

SYN-12 Role of Nitric Oxide in Preventing the Macrovascular Complications of Diabetes

Chandra D[1]., Jackson E.B[1]., Ramana K.V[1]., Kelley R[1], Liu, S-Q[2]., Srivastava[2], S., Srivastava, S.K[1]., and Bhatnagar, A[2].

[1] DEPARTMENT OF HUMAN BIOLOGICAL CHEMISTRY AND GENETICS, UNIVERSITY OF TEXAS MEDICAL BRANCH, GALVESTON, TX 77555, AND [2]DIVISION OF CARDIOLOGY, DEPARTMENT OF MEDICINE, UNIVERSITY OF LOUISVILLE, LOUISVILLE, KY 40202

Cardiovascular complications are the major cause of morbidity and mortality in diabetics. Nonetheless, the mechanisms by which long-term diabetes accelerates atherosclerosis and increases the risk of heart disease are unclear, and no specific therapy for the treatment of the cardiovascular complications of diabetes is available. Several underlying mechanisms have been proposed for the enhanced risk of diabetic for heart disease. These include increased formation of advanced glycosylation end products (AGE), chronic activation of the polyol pathway and protein kinase C. Recent evidence is consistent with the view that all three of these processes contribute to hyperglycemic tissue injury and dysfunction, although their relative contribution is high context-specific. We propose that lack of nitric oxide (NO) bioavailability is the key amplifying trigger in the development of secondary diabetic complications. Our experiments demonstrate that in diabetic rats application of nitroglycerine patches or treatment with L-arginine prevents the activation of the polyol pathway and that treatment with L-NAME (N^G-nitro-L-arginine methyl ester) increases the activity of the pathway and the reduction of glucose to sorbitol. Exposure of vascular smooth muscle cells to NO-donors in culture was found to diminish sorbitol accumulation and the activation of the polyol pathway enzyme – aldose reductase. Collectively, these results suggest that loss of NO availability activates polyol synthesis from glucose and that treatment with NO-donors or nitroglycerine represents a novel approach for preventing the development of the cardiovascular complications of diabetes.

SYN-013 Distinct roles of Ca^{2+}, calmodulin and PKC in the oxidative stress-induced pathways in vascular smooth muscle cells (VSMC).

Ashok K.Srivastava, Research Center, Centre hospitalier de l'Université de Montréal and Department of Medicine, Université de Montréal, Montreal (Quebec) H2W 1T8, Canada.

Oxidative stress induced by reactive oxygen species such as superoxide anion and H_2O_2 has been implicated in the pathogenesis of vascular diseases. An important feature of these diseases is an abnormal growth and proliferation of VSMC. We have shown earlier that mitogen-activated protein kinases ERK 1/2, $p38^{mapk}$ and PKB/AKT, key components of growth promoting signaling pathway are activated by H_2O_2 in A10 VSMC. In the present studies, by using a series of pharmacological inhibitors, we explored the upstream events responsible for H_2O_2-induced activation of above signaling components. Pre-incubation of cells with Ca^{2+} chelators BAPTA/AM and EGTA almost completely inhibited H_2O_2-stimulated phosphorylation/activation of ERKs, $p38^{mapk}$ and PKB/AKT. Fluphenazine, a calmodulin antagonist exerted a similar effect and completely attenuated H_2O_2-induced phosphorylation of above signaling kinases. In contrast, GO 6983 and RO 31-8220, two isozyme-specific inibitors of PKC had no effect on H_2O_2-enhanced phosphorylation of $p38^{mapk}$ and PKB/AKT but abrogated the ERK phosphorylation. Taken together, these data demonstrate that Ca^{2+}, calmodulin and PKC-dependent upstream events play distinct roles in mediating the stimulatory effect of H_2O_2 on the phosphorylation of ERKs, $p38^{mapk}$ and PKB/AKT in A10 VSMC.

SYN-014 Gi PROTEIN AS A POTENTIAL TARGET TO TREAT HYPERTENSION.

Yuan Li and Madhu B. Anand-Srivastava,
DEPARTMENT OF PHYSIOLOGY, FACULTY OF MEDICINE, UNIVERSITY OF MONTREAL, C.P. 6128, SUCC. CENTRE-VILLE, MONTREAL, QUEBEC, CANADA H3C 3J7.

We have previously shown that the enhanced expression of Gi proteins in spontaneously hypertensive rats (SHR) that precedes the development of high blood pressure may be one of the contributing factors in the pathogenesis of hypertension. The present studies were undertaken to investigate the effect of inactivation of Gi» proteins by pertussis toxin (PT) on the development of hypertension in spontaneously hypertensive rats (SHR). Intraperitoneal injection of PT (1.5 :g/100 g body wt) into 2-week-old prehypertensive SHR prevented the development of hypertension up to 4 weeks and that, thereafter, it started to increase and reached the same level found in untreated SHR after 6 weeks. A second injection of PT after 4 weeks delayed the increase in blood pressure for another week. The PT-induced decrease in blood pressure in 6-week-old SHR was associated with a decreased level of Gi»-2 and Gi»-3 proteins in the heart, as determined by in vitro ADP-ribosylation and immunoblotting. The decreased level of Gi proteins was reflected in decreased Gi functions. Furthermore, an augmentation of blood pressure to the same level in PT-treated SHR as found in untreated SHR was associated with enhanced expression and function of Gi. These results indicate that the inactivation of Gi proteins by PT treatment in prehypertensive SHR attenuates the development of hypertension and suggest that the enhanced levels of Gi proteins that result in the decreased levels of cAMP and associated impaired cellular functions may be contributing factors in the pathogenesis of hypertension in SHR. From these studies, it can be suggested that the novel strategies that target Gi proteins could be designed to treat hypertension.

PG-01 TILT TABLE TESTING IN THE EVALUATION OF PRESYNCOPE AND SYNCOPE: A CASE-SERIES REPORT

E S Prakash [1], Madanmohan [1], Sunil K Narayan [2], K R Sethuraman [3] and S Srinivasan [4]
DEPARTMENTS OF PHYSIOLOGY[1], NEUROLOGY[2], MEDICINE[3] & PEDIATRICS[4], JAWAHARLAL INSTITUTE OF POSTGRADUATE MEDICAL EDUCATION AND RESEARCH (JIPMER) PONDICHERRY – 605 006

Tilt table testing has long been used as a standard tool in the diagnostic evaluation of neurally-mediated

syncope (vasovagal syncope). We assessed, in retrospect, the outcome of drug-free, 70-degree head-up tilt table tests (maximum duration of 45 minutes, under standard conditions) conducted over the last five months in JIPMER. **PATIENTS:** This series consisted of both male and female patients (age 8 – 75 yr) with presyncope (Group 1, n =18) and unexplained syncope (Group 2, n = 11). **RESULTS:** Only two out of eighteen patients in group 1 had a positive test (induction of presyncope and / or syncope accompanied by hypotension and / or bradycardia). Eight out of eleven patients from group 2 had a positive test. In this series, the mean time to syncope was 29 minutes. **CONCLUSIONS**: In most patients with unexplained syncope, a neurally-mediated mechanism is implicated. Heart rate variability indices during the first five minutes of head-up tilt could not discriminate patients likely to have a positive test. A double-product (mean arterial pressure X heart rate) threshold set at 4200 mm Hg beats / minute predicted the occurrence of a positive test with a sensitivity of 70% and a specificity of 100%.

PG-02 THE EFFECT OF CMF ON SERUM MARKER ENZYMES IN BREAST CANCER PATIENTS.

K.VIJAYALAKSHMI, P.MAHALAKSHMI AND T. KANNAN.

PG DEPARTMENT OF BIOCHEMISTRY, BHARATHI WOMEN'S COLLEGE, CHENNAI , INDIA

Abstract : There are many markers for Breast Cancer. These include CEA (Carcino embryonic antigen), hydroxy - proline to creatinine ratio, C- reactive protein, Sialyl transferase and oncogenes like $BRCA_1$, $BRCA_2$ receptors like ER (Estrogen receptor and PR (Progesterone receptor) and enzyme markers like Lactate dehydrogenase (LDH) and alkaline and acid phosphatases. The present study was conducted to investigate the association between serum enzyme markers and breast cancer in premenopausal and postmenopausal woman. The breast cancer patients studied were of ductal carcinoma type, which represent the most common histological type of breast cancer. They were treated with CMF a combination of 3 anti cancer drugs cyclo phosphamide, methotrexate and 5-flurouracil. The effect of CMF on these serum markers were analysed to see if there were variation due to combined chemotherapy.

Design & Methods: We selected 25 female breast cancer patients who had ductal carcinoma, and who visited the Oncology department of Stanely Government Hospital India, Chennai for treatment. Mammogramy was done to confirm breast cancer The age of the patients ranged between 45 ± 2 for premenopausal women and 55 ± 2 for post menopausal women. They were then treated with CMF for 6 months. Blood was withdrawn before and after treatment. The serum was seperated. The levels of serum glutamate oxaloacetate transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT) , lactate dehydrogenase (LDH) , creatine kinase (CK) and alkaline phosphatase were investigated in pre and post menopausal women with breast cancer before and after treatment with CMF. They were compared with age and sex matched healthy controls. The study was approved by the Ethical committee of the Stanely Medical College and all the women gave their consents.

Results : The levels of SGOT, SGPT, CK, LDH and alkaline phosphtase increased significantly in breast cancer patients when compared with healthy controls. The CMF treated patients showed a further increase in the levels of these enzymes when compared with controls. The increase is more significant in postmenopausal women treated with CMF. These results are discussed in relation to the hepatotoxicity and cytotoxicity associated with CMF therapy.

Conclusion : The steep increase in the levels of marker enzymes in CMF treated post menopausal women could be due to increased bone demineralisation seen as a result of hormonal imbalance. The increased activity of alkaline phosphatase seen in postmenopausal women may be due to increased activity of osteoblast associated with bone metasstasis during ductal carcinoma.

* Corresponding author. ** Professor of Oncology, Stanely Medical College, Chennai, India

Key Words: Serum marker enzymes, CMF, pre menopausal, post menopausal, free radicals.

PG-03 SEMINAL PLASMA FRUCTOSE AND SPERM MOTILITY IN MALE INFERTILITY

Waghmare V. S., Mishra V. P., Mrs Mishra N. V. Mrs Kaore S. B.
DEPARTMENT OF PHYSIOLOGY, GOVERNMENT MEDICAL COLLEGE, NAGPUR - 440003

The present study was undertaken to find the relationship between seminal plasma fructose level and sperm motility in male infertility. Routine seminal parameters in 100 male partners of infertile couples were assessed as per the WHO guidelines (1993). Fructose level in seminal plasma was estimated colorimetrically, using resorcinol reaction.

These subjects were divided into 4 groups according to % motility (Grp 1 - ³ 70%, Grp II - 50 - 70%, Grp III - 30 - 50%, Grp IV - £ 30%), and the mean fructose level was found significantly different in all the groups (ANOVA - F value -18.05, p< 0.0001)

Similarly when the subjects were grouped according to grade of motility (Grade 1, 2 & 3), the mean fructose level was found significantly different (ANOVA- F value -60.94, p <0.0001).

Statistically significant negative correlation was obtained when fructose levels were correlated with motility (r = - 0.6629, p < 0.001). Thus seminal fructose can be used reliably in the evaluation of male infertility.

Key Words : male infertility, motility, sperm, seminal plasma fructose

PG-04 Level of obesity in different age groups and gender

Presenting person	:-	Dr. Puja Dullo (P.G. Student) Dr. Mrs. A.K. Anand (Prof. + HOD) Dr. Aseem Khurana (Tutor)
Address	:-	Deptt. of Physiology of Biophysics Shri. M.P. Shah Medical College, Jamnagar, Gujarat
Research Question	:-	Assessment of level of obesity in different age groups and gender, using BMI and waist-hip ratio (WHR).
Objective	:-	To assess weight distribution in various age groups and gender.
Study Design	:-	Cross Sectional
Setting	:-	Total 120 participants selected randomly in Jamnagar, Urban Area.
Study Variables	:-	Body Mass Index (BMI) Waist Hip Ratio (WHR)
Time period	:-	One and Half Month.
Statistical Analysis	:-	Percentage Diagrams.
Result and Observation	:-	

The BMI in infants is 75% of normal (considering average of male and female infants) which reduces to 72-73% of normal in 1-5 yrs age group before catching up to 87% in 5-14 yrs age group males and only 74/5% in females.

30% of females in adolescence show the signs of increased fat distribution in body.

The fat distribution in males is central where as females have peripheral distribution b'cos waist circumference is more in males and hip circumference is more in females.

The WHR is found to be with in normal limits but BMI is towards the higher limits mainly in post menopausal female.

Conclusion :-

In infants the BMI value is relatively higher than BMI in 1-5 age group. Therefore in 5-14 yrs age group

and adolescence there is regain in the weight fat approaching towards normal of BMI.

In later adolescence and early adult there is disproportionate weight gain and fat distribution that leads those people to cross moderate and severe obesity level.

PG-05 A perfusion study showing the effect of flow rate on water glucose and electrolyte absorption from commercially available oral rehydration solutions.

Santosh L wakode, Sushil C Mahapatra, Ashok Jaryal, Ramesh L Bijilani.
DEPARTMENT OF PHYSIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI-110029

In situ perfusion of whole rat small intestine was used for studying the effect of flow rate on water, glucose and electrolyte absorption from three commercially available oral rehydration solutions (ORS). The ORS tested were Punarjal [Na 90mEq, K 20mEq/l, Glucose 111 mmol/L] Electrical [Na 51 mEq/L, K 20 mEq/L, Glucose 150 mmol/L], and Enerjal [Na 22 mEq/L, K 6.7 mEq/L, Glucose 237.5 mmol/L]. Thirty male wistar rats were divided into three groups and then small intestine perfused at 0.5 ml/min, 1ml/min and 2ml/min. Initial equilibrium period of 30 min was given before starting the perfusion. The polyethylene glycol (PEG) was used as non-absorbable marker for water absorption. In general the absorption decreased progressively as the speed increased. In some cases there was net secretion instead of absorption at high speeds. Water absorption was seen in all groups except in case of Enerjal at 2 ml/min where net secretion was observed. Sodium absorption was seen only is case of punarjal at 0.5 ml/min and 1ml/min, the latter being less but not significantly so. At 2 ml/min in case of Punarjal, and all speeds in case of electral and enerjal, there was net sodium secretion. Potassium absorption was seen with Punarjal at all seeds but the absorption reduced as the speed increased . In case of Electral and Enerjal, potassium absorption was seen only at 0.5 ml/min; at higher speed there was net secretion. All the three ORS studied showed glucose absorption at all speeds but the absorption was lower at higher speeds. The effect of speed of perfusion was significant, however only in case of Enerjal where absorption at 2ml/min was significantly lower than at 0.5 ml/min ($p<0.05$). Thus absorption from ORS was reduced as the rate of perfusion increased. Further at the rates studied, Punarjal (WHO based ORS) showed better absorption than the other two ORS.

PG-06 Title : The force Frequency Relation - A New And Complete Hypothesis

Authors: Caroline Vijayanand, Sathya Subramani, J. Prakasa Rao

PG-07 *The comparative study of acrosome intactness test and some routine seminal parameters in male infertility.*

Authors: Dr.Amit.S. Telang §, Dr.Mrunal.S. Phatak Dr.Geeta.A.Kurhade**, Dr. Shobha.B.Kaore*** Dr.Manish. V.Sawane*, Dr.Atul.M. Deshkar*.**
DEPARTMENT OF PHYSIOLOGY, GOVERNMENT MEDICAL COLLEGE, NAGPUR.
§ CORRESPONDING AUTHOR: DR.AMIT.S. TELANG, & PRESENTING; DEPARTMENT OF PHYSIOLOGY, GOVERNMENT MEDICAL COLLEGE,
NAGPUR -440003.
*** PROF & HEAD, DEPARTMENT OF PHYSIOLOGY, GOVT. MEDICAL COLLEGE, NAGPUR.
** ASSO PROFESSOR, DEPARTMENT OF PHYSIOLOGY, GOVT. MEDICAL COLLEGE, NAGPUR.
* LECTURER, DEPARTMENT OF PHYSIOLOGY, GOVT. MEDICAL COLLEGE, NAGPUR.
§ POSTGRADUATE STUDENT, GOVT. MEDICAL C_OLLEGE, NAGPUR.

The AI test in male infertility.

It is a well-recognized fact that infertility, in a couple, is multi-factorial in origin. Data from Institute of

research in reproduction, Mumbai, suggests that nearly 50% of cases of infertility in a couple are because of male factors. The remaining cases are due to female factors and about 10-15% have no apparent cause. This study, carried out to investigate the relationship between sperm acrosin intactness score (AI) and routine seminal parameters included 25 fertile, and 25 infertile age matched adult healthy male subjects. The gelatin slide test was performed for AI score and semen parameters were studied according to WHO manual guidelines.

The mean score of AI in control subjects (fertility proven) was found to be 62.60 ± 1.39 while it was 50.44 ± 2.50 ($p<0.001$) in infertile subjects. The analysis of variance (AN OVA) amongst the two groups for AI score was found to be very highly significant ($p<0.001$). The results of the test applied for coefficient of correlation revealed no significant correlation ($p>0.05$) between the total count, and the AI score in the controls as well as cases. The coefficient of correlation was found to be significant ($p<0.05$) and highly significant ($p<0.01$) respectively for the parameter motile sperm count with **AI** in the control and cases. The parameters percent normal morphology and percent viability gave very highly significant ($p<O.OO1$) correlation with the **AI** score in the cases as well as the control groups.

Thus we concluded that a basic germ cell defect, which affects the motile count, morphology and viability, is also associated with poor acrosomal reaction and failed fertilization. It also suggests that **AI** score is a useful indicator of fertility potential and can be safely utilized for selection of sperms for artificial insemination techniques.

Key words : Semen infertility Acrosome intactness

PG-08 THE EFFECT OF COMBINED CHEMOTHERAPY ON BIO CHEMICAL AND HEMATOLOGICAL PARAMETERS IN POST MENOPAUSAL BREAST CANCER PATIENTS

P .MABALAKSHMI K. VIJA Y ALAKSHMI AND T .KANNAN

PG DEPARTMENT OF BIOCHEMISTRY BHARATHI WOMEN'S COLLEGE, CHENNAI,INDIA.

Combined chemotherapy has adverse side effects on various metabolic functions. Cyclophosphoamide, methotrexate, 5-flurouracil kno\vn as "CMF" is most commonly opted chemotherapy for breast cancer patients. It has been reported that CMF treatment has many adverse side effects like reduction in haemoglobin content and platelet count. Hence we planned to study the effect of CMF on post menopausal breast cancer patients. Bio chemical constituents like b.lood glucose, urea, creatinine, total protein and uricacid were analysed.Heamatogical parameters like heamoglobin, total count differential count, Erythrocyte sedimentation rate and platelet count were investigated in post menopausal breast cancer patient before and after with CMF.

Study design and methods :

we selected 25 female breast cancer patients who visited the oncology department, Stanley Government Hospital Chennai INDIA. Mammogramy was done to confirm breast cancer. Patients did·not recieve any chemotherapy or radiotherpy before blood collection. The age of the patients ranged between 55 + 2 for post menopausal women. The age of;th.e control subjects were of same range. Breast cancer patients studied were of ductal carcinoma type. Approximately 5ml heparinised blood was collected and plasma was separated immediately by centrifugation at 3000g for .I Omts at 4 c .The heamotological and biochemical estimations were investigated. The study was approved by the Ethical Committee Of Stanley Medical Co.llege Chennai and all the \..'omen gave their consents.

Results & Discussion :

The levels of Haemoglobin, total count, platelet count decreased in post menopausal breast cancer patients, when compared \vith controls. However erythrocyte sedimention rate and differential count increased in post menopausal breast cancer patients.The biochemical parameters like glucose, urea, creatinine,total.

PG-09 RECEIVER OPERATING CHARACTERISTIC CURVE ANALYSIS OF ANTHROPOMETRY AND PERCENTAGE BODY FAT IN TYPE 2 DIABETICS OF PUNJAB

DHILLON J.K., GILL B.S., ARORA A
DEPARTMENT OF PHYSIOLOGY & DEPARTMENT OF MEDICINE, GOVT. MEDICAL COLLEGE, PATIALA, PUNJAB -147001

The present study attempted to establish appropriate cut off levels of Body Mass Index (BMI) for defining overweight as a risk for the development of type 2 diabetes considering percentage body fat (BF) as standard. A total of 300 patients of known type 2 diabetes participated in the study (150 males and 150 females, all above 40 years of age). Clinical examination was done. Anthropometric measurements as BMI, Waist Circumference (WC) and Waist-hip ratio (WHR) were calculated. Percentage BF was calculated using skinfold thickness method from the equation of Durnin and Womersley. Mean BMI for males was 24.97 (SD 4.3) kg/m2 and for females was 27.56 (SD 5.14). Mean percentage BF for males was 28.19 (SD 0.74) and for females was 38.22 (SD 5.29). A comparison of BF and BMI data with various ethnic groups revealed conspicuous differences. Receiver operating characteristic (ROC) curve analysis showed a low sensitivity of conventional cut off value of BMI (25kg/m2) in identifying subjects with overweight as compared to the cut off values based on percentage BF (males >25, female >30). This results in substantial misclassification. Based on the ROC curve, a lower cut off value of BMI 22.3 kg/m2, displayed the optimal sensitivity and specificity, and less misclassification in identification of type 2 diabetics with high percentage BF. BF:BMI was calculated and was found to be higher in females.

KEY WORDS: Type 2 diabetes, Waist-hip ratio, Waist Circumference, Body Mass Index, Percentage Body Fat, Skinfold, ROC curve.

PG-10 TITLE : COMPARISON OF PANCREATIC ISLETS XENOTRANSPLANTATION AND ALLOTRANSPLANTATION IN RATS

AUTHORS: M.Daisy Mythili, Dr.Anna B Pulimood and Dr.S.Gunasekaran
ADDRESS: DEPARTMENTS OF PHYSIOLOGY AND PATHOLOGY, CHRISTIAN MEDICAL COLLEGE & HOSPITAL, VELLORE -632 002, TAMIL NADU, INDIA.
TELEPHONE: 0416-2262603,2222102, EXTN 4416. FAX 0091 -416 -262788,2.
E.MAIL. GUNASEKARAN@CMCVELLORE.AC.IN

Experiments with xeno and allotransplantation of pancreatic islets into rats were carriedout. Islets were isolated by collagenase digestion method. Xenotransplantation of monkey pancreatic islets into diabetic recipient rats were done. In the recipient rats functional studies were carried out. Fasting plasma glucose levels were estimated and structural studies were carried with histology and electron microscopy. The results showed the reversal of diabetes in xenotransplanted rats under the cover of cyclosporine A 30mgikg body weight. The histology examination of the graft showed the presence of intact islet and the electron microscopy showed the presence of beta cell with its organelles. Preliminary studies were carried out with allotransplantation of rat islet into rat and the graft survival was studied by histology. The results showed the presence of intact islets in the graft. Cyclosporine A 15mgikg was needed for the allotransplanted graft survival.

Key words: Diabetes, xenotransplantation, allotransplantation, Ultrastructure, plasma glucose, pancreatic islets.

PG-11 ECHOCARDIOGRAPHY IN ESSENTIAL HYPERTENSION

DR. ANIL K. PANDEY,*, DR. AMAL BHATTACHARYA,DR.R.SAXENA***
* DEPT. OF PHYSIOLOGY, ** DEPT. OF MEDICINE, GOVT. MEDICAL COLLEGE, SURAT.

INTRODUCTION: Echocardiography is a more sensitive method to detect left ventricular hypertrophy than the ECG and is considerably less expensive. The main indication for echocardiography is to detect possible end-organ damage in a patient with borderline blood pressure values. It will also identify some

patients who would not be treated based upon clinical criteria alone. Left ventricular hypertrophy (L VH) is a common finding in patients with fixed or borderline hypertension and can be diagnosed either by ECG or by echocardiography. The latter is the procedure of choice, since the sensitivity of the different ECG criteria may be as low as 7 to 35 percent with mild L VH and only 10 to 50 percent with moderate to severe disease. Nevertheless, if echo cardiography is unavailable or too expensive, appropriate ECG criteria can be used to detect increased LV mass. Evidence of diastolic dysfunction was still commonly observed, which may reflect the role of increased myocardial collagen content in diastolic dysfunction, an abnormality that may resolve more slowly than the increase in muscle mass. Consistent with this hypothesis is the observation that diastolic dysfunction continues to improve over time With long-term (three year) follow-up.

AIM : To detect LVH, LV mass, diastolic dysfunction and other parameters in hypertensives, and its correlation with ECG.

MATERIALS AND METHODS : 50 hypertensive patients attending attending as indoor and outdoor department of New Civil Hospital and Govt. Medical College, Surat, Gujarat were taken into study. Left ventricular structure and mass, L VH, internal diameter of L V were assessed by echo cardiography. L V mass calculated by (L VM) = 0.8 (1.04 (IVSd+LVIDd+LVPWd)3-LVIDd3) + 0.6 gm. LVH also seen in ECG.

RESULTS: Clinical evidence of heaving apex beat was more specific but less sensitive.. ECG voltage criteria was more sensitive. Echocardiographic criteria were sensitive over ECG in all parameters.

Obesity, hyperlipidemia, family history, smoking, alcohol were the risk factors. Echo criteria for HT directly related to duration of hypertension.

OBSERVATION:

	HT	Control	P value
Age	48±9.4	47±8.6	NS
M:F	32 : 18	30 : 20	NS
Mean SBP(mm Hg)	176 ± 16.5	132 ± 8.3	<.001
Mean DBP(mm Hg)	96 ± 9.4	84 ± 7.6	<.001
LVMI(rnales)	151 ± 11.7	80± 8	<.001
LVMI(fernales)	139±10.8	72±5.7	<.001
L VH	74%	03%	<.001

CONCLUSION: Patients with essential hypertension had increased LV mass, and higher prevalence of LV geometric abnormality. This may have therapeutic significance as certain antihypertensives reduce L V mass more than others.

To improve standardization of echo cardiographic left ventricular anatomic measurements, echo graphic left ventricular dimensions and mass were related to body size indexes, sex, age and blood pressure. All measurements of chamber size, wall thickness and mass differed between men and women.

UG-01 Heart Rate Variation with Respiratory Maneuvers in Type II Diabetic Patients.

Sanjay Misra, Amitesh Tripathi, Dileep Verma, NS Verma, US Pandey

Diabetes mellitus is a common metabolic problem, affecting multiple organ systems. A neuropathy is one of frequent disorders of 'diabetes' and is a cause of merbidity and mortality in such patients.

Two types of test were performed, namely 'Valsalva maneuver' & deep breathing test' and their offects on H.R. – variation was studied.

The experiments were conducted on 80 diabetic subjects and 50 normal subjects (control). All the experiments were conducted in "ANS – LAB of physiology department of CSMMU Lucknow upgraded KG's Medical College, Lucknow.

The significant heart rate variation was noticed in diabetes in relation to respiratory maneuver.

UG-02 Effect of Oxytocin of Coronary Perfusion of Isolated Rabbit Heart

Prem Narayan Gupta * Rajneesh Chandra ** Dr. Pradeep Kumar
DEPARTMENT OF PHYSIOLOGY, CSMMU LKO (UPGRAEDE KG' M C LKO)

Role of oxytocin on cardiovascular regulation is being established. A number of studies have been performed on experimental animals recording the change on Heart rate, Blood pressure and the receptors responsible for that. In present study we compared the coronary perfusion rate between two models or isolated rabbit heart with and without Oxytocin mixed standard perfusion mounted on improved Langerdorff assembly. Observation shows that coronary perfusion in oxytocin mixed perfusate model was 50% less in comparison two standard perfusion in 5 minute and 45% less in next 5 minute of perfusion. Our observation shown that there was no significant difference between two models in term of heart rate and force of contraction. In conclusion we can say that Oxytocin decrease the workload in isolated rabbit heart.

* BDS 2001 CSM Medical University ** Lecturer in Physiology CSMMU, Lko.

UG-03 COMPARATIVE ASSESSMENT OF NUTRITION AND HEALTH STATUS OF RURAL AND URBAN YOUNG HEALTHY MALES

Raj Kumar Yadav* and Pawan Vishwakarma**
* DEPT. OF PHYSIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, N.DELHI-29
** DEPT OF PHYSIOLOGY, KING GEORGE'S MEDICAL COLLEGE, LUCKNOW.

Urban-rural health differences are observed in many countries, even when socioeconomic and demographic characteristics are controlled for. This study tries to assess the existence of selective urban-rural health status differences in young males. 102 young healthy males in age group 18-25 years were enrolled in the study 52 in rural and 50 in urban group. The mean BMI was comparable in both the groups ($p<0.05$). Hb levels were lower in rural males ($p<0.05$). Habits of smoking were equally prevalent in both the groups. Tobacco consumption was higher in rural males as compared to urban males. Degree of alcohol consumption was slightly higher in urban males as that in rural males. The source of drinking water in rural males was hand-pump water in almost all subjects, while in urban males it was mianly tap water supply. More of rural males consumed fresh fruits and vegetables regularly. Although, the dietary habits and diet of rural males appear to be more healthy, they tend to be more on not-so-healthy side which may be due to lack of proper health facilities and sanitation.

The purpose of this study was to asses the level of oxidative stress in an elderly as compared to a going age group by measuring serum MDA (Malondie delyde) sera from 53 healthy elderly adults (age 57.81±8.95 years). 9 females & 44 males, BMI 20.2±2.1lg/m^2) were used. Subject with chronic diseases, smokes, alcoholics and /or subjects on vitamin supplements were excluded. Diet was assessed by a gueshonnaire and was found to be adequate in both groups. Lipid profile was also done to eliminate dystepidemias. MDA was estimated spectrophotometrically. The mean MDA levels in geriatie age group were 2.24±1.08 while in young age group were 1.123±1.11 n males/m1, the differences was statistically significant ($p<0.05$) the results suggests that oxidative stress, measured by MDA in the study is higher in elderly as compared to young age group (all the values are in mean 1SD)

UG-04 VARIATION OF ERYTHROCYTE SEDIMENTATION RATE (ESR) WITH RISE IN BODY TEMPERATURE

Gaurav Dutta, John Pramod, Jaideep Rayapudi and Kusum Soni
DEPARTMENT OF PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE, LUDHIANA.

The determination of ESR is one of the most frequently ordered tests in clinical practice. Elevation in ESR with body temperature is an important prognostic tool to know the effectiveness of recovery in the course of treatment. In the present work, the elevation of ESR with a physiological rise in body temperature after exercise was studied in 55 healthy students, between the age group of 17 to 20 years. 37females and 18 males were selected with their average body weights 125 and 147 pounds, respectively. The mean body temperatures of all the subjects, before and after moderate exercise were 98.111 and 98.186°F, respectively.

With an average 0.1°F rise in body temperature, a significant rise in ESR was observes; the rise varied from 1mm/hr in 8% of the subjects to >10mm/hr in 21% of the subjects. Majority of the subjects (64%) had a rise between 4-10 mm/hr with, the mean value as 7.358±3.999 mm/hr. Interestingly, 7% of the subjects showed fall in ESR (1-9 mm/hr), who also showed fall in their body temperature after the exercise

UG-05 COMPARATIVE EVALUATION OF THE EFFECT OF RAJYOGA MEDITATION ON THE COLD PRESSOR RESPONSE IN IST YEAR MEDICAL STUDENTS

***SAURABH UPPAL, K. SRI NAGESWARI, ANITA MALHOTRA, NANDINI KAPOOR, GURJIT KAUR AND ** NITIN GUPTA**
DEPARTMENT OF PHYSIOLOGY, GOVT. MEDICAL COLLEGE, CHANDIGARH
** DEPARTMENT OF PSYCHIATRY, PGIMER. CHANDIGARH

Many students experience stress related symptoms during the time course of medical education. Longitudinal studies conducted by us earlier revealed significant stress in Ist year medical students assessed through cold pressor response and psychological variables.

After recording the baseline data, fifteen Ist year medical students participated in Brahmkumari's way of Rajyoga meditation for 20 days and 14 served as controls. The CPR parameters recorded and taken as stress indicators were ê (change) SBP, ê DBP (³20mmHg) and Recovery Time (>2 mins) and General Health questionnaraire (psychological parameter, score>2). The results indicated stress in the control group through significant increase in CPR induced ê SBP (8±1.4 mmHg initial), C1 to 19.71±1.9 mmHg, C2, P<0.001) and êDBP (16.42 ± 1.68 to 20±2.3 mmHg, NS). The meditation group (BK) revealed significant decrease in the GHQ score (2.8±0.6, BK1 to 1.31±0.33 BK2, P=0.05). On inter group comparison of the difference (independent sample comparison) in CPR parameters at the two points of time (BK2-BK1 vx C2-C1), highly significant increase was observed for ê SBP (1.6 vs 11.7 mmHg in BK and C groups respectively, p>0.001, indicating the beneficial role played by Rajyoga meditation.

SP-01 STRESS PROTEINS : POTENTIAL BIOMARKERS FOR ACUTE HEAT STRESS IN HUMANS

MAJ A CHAWLA*, DR U TATU#, Y KUMAR# * DEPT OF PHYSIOLOGY. IAM IAF BANGALORE
DEPT OF BIOCHEMISTRY. IISC BANGALORE

Heat stress is a major challenge in aviation medicine, especially in tropical countries like India. Human responses to heat stress are variable and individual heat tolerances differ. Assessment of human responses to heat stress is generally done using physiological parameters such as heart rate, sweat rate, skin and core temperatures. No specific biochemical marker has been described for to assess the heat stress response in humans. Heat shock protein 70 (Hsp 70) is a member of the family of stress proteins that is strictly induced in cells exposed to heat shock. Hsp 70 induction in human leucocytes obtained from three subjects exposed to heat stress was studied. This pilot study reports significant Hsp 70 induction in vivo following acute heat stress in human subjects. The magnitude of Hsp 70 induction varied in the subjects, as did their physiological responses to the heat stress.

Key words. Heat stress, stress proteins, heat shock protein 70

SP-02 PSYCHOPHYSIOLOGICAL CORRELATES OF STRESS IN FIRST YEAR MEDICAL STUDENTS: A DESCRIPTIVE PROFILE

ANITA S MALHOTRA, K SRI NAGESWARI, MANDEEP KANWAR, ANJANA, NITIN GUPTA*.
DEPT OF PHYSIOLOGY, GMCH, CHANDIGARH AND *DEPT OF PSYCHIATRY, PGIMER, CHANDIGARH

A number of studies have demonstrated stress-related disorders medical students. We evaluated stress in first year medical students through well-documented physiological (the cold pressor response [CPR)

and psychological (general health questionnaire [GHQ] score) correlates of stress after a few months of adaptation to the medical college. Stress was indicated by the presence of one or more of the following: difference (post-CPR minus pre-CPR) in systolic &/or diastolic blood pressure (DSBP/ DDBP) ≥20 mmHg; and/or or prolongation of the recovery time (RT) >2 minutes following CPR; and/or GHQ score >2. Students were divided into various groups; Group Ia : DBP ≥20 mmHg, RT >2 minutes and GHQ score >2 (n=7); Group Ib : GHQ score >2 and DBP ≥20 mmHg, or RT >2 minutes (n=9); Group II (n=22); Group IIa GHQ ≤2, DBP ≥20 mmHg or RT >2 minutes; Group IIb : GHQ >2, DBP <20 mmHg and RT <2 minutes; and Group III : GHQ ≤2, DBP <20 mmHg and RT <2 minutes. Group Ia was found to be severely stressed with significant increases in DBP and GHQ score ($P<0.001$ as compared to group III). Group Ib exhibited moderate degree of stress with significant increases in GHQ score and RT ($P<0.001$ as compared to group III).

SP-03 A Comparative Study of the effects of yoga and physical exercises on psychomotor functions during examination stress.

A. Kukreja, S. Das, M. Khullar, L. Rai
DEPARTMENT OF PHYSIOLOGY, LADY HARDINGE MEDICAL COLLEGE AND MORARJI DESAI NATIONAL INSTITUTE OF YOGA NEW DELHI.

There is a lot of stress in Medical Students due to competitive education system. This study was carried out to evaluate the role of yoga and physical exercises in reducing the examination stress in medical students and to study their effects on psychomotor functions. 90 healthy female 1st MBBS students were recruited and based on their preference, they were divided into yoga, physical exercise and control groups (n = 30 in each group). Yoga and physical exercises were administered to them for a period of 12 weeks. Yogic exercises included hatha yoga and meditation, while physical exercises were done on computerised bicycle ergometer. The subject were assessed at 0, 6 weeks and 12 weeks in psychological parameters (14 test variables), GSR, AV reaction time and physical endurance time. The data was evaluated using Means, Standard error, ANOVA and Factorial Analysis. In the yoga group Psychological parameters showed a statistically significant improvement ($p < .01$) in anger, depression, neuroticism, anxiety and sense of well being. Type A personality tended to shift towards type B personality traits ($p < .05$). Physical endurance time tended to increase ($p < .05$), GSR showed an improvement ($p < .01$) AV reaction time also showed a decline which was not statistically significant. Physical exercises group also showed the same trend which was statistically significant but of lower magnitude. The study was followed up further by comparing the results of Professional Examination. It was found that pass percentage was 78.2%, 92.5%, 73% and percentage of successful students who scored >60% aggregate were 76.1%, 72.1% and 57.8% in Yoga, physical exercise and control groups respectively.

SP-04 Oxidative Stress and Antioxidant status in men exposed to High altitude Hypoxia.

Annana G. Vij, Satija N. K. and Dutta R
DEFENCE INSTITUTE OF PHYSIOLOGY AND ALLIED SCIENCES, LUCKNOW ROAD, TIMARPUR, DELHI – 110 054

Objectives : To evaluate the activites of key antioxidant enzymes – superoxide dismutase (SOD) and glutathione Peroxidase (GPx), antioxidant status and oxidative stress in men during 8 mongh sojourn at high altitude (HA) above 14000 feet (4200 m)

Methods : Activities of SOD, GPx, total antioxidant status and thiobarbituric acid ractive substances (TBARS), glutathione, ceruloplasmin and uric acid were estimated in blood samples collected from sixty men at sea level and than after 3 and 8 months of their stay at an altitude of 14000 feet or above.

Results : TBARS levels were significantly higher in men after 3 months' stay at HA as compared to their base level value and remained elevated even after 8 months of their state at HA. Activities of antioxidant enzymes – SOD and GPx were higher at HA. Total antioxidant status was elevated in spite of decreased levels of glutahione, ascorbic acid and ceruloplasmin. Perhaps significant increase in plasma uric acid

contributed to anitoxidant status.

Conclusion : The increased activities of antioxident enzymes were unable to conunterect excessively generated oxidants in vivo, as is evident from the increased TBARS level. It is thus possible that some complications of high altituted could at least partly be due to oxidative stress. Strategies to strengthen the complex endogenous free radical defense can thus be formulated to achieve better adaptation to high altitude environment.

SP-05 A Comparative study of cardio pulmonary efficiency in athletes and non athletes

Amrith pakkala, N. Veeranna & S. B. Kulkarni
DEPT. OF PHYSIOLOGY, KIMS, HUBLI

This study was aimed to determine during exercise the maximum related oxygen transport VIZ., max heart rate (Max HR), Dyspnoeic Index (DI), Oxygen pulse (O2 Pulse), Recovery heart rate in an athletic and a non-athletic group. Both study groups were subjected to graded treadmill exercise testing and PFT was done using an electronic Spirolyse. Results were compared and analyzed.

We have observed significantly higher values in athletes as compared to non athletes w.r.t. the following parameters : VO2 max, VE max and max O2 pulse where resting heart rate, DI at VO2 max & recovery heart rate were lower in athletes while there was no significant change in both the groups in observed value of : MVV, BR at VO2 max HR. our observations suggest an overall higher adaptability of the cardio vascular system and the relative refractoriness of the respiratory system to the effects of training and the maximum oxygen consumption in both the groups show similar values as that from other parts of the country while MVV, VE max, BR at VO2 and DI at VO2 max differ.

SP-06 A comparative study of the effects of yoga and physical exercises on psychomotor functions during examination stress.

A Kukreja, S. Das, M. Khullar, L. Rai
DEPARTMENT OF PHYSIOLOGY, LADY HARDINGE MEDICAL COLLEGE AND MORARJI DESAI NATIONAL INSTITUTE OF YOGA NEW DELHI

There is a lot of stress in Medical Students due to competitive education system. This study was carried out to evaluate the role of yoga and physical exercises in reducing the examination stress in medical students and to study their effects on psychomotor funcitons. 90 healthy female 1st MBBS students wer recruited and based on their preference, they were divided into yoga, physical exercise and control groups (n = 30 in each group). Yoga and physical exercises were administered to them for a period of 12 weeks. Yogic exercises included hatha yoga and meditation, while physical exercises were done on computersied bicycle ergometer. The subject were assessed at 0, 6 weeks and 12 weeks in psychological parameters (14 test variables), GSR, AV reaction time and physical endurance time. The data was evaluated using Means, standard error, ANOVA and Factrorial Analysis. In the yoga group Psychological parameters showed a statistically significant improvement ($p<.01$) in anger , depression, neuroticism, anxiety and sense of well being. Type A personality tended to shift towerds type B personality traits ($p < .05$). Physical endurance time tended to increase ($p<.05$) GSR showed an improvement ($p<.01$) AV reaction time also showed a decline which was not statistically significant. Physical exercises group also showed the same trend which was statistically significant but of lower magnitude. The study was followed up further by comparing the results of Professional Examination. It was found that pass percentage was 78.2%, 92.5% , 73% and percentage of successful students who scored > 60% aggregate were 76.1% 72.1% and 57.8% in Yoga, physical exercise and control groups respectively.

SP-07 Effect of Sytessor intensity on voluntary alcohol drinking behavior in rats

Nagaraja H.S * and Jeganathan P.S.
DEPTT. OF PHYSIOLOGY, KMC, CENTER FOR BASIC SCIENCES, BEJAI, MANGALORE – 575004

Male albino rats of Wistar strain were exposed to crowding stress in two different groups for a period of seven days. One group of rats was kept under stress for six hours per day (acute stressed groups) and the other group rats was kept under stress continuously (chronic stressed group). The effect of these acute and chronic stresses on body weight, food intake, and water intake were studied. Free choice alcohol (2%w/v) intake was monitored during the 7days of stress exposure and alcohol preference and total alcohol intake in terms of g/kg body weight were also studied. A significant increases in alcohol preference and alcohol intake was there in one day and 7 days chronic stressed group. No significant increase in water intake in both acute and chronic stress. Total fluid intake was increased after chronic stress for 7 days. Food intake did not change after acute stress but chronic crowding decreased food intake after one-day stress. Body weight decreased both in acute and chronic stressed groups. Thus a short lasting stressor may not increase alcohol drinking behavior where as when animals were exposed to more intense stressor continuously for 7 days, an increase in voluntary drinking behavior may be seen.

SP-08 Exercise Heart Rate Recovery Pattern of High Altitude Natives

B. P. Bhetwal, B. H. Paudel, S. Kumar
DEPARTMENT OF PHYSIOLOGY, P.P. KOIRALA INSTITUTE OF HEALTH SCIENCE, DHARAN, NEPAL.

Execrcise recovery heart rate is a good indicator of physical fitness. The fitness level is greatly influenced by the physical activity, as physically more active people show faster recovery. High altitude residence simulates the exercising habit at low altitude by increasing oxygen demand. Thus faster recovery is expected from highlanders (HL). The study aimed to compare exercise heart rate recovery pattern of Nepali healthy adult males between HL (35.23±14.63 years) & lowlander rickshaw pullers (LLRP, 31.67 ± 10.13 years). To match the possible higher physical activity of HL (Sankhuwasabha, 2900 m); age, height, and weight matched LLRP (n = 24) control were selected at 400 m (Dharan). The subjects performed simple 3-min step test & post-exercise recovery pulse rates (bpm) were counted for 6 min. The data were analyzed using ANOVA. All subjects gave consent for participation in the study. Resting heart rates of both groups were comparable (73.06 ± 13.82 Vs. 69.54 ± 9.92). Their recovery pulse rates did not come back to resting level even at 6th min (HL = 73.06 ± 13.82 Vs. 85.73 ± 14.92; $p<0.001$), (LLRP = 69.54 ± 9.92 Vs. 81.5 ± 14.58; $p<0.001$), however, stabilization appeared at 1 min (85 ± 17.42) in LLRP & after 1.5 min. (92.26 ± 16.27) in HL. The pulse rate of HL remained higher upto 3.5 min after the exercise as compared to LLRP (88.4 ± 15.73 Vs. 81.33 ± 14.76; $p<0.05$). The results suggest that the recovery of post-exercise heart rate is faster in lowlanders compared to highlanders which is just opposite to our expectation. The slower recovery in highlanders may be due to their lower physical activity, lower ambient temperature & racial differences as compared to LLRP.

Keywords : Exercise rocovery heart rate, Physical fitness, High altitude natives, Physical activity, Lowlanders, Rickshaw pullers.

SP-09 To Study The Age of Onset of Hair Recession In Central Indian Adolescent Population

Parekh Nitin, Gajbhiya IPR, Bharshankar RN, Asia AA, Jadhav P.
DEPT. OF PHYSIOLOGY, IGMC, NAGPUR

The study was carried out in the department of physiology, Indira Gandhi Medical College, Nagpur to determine the age of onset of hair recession in Central Indian Urban male population. One hundered and eighty subjects were evaluated which included 20 subjects each in the age group of 11 to 19 years. The morphological analysis of hair recession pattern with graphical representation were designed from the observed

mean values of hair line measured in all angles (0-180^0) from centre of the Frankfurt horizontal plane with the help of specially designed instrument. The age of onset of hair recession is 16 years as observed in central Indian male population.

SP-10 Effect to Examination Stress on Cardiovascular Parameters

Dr. A. N. Joshi, Dr. (Mrs.) S. Chandwani, Dr. N. R. Pathak
DEPTT. OF PHYSIOLOGY, MEDICAL COLLEGE, VADODARA, GUJARAT.

Recent research on cause of diseases and again has increasingly supported the significance of stress. All situations or conditions that bring a change in the function and behaviour are termed as stressors. Examination is a well-known mental stressor in the student's life.

The present work was undertaken to study the effect of examination stress on some cardiovascular parameters. 38 Medical students of First MBBS course in the age group of 17 to 19 years participated in the study. 15 were boys and 23 were girls. The subjects were explained the purpose and importance of study. Only those who were motivated and consented were inclueded in the present study. Pulse rate, Systolic Blood pressure, Diastolic Blood Pressure and Pulse Pressure were measured seven days before the commencement and seven days after the conclusion of Examination. They were recoverded in the morning between 8 to 10 a.m. to avoid diurnal variations and by the same instrument to avoid the instrumental errors.

The values of pulse rate, systolic blood pressure, and diastolic blood pressure were significantly higher during pre-examination period when compared to those of post examination period. Pulse pressure however did not show a significant change.

SP-11 A comparative study of Lipid profile and blood sugar in regularly, irregularly and non exercising young population of Ajmer.

Sudhanshu Kacker*, R.D. Sharma, Sonali Sharma.
DEPARTMENT OF PHYSIOLOGY, J.L.N. MEDICAL COLLEGE, AJMER

The present study was undertaken to study the long term effect of exercise on lipid profile in seventy young medical students which were divided in following viz. regularly, irregularly and non exercising groups. Serum Cholesterol was significantly lower in regularly exercising group in comparison to irregularly or non exercising group. Serum HDL levels were higher in regularly exercising group in comparison to irregularly or non exercising group. Irregularly exercising group had higher HDL level in comparison to non exercising group. This could be attributed to high lipoprotein lipase activity. Serum Triglycerides, LDL and VLDL levels were lower in exercising group in comparison to other two groups. Blood sugar level was lower in regularly exercising group in comparison to other two groups due to better peripheral utilisation of glucose. The present study suggests that exercise in young individuals play an important role in regulating the lipid profile and blood sugar level. Irregular exercise {four times per week for at least 45 minutes per day} also proved to be beneficial in comparison to sedentary life style.

SP-12 EFFECT OF PRECOOLING IN REDUCING HEAT STRAIN

PK Jain*, AK Balyan
* NAME OF CORRESPONDING AUTHOR:
WG CDR P K JAIN, PROFESSOR AND HEAD, DEPARTMENT OF PHYSIOLOGY, INSTITUTE OF AEROSPACE MEDICINE, INDIAN AIR FORCE, BANGALORE-560017

Heat stress adversely affects the aircrew performance, especially during low level, high speed flying. Fifteen healthy male subjects were given heat stress exposure twice to find out the efficacy of precooling in reducing heat strain. On first day, they were exposed to a heat stress of wet bulb globe temperature index (WBGT) 38.1^{0}C (CON-HSR) for 60 min. On second day they were precooled at 16^{0}C for 60min and then exposed to the same heat stress as on day one for 60min (EXP-HSR). Their Heart rate (HR) and oral temperature (T_{oral}) were recorded every 10 minutes during heat exposure. Their near nude body weights

were recorded prior and after the heat exposure to determine sweat loss (SL). HR in EXP-HSR was found to be significantly lower during and at the end of 60 min of heat exposure. The Oral temperature (T_{oral}) in EXP-HSR was found to be significantly lower than CON-HSR for the first 30min only. SL was significantly lower in EXP-HSR as compared to CON-HSR. Craig's index (CI) was also significantly lower for the duration of the exposure in EXP-HSR. It is concluded that precooling at 16°C for 1hr provided complete protection for a short duration of 30 min and significant protection for 1 hr of exposure to a heat stress of WBGT 38.1°C.

SP-13 BODY COMPOSITION AND PHYSICAL FITNESS PROFILE OF INDIAN NATIONAL WOMEN FOOTBALL PLAYERS

Dr. L.Suresh Roy, Dr. A.K. Joy Singh and Prof. M.M. Singh
1- P.G. STUDENT, 3-PROF. AND HEAD, DEPARTMENT OF PHYSIOLOGY, RIMS, IMPHAL, 2-ASST. PROFESSOR, DEPARTMENT OF PHYSICAL MEDICAL AND REHABILITATION, RIMS, IMPHAL.

Objective : To study the body composition and physical fitness level on Indian National women football players. Methods: This study was carried out on 32 football players attending a national coaching camp in July 2002 for Busan Asiad at Imphal, Manipur. The body compostion variables like body mass index (BMR) and total body water (TBW) were recorded by TANITA body composition analyser. Selected physical fitness variables, standing broad jump (SBJ), vertical jump (VJ), push ups, 60 M run, 6X 10 M run and 15 minutes run were also recorded. Results: All the subjects were having high % of fat in comparison to other professional women football players. The goalkeepers were found to be having higher variable values regarding age weight, BMI, % fat, FM and BMR. The physical fitness of forward and half positions players were uniform, while the goalkeepers were having lower recordings in push ups, 60 M run and 15 minutes run. The physical fitness scores of the subjects were found to be less than the recommended levels. Conclusion : The body composition especially % fat of the subjects are more in comparison to that of elite players. Physical fitness variables are found uniformly low in comparison to that of the players of other countries. So improvement in body composition and physical fitness level of the players can bring about improvement in their performance.

CNS-01 VENTRAL SUBICULAR LESION IMPAIR SPATIAL MEMORY AND ALTER THE SLEEP DEPENDENT MEMORY CONSOLIDATION IN RATS.

Bindu M.Kutty **Latha Devi and T.R.Raju**
Department of Neurophysiology, NIMHANS, Bangalore – 560 029 India

Recent studies emphasize the importance of sleep in memory consolidation. Few studies have suggested the role played by the Pontine waves (P waves) and REM sleep in learning associated memory consolidation. Our study was aimed at examining the changes in sleep pattern and memory consolidation following bilateral ventral subicular lesion. Experiments were carried out in adult male Wistar rats (n=10 / parameter). Polysomnographic recordings were carried out using EEG (frontal cortex and rostral pons), EOG (eye muscles) and EMG (nuchal muscles) continuously for six hours pre and post acquisition of the spatial task in eight arm radial maze. The average criteria for acquisition of a spatial task were attaining 7.5/ 8 correct choices. Similar experiments were also carried out following ibotenate lesions of ventral subiculum (0.5 mgm / site). The results demonstrated a significant impairment in acquisition of the spatial task following ventral subicular lesion. They have taken more number of trails to acquire task when compared to control rats. Increase in both P wave density and REM sleep following spatial learning was observed in control rats. Whereas lesion has resulted in distinct changes in sleep states, both NREM and REM sleep states were enhanced; P waves were distributed indiscriminately throughout the sleep states.

The present results demonstrate the importance of REM sleep and P-waves in memory processes and subicular lesions have disrupted the sleep dependent memory consolidation and thereby impair spatial learning and memory function.

***Acknowledgement : This study has been funded by CSIR, New Delhi.**

CNS-02 TO STUDY THE EEG CHANGES IN DIFFERENT PHASES OF MENSTRUAL CYCLE

Dr. Muneeb Jahan, Dr. Mrs. Afzal Jabbar, Dr. Irshad Hussain Askari
UPGRADED DEPARTMENT OF PHYSIOLOGY, OSMANIA MEDICAL COLLEGE

The aim of the present study is to record electrical activity in healthy female subject in the age group of (17 – 21) yrs. About 20 volunteers were taken up for study and were divided in two groups.

Group I – Subjects with (N) Menstrual cycle is NO PMT

Group II – Subject with H/o post menstrual tension and abnormal cyclic pattern.

MATERIAL AND METHODS

Subjects were studied on multi channel polygraph. The electrodes were placed on four selected areas, Bifrontal, Bitemporal, Biparietal and Bioccipital region with reference electrodes on nasion.

Recording at 4 settings

1st week in 1 – 4 days of menstrual cycle

2nd week in 10 – 12 days of menstrual cycle

3rd week 20 – 23 days of menstrual cycle

4th week 25 – 28 days of menstrual cycle

The EEG recording was done with external stimuli like hyperventilator and Photic drive. The ongoing electrical activity of brain was studied with different frequency and the changes in the amplitude of Alpha and Beta waves were the main events recorded during the study.

IN GROUP – I showed a closed similar pattern with average frequency of 13-18 Hz / sec. There was decrease of 0.5 Hz / sec. The amplitude of the alpha-wave showed an mean increase is noted (45 – 55mv) And their was mild decrease in B activity on Photo stimulation is seen in the form of Alpha block.

Hyperventilation shows no significant change in Delta activity.

IN GROUP – II The frequency of Alpha waves showed a slight decrease with coverage frequency 13 Hz / sec and there was slight increase in Amplitude average 40mv and the beta activity showed very little decreasing trend with average frequency of 11-42 Hz /sec.

The EEG changes are minimum across menstrual cycle both in group I & II.

These changes reflect the balance of various hormonal agent on Thalamic and Cortical Neurons.

KEY WORDS : Electro Encephalograph, Alpha waves, Beta waves, Menstrual cycle.

CNS-03 STUDY OF SLEEP PATTERN AMONGST THE PROFESSIONALS HAVING DIFFERENT OCCUPATION

R.C. Sharma, M.M.Haq, R.S.Bhise, R. V. Joshi & Kirti C. Kanodia
DEPARTMENT OF PHYSIOLOGY & BIOPHYSICS, SURAT MUNICIPAL INSTITUTE OF MEDICAL EDUCATION & RESEARCH UMARWADA, OPP.BOMBAY MARKET, SURAT, GUJARAT

Several longitudinal and cross-sectional studies on children, Adolescence, and young adult have been carried out to determine the factors affecting sleep pattern (Murray 1995, Stuart McKelvie 1992) and reported that changes in sleep pattern is attributed to the difference in daily life pattern as well as socio-economic conditions. Renata Meixner (1997) in his study reported that during transition from puberty to adolescence, change in sleep pattern in adolescents is due to an underlying biological change while in college students, it seems it is a life structure and personality traits. It is interesting that there is an increase in REM sleep from the time of adolescents to the early 20's and suggested that research in these areas of sleep is needed with more emphasis on the role of developmental forces behind sleep effectors.

Present study was undertaken in the department of Physiology with an objective to show the effects of differences in occupation and its intrinsic psychosocial influence on sleep pattern amongst the professionals of this industrial city. The subjects for the present study were drawn amongst the professionals on voluntary

basis and were interviewed by the investigators. A questionnaire was given to the each subject, who has consented to participate in the study. Details of anthropometrical data as well as information on socioeconomic & psychosocial aspects of the subject were recorded in the questionnaire. All the data of questionnaire were compiled and analyses statistically using SPSS software. It is observed that sleep pattern is an outcome of interaction between behavioral and psychosocial factors.

CNS-04 ASSESSMENT OF INTELLECTUAL IMPAIRMENT IN APPARENTLY HEALTHY INDIVIDUALS OF GERIATRIC AGE GROUP

John Pramod*, Kusum Soni*, Malina Pramod# and Rajesh Chakravarti**
*DEPARTMENT OF PHYSIOLOGY, **DEPARTMENT OF RADIODIAGNOSIS, CHRISTIAN MEDICAL COLLEGE, LUDHIANA, PUNJAB. # GENESIS FAMILY CLINIC, LUDHIANA

Intellectual impairment and dementia are known to affect the geriatric age group. The symptoms are likely to appear and aggravate exponentially with age beyond 65 years. The present study was conducted on 332 apparently healthy individuals aged 60 years and above. None of the subjects had any acute problem or symptoms warranting treatment. All subjects were interviewed for documentation of history of smoking, alcoholism, known diseases like hypertension, diabetes, IHD or TIA. Each subject was assessed for integrity of computational ability, fluency in language, concentration span, consistency of signatures and recall of memory. Modified Hachinski Ischemia Score (HIS) was applied on all subjects. It was observed that 62% of the subjects had HIS of 6 or less (group I). Of the remaining 38% subjects (group II), 67% had score of 7, 26% had 8 and only 7% had HIS of 9 points. All subjects of group II had variable degree of CT proven multiple cerebral infarcts. It was observed that 96% subjects in group II had preventable potential causes of multi infarct dementia like hypertension (80%), diabetes (69%), history of TIA (27%), smoking (52%), IHD (23%) and alcoholism (43%). A large majority (86%) of the subjects belonging to both groups maintained social graces even in the face of cognitive impairment. We conclude that all functionally independent individuals in the geriatric age group should not be labeled as demented considering the fact that multi infarct dementia can be prevented and treated to some extent.

CNS-05 ALTERATION IN AUDIOVISUAL REACTION TIME BY ACUTE AUTONOMIC STRESS : POSSIBLE ROLE OF CIRCADIAN RHYTHM

Shaikh Wasim ,Ghosh S. and Singh S.K.
DEPARTMENT OF PHYSIOLOGY,PRAMUKH SWAMI MEDICAL COLLEGE, KARAMSAD, GUJARAT

Audio-visual reaction time is a reliable indicator of the rate of processing of an external stimuli by the central nervous system[C.N.S.]. The present study was aimed to find out if acute autonomic stress alters the processing ability of the C.N.S. and whether there is a diurnal variation in this processing ability.50 young healthy male subjects of the age group 17-20years were selected randomly from the first M.B.B.S. batch after ruling out any medical illness or disorder[organic/inorganic].The audio-visual reaction time was tested by a AUDIO-VISUAL REACTION TIME APPARATUS RTM-608[with a resolution of 0.0001 and accuracy of +/-1], a Medicaid Systems[Chandigarh] product.The testing was performed twice a day, once at 8:30a.m. and once at 5:00p.m. in both prestress and poststress conditions. The autonomic stress was applied by asking the subject to perform a isometric exercise by a hand-grip dynamometer for SYMPATHETIC stress and by performing the Valsalva maneuver for PARASYMPATHETIC stress. The audio-visual reaction time were tested separately both after sympathetic and parasympathetic stresses. The observation showed that there was a significant diurnal variation in both the auditory and visual reaction times,which were found to be better in the evening than morning in prestress as well as poststress states. The second observation was that the visual reaction time was affected significantly by the autonomic stress, decreasing after stress whereas auditory reaction time was affected insignificantly. The parasympathetic stress showed a diurnal variation on its effect on both the reaction times. It decreased the visual reaction time more in the morning than in the evening.

The results indicate that the alteration of C.N.S. processing ability as reflected by the changes in audio-visual reaction time may be due to the application of acute autonomic stress with a possible role of

circadian rhythm in tuning the C.N.S. . However, it is yet to be conclusively determined whether the alteration in the reaction time during the evening hours is due to a role of the circadian rhythm or a day long stress or a combination of both.

CNS-06 Spinal H-reflex studies in term human newborns with fetal distress

Subhankar Kumar, Varsha Mahendra, B.D. Bhatia, Udai Prakash
DEPARTMENTS OF PHYSIOLOGY AND PEDIATRICS, I.M.S., B.H.U., VARANASI – 221 005, U.P.

Objective : A preliminary study to see the effect of fetal distress on spinal H-reflex (Hoffmann's reflex, 1918 : Non-invasive, electrically elicited monosynaptic reflex, equivalent to tendon jerk) in term human neonates.

Methods : 6 term human newborns with evidence of fetal distress but normal Apgar score were tested within one week of birth and compared with 6 normal term newborns as control. Impulse transmission through the reflex arc was assessed in the right lower limb by H-reflex latency (HRL), H-reflex conduction velocity (HRCV) and distal motor latency (DL), while a-motor neuron excitability was estimated by Hmax, Mmax and H/M ratio. BIOPAC BSL Advance System along with Grass stimulator (model S88) were the apparatus used.

Results : Fetal distress group of newborns showed longer HRL, slower HRCV, and reduced Hmax and Mmax values compared to the control group.

Conclusion : Fetal distress in the newborn could affect the spinal motor neurons, and transmission of impulse in the monosynaptic reflex pathway.

CNS-07 Visual Evoked Potentials in different Phases of Menstrual Cycle.

Ravindra Singh Rojpoot, U. S. Pandey, S. Tewari, N Srivastava, Raj Kumar Yadav*, Rakesh Shukla.**
DEPTT. OF PHYSIOLOGY , CSMMU LKO. * DEPTT. OF PHYSIOLOGY AIIMS, NEW DELHI
** DEPTT. OF NEUROLOGY, CSMMU, LKO

Evoked Potentials are particularly suited in the noninvasive evaluation of the integrity & functional maturation of several afferent pathways in the nervous system.

VEP is a measure of transmission along a complex visual pathway. In the study, 20 healthy female students of Ist year MBBS batch of CSMMU. (age group 17-20 yrs.) have been enrolled. In each case menstrual history has been recorded in detail. VEP will be recorded in pre & post menstrual phases. The results will be statistically analyzed & compared.

It is well known that menstruation itself is a physiological stress which may affect VEP.

Key words : VEP (Visual Evoked Potential) & Menstrual Cycle.

CNS-08 Title : Patterns of Taste Thresholds In Various Age Groups

Authors : Rekha Nambiar* & A Malathi
DEPARTMENT OF PHYSIOLOGY, LOKMANYA TILAK MUNICIPAL MEDICAL COLLEGE, SION, MUMBAI.

Taste is a combination of sensations conveyed by taste buds and olfactory sensations, temperature and even texture of food.

To study taste thresholds for sweet, sour, salt and bitter tastes in various age groups.

100 healthy medical students and staff of the Lokmanya Tilak Municipal Medical College at Mumbai were studied. After clinical examination, the subjects were divided into five age-based sub-groups, each consisting of 10 males and 10 females. The thresholds for sweet, salt, sour and bitter tastes were detected by 7 successive serial halfdilutions of glucose, sodium chloride, citric acid and quinine sulphate solutions.

60%, 70% and 50% of the subjects in 16-25 years age group were also to appreciate seet, salty and

bitter tastes respectively, at lower concentrations compared to merely 20% among those aged > 56 years. There was no change in threshold for sour taste.

The thereshold for sweet, bitter and salt taste increased significantly with increasing age, but with no change in threshold for sour taste.

CNS-09 Visual Reaction Time : A comparative study in Deaf and Dumb and Normal Subjects

Singh S. K., Shaikh W. and Ghosh S.
DEPTT. OF PHYSIOLOGY, PRAMUKH SWAMI MEDICAL COLLEGE, KARAMSAD, GUJARAT.

The visual reaction time acts as an indicator of the processing ability of the central nervous system. The present study was done to know whether a disturbance in one of the special senses could after the functioning of the other special senses. 50 deaf and dumb, otherwise healthy males of the age group 10-18 years were randomly selected at the BADHIR Vidhya Vihar (Deaf and Dumb School) run by the Rotary Club Nadiad Samaj, Seva, NADIAD. The deaf and dumb subjects were trained for the visual reaction time testing before doing their test. The visual reaction time was tested by a Audio-Visual Reaction time Apparatus RTM-608 (with a resolution of 0.0001 and accuracy of ± 1) a Medicaid Systems (Chandigarh) Product. The control group was selected from the BAAWIS GHAM VIDHYALAYA (Primary & Secondary School) at Vailabh Vidhyanagar. The testing was done once in the day at 10:30 a.m. according to the convenience of the subjects and the control group. The observation showed that there was a significant increase in the reaction time of the deaf and dumb subjects as compared to that of the control group.

The results indicate that the special senses are interlinked to each other and a damage to one can alter the functioning of the other. The increase in the visual reaction time may also be due to any hidden psychological component developed in the deaf and dumb subjects.

CNS-10 Auditory Evoked Responses In postmenopausal Women on Hormone Replacement Therapy

Farah Khaliq, O. P. Tondon and Neeraj Goel *
DEPTT. OF PHYSIOLOGY AND OBSTRETICS & GYNAECOLOGY* UNIVERSITY COLLEGE OF MEDICAL SCIENCE AND G.T.B. HOSPITAL DILSHAD GARDAN, DELHI.

The effect of hormone replacement therapy (HRT) was studied in 32 postmenopausal women on their auditory Evoked Potentials i.e. auditory brainstem response (ABR), Middle latency response (MLR) & slow vertex response (SVR). Recordings were done on computerzed evoked potential recorded using 10/20 system of electrode placement and standard click stimuli. A significant improvement in neural transmission was observed as was evidenced by decrease in the ABR wave latencies I, II, IV & V and interpeak latency III-V and I-V afte 6 months of HRT. A similar significant decrease was observed in MLR wave latencies of Po, Na & Pa. The SVR wave latencies although found to be decreased after HRT, could not reach the level of statistical significance. The results indicate the effect of sex hormone in improving transmission in auditory pathway from periphery through brainstem and thalamus upto cortex. However slow vertex responses indicate that auditory association areas are not much affected. This might have bearing on improvement of neuropsychological functions in postmenopausal women on HRT.

CNS-11 Mid Latency & Slow Vertex Responses During Pregancy

Asha Yadav, O P Tandon, Neelam Vaney
DEPTT. OF PHYSIOLOGY, UNIVERSITY COLLEGE OF MEDICAL SCIENCES & GTB HOSPITAL, DILSHAD GARDEN, DELHI.

Central auditory pathways picked up electrophysiologically as mid latency responses (MLRs) and slow vertex auditory responses (SVRs) have been studied least in women during their critical periods of life

although auditory brainstem responses (ABRs) have been studied by many researchers. In the present study MLRs and SVRs were recorded in 20 pregnant women of age group 18-28 years. Their period of gestation ranged between 18-36 weeks & pregancey had been uneventful & normal. MLRs & SVRs were recorded from Cz-A1 & Cz-A2 positions with alternating 90 dB sound pressure click stimuli delivered at 5Hz & 0.5 Hz respectively. 256 responses for MLR & 64 for SVR were averaged and analyzed. Different waves of these auditory evoked responses were compared with 20 age watched non-pregnant females. The data obtained was analysed for each variable by using unpaired student's test.

Present study did not reveal any difference in MLR waves during pregnancy but all the SVR waves were significantly delayed in pregnant women. The varying levels of hormones during pregnancy specially estrogen and progesterone interacts with the generators of SVRs, could be responsible for this delay in the information processing.

CNS-12 Beta Adrenoceptor Blocker Prevents Locus Coeruleus Stimulation Induced Reduction in Rapid Eye Movement Sleep in Rats.

Singh S.* and Mallick, B. N. **
BAREILLY COLLEGE, BAREILLY* SCHOOL OF LIFE SCIENCES, JAWAHARLAL NEHRU UNIVERSITY, NEW DELHI 110067, INDIA

Noradrenergic neurons in the locus coeruleus (LC) cease firing during rapid eye movement sleep (REMS). We have shown on one hand that REMS deprivation induced physiological changes might be due to alterations in the levels of norepinephrine acting on alpha-1 receptors, on the other hand, stimulation of LC induced a reduction in REMS – a condition similar to that of REMS deprivation. To further understand and elucidate the mechanism of action, in this study, we investigated if adrenoceptor blockers could prevent the effects of LC stimulation, if at all.

Under surgical anesthesia rats wer prepared for recording EEG, EOG, EMG and bilateral stimulation of LC. After recovery, sleep-wakefulness was recorded i) during baseline; ii) during stimulation of the LC (2 Hz; 150μA); and iii) during stimulation of LC in the presence of either Alpha-1 (prozosin, 3 mg/kg) or Beta (propranolol, 10 mg/kg) adrenoceptor antagonist (i.p. injection)

The results showed that the effect of stimulation of LC on REMS could be prevented by the beta blockers and not by the alpha-1 blockers. This suggests that the effects of LC stimulation induced reduction in REMS is likely to be mediated by norepinephrine acting on beta adrenoceptors. However, it also raises the question that LC stimulation induced reduction in REMS and normal REMS deprivation induced effects may not be a similar phenomena.

CNS-13 Tactile Reaction Time : An Innovative Study

P K nanda & Tajir Tamuk
DEPARTMENT OF PHYSIOLOGY, I G MEDICAL COLLEGE, SHIMLA – 171001

Measurement ofreaction times offers considerable insight into the functioning of nervous system, specially of the central nervous system. Auditory and visual reaction times have been measured by several workers under various physiological and pathological situations.

Medical literature appears to be silent on any other reaction time apart from the frequently measured auditory and visual reaction times. An innovative attemts, therefore, has been made through the present study to measure that Tactile Rection Time (TRT).

The TRT was measured in 12 healthy volunteering medical students in the close age group of 19-20 years. All the measurements were made at the same time of each day of the experiment. Auditory and visual masking was done during recording of the TRT. The TRT was measured by using a slightly modified set-up which is otherwise employed for measurement of Auditory and Visual reaction times.

The tactile stimulus employed consisted of a device for applying crude touch and the stimulus was applied on the same anatomical part of the body for all the subjects.

The mean + SEM value of the TRT was calculated to be 284 + 5.03 msec with the observed values ranging from 261 to 311 msec.

CNS-14 Effect of External Calcium on Components of Compound Action Potential of Frog Sciatic Nerve In Vitro

Maloy B Mandal and Shripad B Deshpande
DEPARTMENT OF PHYSIOLOGY, IMS, BHU, VARANASI – 221005 INDIA

External calcium concentration has been known to influence the neuronal membrane excitability for a long time. However, it is not clear whether the external calcium affects uniformly to all the fibre population present in a mixed nerve.

Compound action potentials were recorded from deshethed nerve fibers placed in a Perspex chamber (1.5 ml) with continuous superfusion with physiological Ringer solutions. Suction electrodes were used for both recording and stimulating purposes. The potentials from the recording electrodes were amplified, dizitized and displayed on PC/AT computer using unkelscope softwere (MIT, Massachusetts) for storage and analysis. The signals were also monitored on an oscilloscope simulataneously. Recording from the nerve bathed in Ca++ free Ringer solution clearly showed two distinct peaks of potentials namely Alpha and Beta with different threshold, conduction velocity/latency, rise time, amplitude and duration. The changes noted on addition of Ca++ in the Ringer were minimum in Alpha peak with a significant ($P < 0.05$) reduction (+25%) in conducition velocity. On the other hand Beta peak showed a remarkable and significant decrease in area (-70%) and amplitude (-75%) with an increase (+63%) of the rise time. Gradual increment in the Ca++ concentration in the bathing solution recorded attenuation of Beta peak area, initially fast (up to 0.5 mm) than slowly till 2.0 mm concentration. Washing again with Ca++ free Ringer solution could not reverse these changes significantly ($P>0.05$) if any of the parameters recorded here. However, in another set of experiments the Ca++ (2mM) induced decrease of Beta peak area and amplitude could be reversed up to nearly 70-75% of the calcium free response when the preparation was equilibrated for 30 min with Ringer solution containing EDTA (2mM) in place of Ca++. Further, initially exposing the nerve to normal amphibian Ringer (Ca++ 2mM) for 30 min and than exposure to either Mg++ (2mM) or pentobarbitone sodium (10 µM) or Verapamil (10µM) for 30 min also failed to reverse the Ca++ induced depression of the beta peak. The present work describes the presence of extremely calcium sensitive component of compound action potential in frog sciatic nerve.

CNS-15 Implication of Sexually Differentiated Median Pre Optic Area on Sweet and Salt Preference in Rats.

Maxim Crasta
DEPARTMENT OF PHYSIOLOGY, KASTURBA MEDICAL COLLEGE, MANGALORE – 001

The Median Pre-optic area is speculated to be primarily involved in gender identity and sexual orientation. This is also the part of hypothalamus regulating eating and drinking. It is believed to undergo sexual differentiation due to organizing effects of sex hormones. There are three sex dimorphic peaks in gonadal hormones viz. during first half of gestation, in the perinatal period and during puberty. The present study examines the interaction between testosterone on MPOA perinatally and during puberty of the male rat and its possible influence on taste sensitivity. The absence of such interaction in age matched littermate female rats were also studied. Age matched male and female rats were used in the study. The organizational role of testosterone was evaluated by gonadectimization in the adult rats, neonatal castration, treatment of neonatally gonadectomized rats with Testosterone Propionate and Testosterone Enanthate. These rats were subjected to unilateral and bilateral lesions when attained puberty, with stereotaxic co-ordinates Antero-Posterior = 6.5 mm, lateral 0.05 mm and vertical = 7.8 mm. All these were subjected to two/three bottle preference test for glucose and saline solutions. The results show that the females preferred sweet or salt solution compared to male and this behaviour coincided with the onset of puberty. Neonatal castrated testosterone treated male rats and MPOA lesioned adult rats mimicked the female rats in terms of absolute intake of the fluid. We conclude that the differences in taste preference as areflectionof possible sex difference in hypothalamic

regulation which depend on Organisational action in early part of the rat's life and activational influence of sex hormones in the adulthood.

CNS-16 MODULATION OF THE RESPONSIVENESS OF THE GUINEA-PIG ISOLATED TRACHEALIS TO 5-HT UNDER HYPOXIA : EFFECTS OF EPITHELIAL DENUDATION

Kaveri Chakrabarty and M. Fahim
DEPARTMENT OF PHYSIOLOGY, VALLABHBHAI PATEL CHEST INSTITUTE, UNIVERSITY OF DELHI, DELHI

5-HT is released from neuroepithelial cells of the airways during hypoxia as well as during immune degranulation, which may alter airway resistance. The present investigation was undertaken in isolated tracheal ring segments of guinea-pigs to evaluate whether hypoxia could modulate the contractile response of 5-HT. The investigation was further extended to exami8ne the involvement of airway epithelium in the modulation of the above response under hypoxia, as there is no data to our knowledge available so far regarding the same. Changes in isometric tension under initial tension of 2g were measured with force displacement transducers (Grass FT-03c) connected to a polygraph (Lectromed, UK) through a strain gauge amplifier (Lectromed, UK). 5-HT caused concentration-dependent contration of the rings during normoxia upto concentration of 10^{-5M} followed by relaxation showing biphasic response. Epithelial denudation did not modify the 5-HT induced response, suggesting the absence of epithelial mediated mechanism in the 5-HT induced effect on the airway smooth muscle. Hypoxia significantly decreased the contractile response induced by 5HT of both epithelium intact and denuded rings. The results suggest that hyporesponsiveness of the guinea-pig isolated trachealis to 5HT under hypoxia is independent of the airway epithelium. The significance of the results at high altitude and during asthma will be discussed.

CNS-17 EFFECT OF VITAMIN C (ASCORBIC ACID) ON REACTION TIME

Dr. Vaidehi Paranjpe, Dr. (Mrs.)Brinda Venkatraman, Dr. Dinesh Maskeri Topiwala
NATIONAL MEDICAL COLLEGE AND B.Y.L. NAIR CHARITABLE HOSPITAL, MUMBAI

The study was carried out to evaluate the effect of ingestion of a moderately large amount of vitamin C on simple auditory (ART) and visual (VRT) reaction times in 200 young healthy right-handed medical students aged between 17 and 20 years. Baseline ART and VRT, prior to vitamin C administration, were noted. This was followed by supervised administration of 1000mg vitamin C once daily to each subject for 14 days. After this period, ART and VRT in both males and females, the improvement being 5% more observed in VRT as compared to ART. This betterment in reaction time, a measure of psychomotor reactivity, can be attributed to the anti-oxidant, lipid protective property of ascorbic acid. Vitamin C functioning as a cofactor in the biosynthesis of neurotransmitters like epinephrine and norepinephrine in the brain, is also contributory. The study emphasizes the need to redefine the required dietary allowance of ascorbic acid.

CNS-18 Study of Reaction Time in Type II Diabetes Mellitus Patients

Dr. Shalaka Karanjkar, Dr. V. Brinda, Dr. Ashutosh Bodhe, Dr. Dinesh Maskeri
DEPT. OF PHYSIOLOGY T.N. MEDICAL COLLEGE AND B.Y.L. NAIR CHARITABLE HOSPITAL MUMBAI CENTRAL, MUMBAI - 400 008

The objective of this study was to assess the effect of diabetes on choice reaction time. The study group comprised of uncomplicated type II diabetics; normal healthy subjects formed the control group. Effects of age, gender and blooe glucose levels wer also studied so as to create a baseline for assessing the damage caused by diabetes.Visual and auditory choice reaction time was recorded using RTM-608 apparatus. The unpaired 't' test shows that both the reactio times significatntly increase with age in both the groups but in each age group the diabetics show a significantly higher reaction time. The younger age group is more affected by the diabetic process. Gender and blood suger level comparison do not show significant differences. Ten to twenty years of diabetes creates the most significant change in reaction time. The role of diabetes in

oxidative stress would be discussed with cerebrovascular complications and peripheral demyelination leading to increase in reaction time.

CNS-19 Understanding of problems in the thought processing of children with learning disabilities

Kusurkar .R.A, Malathi.A, Kulkarni.M

Learning disability manifests in a person who essentially has normal or above normal IQ, in the form of a difficulty in understanding or functioning in a specific area of learning.

This study was undertaken with an objective to understand where the fault in the thought processing mechanisms of a child with learning disabilities lies. Therefore, accepting a "Structure of Intellect" model given by J.P.Guilford, which gives the different aspects of thought processing, a study was carried out to assess each of these mechanisms.

CNS-20 BRAINSTEM AUDITORY EVOKED RESPONSES IN GESTATIONAL DIABETICS

Lalita Chaudhari, O.P. Tandon, N. Vaney, and N. Agarwal*
DEPARTMENT OF PHYSIOLOGY AND GYNAE-OBSTETRICS*, UNIVERSITY COLLEGE OF MEDICAL SCIENCES AND GURU TEG BAHADUR HOSPITAL, DILSHAD GARDEN, DELHI-95

Electrophysiological correlates of sensory function in diabetic pregnancy have not been documented. Present study reports changes in Auditory brainstem evoked responses (ABR) in diabetic pregnancy when compared with normal pregnant controls. Waves of ABR primarily represent volume conducted electrical activity generated from cochlear nerve to inferior colliculus and interpeak latencies between these waves reflect neural conduction in the corresponding segment of central auditory pathway. These potentials were recorded in 20 women with diabetic pregnancy using Ag/AgCL electrodes from Cz-A_1 and C_z-A_2 position on MEB 5200 Neuropack II plus (NihonKohden, Japan) Evoked Potential Recorder. The evoked potential in diabetic pregnant women were compared with 20 age matched normal pregnant women using Student's t-test. Absolute latencies of waves I to V, Inter peak latencies I-III and I-V of ABR were significantly increased whereas amplitude of wave V was decreased in diabetic pregnant women. These findings indicate prolongation of both peripheral transmission time (PTT) and central transmission time (CTT) in women with gestational diabetes.

ANS-01 Effect of Yogic Exercises on Autonomic Functions in Diabetic Subjects

Jagdish Narayan, Vani Gupta, Shraddha Singh, Sunita Tewari, U.S. Pandey
DEPT. OF PHYSIOLOGY, C.S. M. MEDICAL UNIVERSITY, UPGRADED K.G. M. C. LUCKNOW

Research has shown that yogic exercises improve autonomic functions with this background knowledge; we have planned to see the effect of Yogic exercises (Asanas) on Autonomic Functions in diabetic patients. The study is case control cross over study. Control and study group comprises of age and sex matched diabetic subject of age group 40 to 60 Yr., 20 in each group. Study group have done yogic exercises 2 hour daily for initial 2 months and then stopped exercising for next 2 months. The control group has not done any exercise for initial 2 months and then has switched to Yogic exercise for next 2 months.

The autonomic function tests (Cold pressur test, Hand griptest, valsalva maneyrre) was done on 0^{th} day and then at interval of 15 days for 4 months in both groups.

The study is still going on, results are awaited

Key words : Diabetics, Yogic exercises, Autonomic Function Test

ANS-02 Short-term physical training alters cardiovascular autonomic response amplitude and latencies

R K Sharma, K K Deepak, R L Bijlani, P S Rao
AUTONOMIC FUNCTION LABORATORY, DEPARTMENT OF PHYSIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI 110029,
E-MAIL : KKDEEPAK@HOTMAIL.COM

This study reports the effects of 15 days of short exercise training in 25 healthy adult males on cardiovascular autonomic response amplitudes and latencies. A standard battery of autonomic function tests including both activity (tone) and reactivity was used. Parasympathetic activity as evaluated from heart rate variability (HRV) showed no statistically significant change in both time and frequency domain measures. Although sympathetic activity as measured by QT/QS2 ratio showed no statistically significant change, a trend with a decrease in sympathetic activity and an increase in parasympathetic activity was observed. There were no changes in the parameters measuring parasympathetic reactivity. Sympathetic reactivity as evaluated by diastolic blood pressure responses to hand grip test (HGT) showed a significant decrease (mean ± SD) at 2nd and 4th minutes (14.24 ± 7.24 vs 11.6 ± 6.21, and 17.6 ± 7.81 vs 15.2 ± 6.53 mm of Hg respectively). Similarly diastolic blood pressure response to cold pressor test showed a significant decrease at 1st minute (11.2 ± 5.19 vs 8.88 ± 4.51 mm of Hg). Time domain assessment of autonomic responses was done by measuring tachycardia and bradycardia latencies during Valsalva maneuver (VM) and lying-to-standing test (LST). Physical training resulted in an increase in tachycardia latency during LST (6.44 ± 1.53 vs 8.02 ± 1.77 sec) and a decrease in bradycardia latency during VM (9.23 ± 3.72 vs 7.78 ± 3.9 sec). We conclude from the present study that 15 days of physical training is not enough to alter autonomic activity and PNS reactivity but can influence changes in SNS reactivity and latency parameters. We hypothesize that a decrease in bradycardia latency during VM signifies a faster recovery of heart rate during VM and an increase in tachycardia latency during LST denotes a delayed activation of the system both of which are favorable cardiovascular responses. The research was funded by Department of Science and Technology, Govt. of India.

ANS-03 A short duration of physical training benefits cardiac performance during exercise

R K Sharma, K K Deepak
AUTONOMIC FUNCTION LABORATORY, DEPARTMENT OF PHYSIOLOGY
ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI 110029
CORRESPONDENCE: KKDEEPAK@HOTMAIL.COM

Long duration of physical training is known to have beneficial effects on many cardiovascular parameters. In the present study, the effects of a moderate intensity, short duration of physical training of 15 days was studied on cardiovascular variables during rest, exercise and recovery. The study was conducted on 25 healthy, adult male subjects, who underwent a supervised exercise-training regimen on a bicycle ergometer for 15 days. The physical training programme consisted of bicycling 15 minutes per day, 6 days a week for 15 days. The exercise load was assessed by cordless monitoring of heart rate, which was maintained between 60 to 70% of the maximum achievable heart rate throughout the exercise. Continuous ECG recording was done during the entire exercise and recovery phases. Blood pressure was measured manually at 1-minute intervals during exercise and recovery phases. Autonomic tone was measured by time and frequency domain analysis of heart rate variability (HRV) and Sympathetic tone was determined by the ratio of electrical and mechanical systoles (QT/QS_2). All the study parameters were recorded before and after the physical training schedule. After the physical training heart rate response to graded exercise showed a significant decrease at 2nd, 3rd, 4th, 5th and 6th minutes. Heart rate at 90th second after the peak exercise during recovery showed a significant decrease after the physical training [(99.13±15.09 bpm vs 93.67±13.67 bpm, $p<0.05$)]. The systolic blood pressure response to graded exercise showed a significant decrease at 4th minute and 6th minute after physical training. The percentage drop in heart rate in 1 minute during recovery was significantly increased [(21.03±7.93 vs 23.50±6.97, $p<0.05$)] as well as heart rate recovery time showed a significant decrease

[(3.1±1.3 vs 2.54±1.18 minutes, p<0.05)]. There were no significant changes in autonomic tone parameters but there was a trend of an increase in PNS tone and a decrease in SNS tone. These findings suggest that short duration (15 days) of physical training results in favorable cardiovascular responses during exercise. The research was funded by DST.

ANS-04 PARASYMPATHETIC DYSFUNCTION IN DIABETICS

*** Dileep Kumar Verma, ** N. S. Verma, *** S. Tewari, **** U. S. Pandey**
DEPT. OF PHYSIOLOGY, C.S.M. MEDICAL UNIVERSITY, LUCKNOW

Diabetes is the single most important metabolic disease which can affect nearly every organ system in the body. India has a largest population in the world. Change in eating habits, increasing weight & decreased physical activity are major factor leading to increased incidence of type - II diabetes. 80 Non-Insulin Dependent Diabetes Mellitus (NIDDM) patients (all male) were subjected to evaluation of cardiovascular autonomic reflexes in the ANS lab of department of physiology K.G. Medical College, Lucknow & 40 healthy euglycemic subjects (all male) served as control & they have similar socio-economic conditions were also subjected to autonomic function test deep Breathing Test (E:I Ratio) & Valsalva Ratio were done in diabetic patients & control subjects. I found that E: I Ratio is less tan 1.10 in 46% of diabetic patients (abnormal), 27% borderline & rest are normal. The abnormal Valsalva Ratio in 51%. The study group here shows significant decrease in R-R interval, Valsalva Ratio near to 1.20 which is significantly different from control groups. Incidence of parasympathetic neuropathy was 57.5% in comparison to control. I found decreased parasympathetic reactivity in diabetic patients mostly. All the diabetic has significantly shorter R-R interval than control.

Key words - NIDDM, ANS - Autonomic Nervous System Valsalva - Ratio
E : I Ratio - Expiratory - Inspiratory Ratio

ANS-05 THE USE OF THE HAND GRIP TEST FOR PREDICTING PREGNANCY INDUCED HYPERTENSION

***Kapila Gupta * Rashmi Babbar ** S. Batra and *** Anil K. Gupta**
*DEPARTMENT OF PHYSIOLOGY, MAULANA AZAD MEDICAL COLLEGE, ** DEPARTMENT OF OBSTETERICS AND GYNAECOLOGY, L.N.J.P. HOSPITAL, *** MCD

Pregnancy induced hypertension is acute hypertension, which develops in a gravida whose blood pressure is normal before 3rd **Trimester of pregnancy but persistently remains elevated to atleast 140/ 90 mm Hg with an overall increase in the diastolic blood pressure of atleast 20 mm Hg.**

To assess the potential of the handgrip test (isometric exercise) as prospective non-interventional screening test of PIH, a study was carried out in the Department of Physiology M.A.M.C. in collaboration with antenatal cl8inic of L.N.J.P. Hospital. Isometric exercise is known to cause general sympathetic activation which result in an increase systemic arterial pressure. One hundred primigravida between 28-32 wks gestation volunteered to sign an informal consent form and underwent the siometric handgrip test. An increase in the diastolic blood pressure of atleast 20 mm Hg. Was considered a positive test. Any subject with the history of hypertension, diabetest mellitus or renal diseases was excluded from the study.

The sensitivity of handgrip test in predicting PIH was 68% the specificity being 76%. The positive predictive value was 75%. This test may prove to be a valuable screening test of this disease because of its simplicity as a result of which prevention can be approached at right time.

ANS-06 CORRELATION OF AUTONOMIC INDICES WITH THYROID STATUS

Sujata Gautam, O.P. Tandon, S.S. Sircar, R. Awasthi*, T. Sekhri**
DEPARTMENT OF PHYSILOGY & MEDICINE* UNIVERSITY COLLEGE OF MEDICAL SCIENCES AND G.T.B. HOSPITAL SHAHDRA, DELHI
& INSTITUTE OF NUCLEAR MEDICINE & ALLIED SCIENCES** TIMARPUR, DELHI

The autonomic status in female thyroid patients was compared with healthy, age-matched normal

[(3.1±1.3 vs 2.54±1.18 minutes, p<0.05)]. There were no significant changes in autonomic tone parameters but there was a trend of an increase in PNS tone and a decrease in SNS tone. These findings suggest that short duration (15 days) of physical training results in favorable cardiovascular responses during exercise. The research was funded by DST.

ANS-04 PARASYMPATHETIC DYSFUNCTION IN DIABETICS

*** Dileep Kumar Verma, ** N. S. Verma, *** S. Tewari, **** U. S. Pandey**
DEPT. OF PHYSIOLOGY, C.S.M. MEDICAL UNIVERSITY, LUCKNOW

Diabetes is the single most important metabolic disease which can affect nearly every organ system in the body. India has a largest population in the world. Change in eating habits, increasing weight & decreased physical activity are major factor leading to increased incidence of type - II diabetes. 80 Non-Insulin Dependent Diabetes Mellitus (NIDDM) patients (all male) were subjected to evaluation of cardiovascular autonomic reflexes in the ANS lab of department of physiology K.G. Medical College, Lucknow & 40 healthy euglycemic subjects (all male) served as control & they have similar socio-economic conditions were also subjected to autonomic function test deep Breathing Test (E:I Ratio) & Valsalva Ratio were done in diabetic patients & control subjects. I found that E: I Ratio is less tan 1.10 in 46% of diabetic patients (abnormal), 27% borderline & rest are normal. The abnormal Valsalva Ratio in 51%. The study group here shows significant decrease in R-R interval, Valsalva Ratio near to 1.20 which is significantly different from control groups. Incidence of parasympathetic neuropathy was 57.5% in comparison to control. I found decreased parasympathetic reactivity in diabetic patients mostly. All the diabetic has significantly shorter R-R interval than control.

Key words - NIDDM, ANS - Autonomic Nervous System Valsalva - Ratio
E : I Ratio - Expiratory - Inspiratory Ratio

ANS-05 THE USE OF THE HAND GRIP TEST FOR PREDICTING PREGNANCY INDUCED HYPERTENSION

***Kapila Gupta * Rashmi Babbar ** S. Batra and *** Anil K. Gupta**
*DEPARTMENT OF PHYSIOLOGY, MAULANA AZAD MEDICAL COLLEGE, ** DEPARTMENT OF OBSTETERICS AND GYNAECOLOGY, L.N.J.P. HOSPITAL, *** MCD

Pregnancy induced hypertension is acute hypertension, which develops in a gravida whose blood pressure is normal before 3rd **Trimester of pregnancy but persistently remains elevated to atleast 140/ 90 mm Hg with an overall increase in the diastolic blood pressure of atleast 20 mm Hg.**

To assess the potential of the handgrip test (isometric exercise) as prospective non-interventional screening test of PIH, a study was carried out in the Department of Physiology M.A.M.C. in collaboration with antenatal cl8inic of L.N.J.P. Hospital. Isometric exercise is known to cause general sympathetic activation which result in an increase systemic arterial pressure. One hundred primigravida between 28-32 wks gestation volunteered to sign an informal consent form and underwent the siometric handgrip test. An increase in the diastolic blood pressure of atleast 20 mm Hg. Was considered a positive test. Any subject with the history of hypertension, diabetest mellitus or renal diseases was excluded from the study.

The sensitivity of handgrip test in predicting PIH was 68% the specificity being 76%. The positive predictive value was 75%. This test may prove to be a valuable screening test of this disease because of its simplicity as a result of which prevention can be approached at right time.

ANS-06 CORRELATION OF AUTONOMIC INDICES WITH THYROID STATUS

Sujata Gautam, O.P. Tandon, S.S. Sircar, R. Awasthi*, T. Sekhri**
DEPARTMENT OF PHYSILOGY & MEDICINE* UNIVERSITY COLLEGE OF MEDICAL SCIENCES AND G.T.B. HOSPITAL SHAHDRA, DELHI
& INSTITUTE OF NUCLEAR MEDICINE & ALLIED SCIENCES** TIMARPUR, DELHI

The autonomic status in female thyroid patients was compared with healthy, age-matched normal

females as controls. The patients (29+/- 7 years) were categorised into two groups : hyperthyroid and hypothyroid. The valsalva manoeuvre, standing to lying ratio (S/L ratio) and immediate heart rate response to standing (30:15 ratio) were recorded for assessing the parashympathetic status while the galvanic skin response (GSR) was recorded to assess the sympathetic status. Statistical analysis was done using Student's t-test for comparing autonomic indices between the different groups and regression analysis for individual with thyroid hormone levels. Although the mean values were not significantly different in hypothyroid and hyperthyroid patients, yet the correlation done between autonomic function and thyroid hormone levels indicates a statistically significant difference p-value 0.05, in one autonomic function (S/L ratio). The correlation was negative for log (T3) and log (T4), while it was positive for log (TSH). This indicates that there is decreased parasympathetic activity with increased T3 and T4, which is in agreement with earlier reports. The GSR, which is one of the measures of sympathetic activity, was found not be affected.

ANS-07 STUDY OF AUTONOMIC FUNCTION IN DIABETEST MELLITUS PATIENTS

Dr. P.S. Bajji, Dr. R.m. Shaikh I& Dr. M.R. Ramavat
DEPARTMENT OF PHYSIOLOGY, DR. V. M. MEDICAL COLLEGE, SOLAPUR.

Atuonomic nervous system examination was performed in total 152 diabetic patients, which comprised of males & females of both IDDM and NIDDM cases. Assessment of status of the autonomic nervous system was done both with the help of symptoms and by tests based on cardiovascular reflexes. 44% of the patients showed one or the another symptoms of autonomic neuropathy, where as by using test 51.9% of patients were found to have autonomic neuropathy. This suggests that tests based on cardiovascular reflexes are able to detect diabetic autonomic neuropathy even before its symptoms appear. The percentage of autonomic neuropathy was found more in IDDM (57.6) patients than in NIDDM (45.9) patients. We found no correlation between incidence of autonomic neuropathy and age of diabetic patients. We also found to correlation between occurrence of autonomic neuropathy and duration of diabetest mellitus. Parasypathetic neuropathy was found to be more common than sympathetic neuropathy.

Key Words : IDDM - Insulin dependent diabetes mellitus.
NIDDM - Non – Insulin dependent diabetes mellitus.

ANS-08 A CORRELATIVE STUDY OF PARASYMPATHETIC ACTIVITY IN VARIOUS PHASES OF MENSTRUAL CYCLE

Dr. (Smt.) Roopali Parlewar & Dr. (Smt.) Brinda Venkatraman
DEPT. OF PHYSIOLOGY, TPIWALA NATIONAL MEDICAL COLLEGE & NAIR HOSPITAL, DR. A.L. NAIR ROAD, MUMBAI CENTRAL, MUBAI – 400 008

Menstrual cycle refers to the cyclic events that take place in a rhythmic fashion during the reproductive period of a woman's life. Aim of the present study is to comparr parasympathetic activity during different phases of menstrual cycle i.e. pre-menstrual (20^{th}-25^{th} day), menstrual (1^{st} – 5^{th} day) & post-menstrual (6^{th} – 11^{th} day). The study group consisted of 30 female medical students in the age group of 17-25 yrs. Taking utmost care to exclude subjects with medical and gynaecological problems. Parameters studied were resting heart rate, expiration – inspiration index (E. Iindex), Postural index & Valsalva index on ECG. E. index & Postural index showed no phase related statistically significant difference during menstrual cycle – Valsalva index recorded during the pre-menstrual phase was compared with that recorded during the menstrual phase. Values recorded for valsalva index in pre-menstrual phase were significantly higher than those recorded during the menstrual as well as the post-menstrual phases. Thus it can be concluded that the autonomic nervous system balance suffers significantly during the leuteinizing phase of the menstrual cycle in normal women.

ANS-09 STATUS OF AUTNOMIC NERVOUS SYSTEM IN CHILDREN OF ASTHMATICS

Seema Kamal, Rashmi Babbar, M.K. Doga and V.P. Varshney
DEPARTMENT OF PHYSIOLOGY MAULANA AZAD MEDICAL COLLEGE AND DEPARTMENT OF MEDICINE LNJP HOSPITAL, NEW DELHI.

Asthmatic patients are know to have autonomic abnormalities. The study evaluated the status of autonomic nervous system of children from asthmatic parents to determine whether these autonomic aberrations present in asthmatics are inherited and are primary to asthma.

The study was carried out by comparing the status of autonomic nervous system of children aged between 5 to 10 years for two groups : (a) children from asthmatic parents as Test Group (b) children from non-asthmatic parents as Control Group. The results of various autonomic function tests (SL ratio, 30:15 ratio, valsalva ratio and tachycardia ratio, handgrip test and cold pressor test) conducted for both the groups suggested that there is no parashymathetic or sympathetic defect in the children of asthmatics. Therefore, the study indicates that the autonomic defects are secondary to asthma, and rules out the possibility that autonomic aberrations present in asthmatics are inherited and primary to asthma.

ANS-10 AUTONOMIC RESPONSES TO BREATH HOLDING IN SMOKERS & NONSMOKERS.

Karadkhedar S. S., Khan S.T., Afroz Sayeeda, Jadhav S.S., Dudhamal V.B.
DEPARTMENT OF PHYSIOLOGY, GOVT. MEDICAL COLLEGE, AURANGABAD.

In this study 25 smokers & 25 nonsmokers were studied. Following parameters were studied, breath holding time (BHT), Pulse rate in resting & during breath holding B.P. & E.C.G. changes and peak expiratory flow rate (PEFR) were recorded.

BHT in nonsmokers was 38.28 +/- 5.11 & in smokers 28.62 +/- 6.67. Thus B.H.T. was significantly rerduced in smokers. PEFR in resting condition in nonsmokers & smokers was 390.30+/- 32.33 & 268 +/- 62.59 (respectively. This decrease is highly significant.

Systolic BP in nonsmokers & smokers was 117.08 +/- 6.9 and 120.32 +/- 5.99 respectively. Thus slight increase is observed in smokers. Mean diastolic B.p. in nonsmokers & smokers was 78.64 +/- 5.44 and 79.28+/-5.94 respectively. This diastolic B.P. also shows slight increase in smokers than nonsmokers. Mean pulse rate in nonsmokers & smokers was 75.41 +/- 4.73 and 76.36 +- 4.92 respectively. OThus slight increase in pulse rate in smokers is observed. Mean pulse rate during B.H.T. in nonsmokers and smokers was 77.92+/-4.46 and 80.88+/-4.36. Thus significant increase in pulse rate during B.H.T. in smokers.

E.C.G. shows no change. The results obtained shows significant reduction in values of B.H.T. & PEFR in smokers. Also there is significant increase in pulse rate which was taken during B.H.T. on smokers than nonsmokers.

ANS-11 CARDIOVASCULAR AUTONOMIC DISTURBANCES IN DIABETES MELLITUS

Dr. R.R. Mohanty, Dr. R.K. Nanda
DEPARTMENT OF PHYSIOLOGY, V.S.S. MEDICAL COLLEGE, BURLA, ORISSA

Diabetes Mellitus, the third most common metabolic disorder, is faced not only with decreased life expectancy but also with every possibility of disabling complications. Cardiovascular autonomic neuropathies of varying degree are common and are responsible for orthostatic hypotension, resting tachycardia, loss of heart rate variation, and impotence in male etc.

Simple cardiovascular tests can be used to assess autonomic involvement to cardivascular system. In the present study 30 diabetic patients were subjected to bed side tests in the department of physiology V.S.S. Medical College, Burla during the period from August 2001 to May 2002. The resting heart rate, sinus arrhythmia, postural hypotension and handgrip test were performed. The results of above rests were compared

to age and sex matched healthy controls.

In the present study, the incidence of cardiovascular autonomic disturbances were quite common in Diabetic. Melltus patients irrespective of types of Diabetes and fasting blood glucose levels. Autonomic involvement of the cardiovascular system should be given proper attention to present morbidity and mortality relating to cardiovascular system.

ANS-12 A COMPARATIVE STUDY OF SYMPATHETIC FUNCTIONS IN DIFFERENT PHASES OF MENSTRUAL CYCLE.

DR. RUPALI PARLEWAR; DR. BRINDA VENKATRAMAN.
DEPARTMENT OF PHYSIOLOGY, NKP, SIMS & LATA MANGESHKAR HOSPITAL, NAGPUR.

A study undertaken to examine and compare the sympathetic responses in blood pressure during various phases of menstrual cycle. Resting blood pressure, cold pressore test, handgrip test suggesting changes in sympathetic activity have been studied and compared in different phases of menstrual cycle (Menstrual 1st to 5th day, postmenstrual 6th to 11th day, premenstrual: 20th to 25th day). The study group consisted of 30 female Medical students aged 17 to 25 years. Students with gynecological and medical problems were excluded.

Resting systolic pressure was found to be significantly higher in premenstrual phase on the other hand the diastolic pressure showed no statistically significant difference. Cold pressor test also showed a significant increase in systolic pressure in premenstrual phase. Handgrip test showed no statistically significant result. Hence it can be concluded that the hormonal fluctuation occurring during normal menstrual cycle alters the sympathetic outflow.

CVS-01 CARDIOVASULAR PARAMETERS IN UNDERNOURISHED CHILDREN

Girwar Singh Gaur*, Krishnamurthy N, Velkumary S, Kaviraja Udupa, Madanmohan and Srinivasan S**
DEPARTMENTS OF PHYSIOLOGY AND PEDIATRICS**, JAWAHARLAL INSTITUTE OF POSTGRADUATE MEDICAL EDUCATION & RESEARCH (JIPMER),
PONDICHERRY – 605 006.

Undernutrition is known to affect the nervous system, skeletal muscles and smooth muscles. However, there is a paucity of literature on the effect of undernutrition on cardiovascular functions in children. Hence, the present work was undertaken to study the effect of nutritional status on the heart rate (HR), blood pressure (BP) and systolic time intervals [electromechanical systole (QS_2), left ventricular ejection time (LVET) and pre ejection period (PEP)] of undernourished children. The study was conducted in 15 undernourished boys (age 8-12 years, BMI 11.5 - 13.5 kg/m^2). The study was also conducted in 15 age-matched boys (BMI 13.51-16.5 kg/ m^2). After 5 minutes of supine rest, HR, BP and Systolic time intervals were determined in all these subjects. The mean values of HR, systolic pressure, diastolic pressure, rate-pressure product, QS_2, LVET and PEP of the control group were compared with corresponding mean values of undernourished group. There was statistically no significant difference between the corresponding parameters of both the groups. Thus it is concluded that borderline undernutrition does not affect these cardiovascular parameters.

CVS-02 AN EVALUATION OF TRANSTHORACIC HYPOVOLAEMIA, MYOCARDIAL CONTRACTILITY & SYMPATHO-VAGAL INTERACTIONS DURING RECUMBENCY, SITTING & QUIET STANDING

Lt Col KK Tripathi*, Dr Rajah Vijay Kumar, Dr PK Banerjee*****

13 healthy, male, non smokers were evaluated, using impedance cardiography, for their reactions to two orthostatic manoeuvres viz sitting & quiet standing, primarily, to examine whether availability of foot support, and thereby, muscle pump would prevent deterioration in myocardial contractility. Such an observation

is endorsed, recently, in a study wherein passive upright tilt was given with foot board support and is contrary to much more frequently reported impairment of cardiac contractility during such stresses. In the present study, thoracic impedance rose from its supine value of 22.80±2.33 W to 25.15±2.97 W during sitting and further to 25.93±2.47 W during quiet standing. The changes were interpretable as trans-thoracic hypovolaemia of 492±258 ml & 656±268 ml in the two postures, respectively. PEP/LVET Ratio increased from its supine value of 0.40±0.09 to 0.47±0.13 during sitting and 0.54±0.11 during quiet standing. Corrected values of maximal rate of change in the impedance (dZ/dt_{max}), the closest non-invasive match for dP/dt, exhibited a significant decrease to 1.30±0.26 W/sec during sitting and 1.19±0.28 W/sec during quiet standing from its supine value of 1.49±0.42 W/sec. Stroke volume decreased significantly from its supine value of 71.4±20.7 ml to 50.2±16.4 ml during sitting and 37.8±10.7 ml during standing. LF/HF Ratio (derived from spectral analysis of HRV) rose from its supine value of 1.80±0.94 to 4.05±3.85 during sitting and 9.06±4.49 during quiet standing. All these changes during quiet standing were significant from supine ($p<0.05$; Wilcoxon Matched Pairs Test) and signify a reduction in myocardial contractile status despite availability of muscle pump and a marked sympathetic stimulation during the two orthostatic manoeuvres. These and other pertinent observations from the study are discussed in the text.

CVS-03 Measurement of Pressure Tolerance in Manual and Sedentary Subjects

R.C.Sharma, M. M. Haq, R.V.Joshi , Kirti Kanodia and S.C.Sharma
DEPARTMENT OF PHYSIOLOGY & BIOPHYSICS, SURAT MUNICIPAL INSTITUTE OF MEDICAL EDUCATION & RESEARCH UMARWADA, OPP.BOMBAY MARKET, SURAT, GUJARAT

Pressure tolerance measurements has been reported to be a reliable indicator in various disease conditions such as hypothyroidism, estrogen deficiency and in state of chronic myopathies. Keele et al has used sensitive force gauge to quantify level of tenderness of the muscle for identification of trigger points & evaluation of pressure sensitivity in health & diseases. Present study has been undertaken to measure pressure tolerance of the subjects in order to establish normal values of pressure tolerance in normal healthy adults having sedentary or manual occupation. A total of 120 subjects were selected for the present study amongst the officers of Surat Municipal Corporation and manual laborers engaged in construction work. The Sedentary group comprises of officers having occupation of sedentary nature while manual worker group consists of construction workers. The consent of all subjects was taken prior to their inclusion in the study. All the subjects were examined clinically. The subjects suffering from any chronic or acute diseases such as pulmonary tuberculosis, hypertension, diabetes, cardiac, myopathies and musculo-skeletal disorders were excluded from the study. The physical data of the subject were recorded prior to pressure tolerance measurement.

Pressure tolerance measurements were performed with the help of Digitrack™ Commander in all subjects at the maximum bulk of deltoid muscle and tibia separately as per the method described by Fischer AA et al (1986). Three readings were taken on the same sites as well as on contralateral side to improve measurement reliability. The entire process was repeated subsequently by same applicator using the mid tibia. Pressure tolerance measurements having wide variations after repeated three times at the same site were repeated next day.

Mean pressure tolerance of male and female subjects with sedentary occupation was found to be lower than the group comprise of manual work (26.8 lb./ cm^2). The results of this study were also analyzed to establish correlation between observed data on pressure tolerance and age, sex, weight and physical activity.

CVS-04 Cardiac Effects of Garlic (Allium Sativum)

Narsingh Verma, R. K. Yadav
ASSTT. PROFESSOR, KGMC, LUCKNOW AND RAJ KUMAR YADAV ASST. PROF. AIIMS, NEW DELHI.

Garlic has been used medicinally since time immemorial. New data have increased interest in its role in normalization and treatment of cardiovascular diseases' risk factors. The active properties of garlic depend on a pungent volatile oil consisting of sulfur containing compounds. Garlic has a significant antiarrhythmic

effect on heart. In the present study the effect of fresh garlic juice was studied on frog. A significant effect was seen on the heart rate, rhythm, and force of contraction.

CVS-05 Normal reference values of degree of mean QRS vector in young healthy adult subjects.

Meenakshi Gupta, SAA Rizvi, Sangeeta Singhal, P.N. Singh,
DEPARTMENT OF PHYSIOLOGY, JN MEDICAL COLLEGE, AMU, ALIGARH-202002.

Long standing hypertension leads to hypertrophic disorders of left ventricle, leading to shift through mean QRS vector/MQV to left side but there is no indication of left axis deviation as the normal reference value has been taken as-30 degrees. In clinical practice usually reference value is taken between 0 to +90 degrees and hence it appears that there is no unanimity of the degree of MQV. Therefore we have chosen in the first phase, young healthy adult subjects to find out their normal reference values.

The mean QRS vector calculated in the 51 medical students aged between 17 to 25 years was found to be 60.79 + 25.11 degrees (M+SD). The 95% confidence limit, which is generally considered to be the normal reference value, was calculated as +10.57 to + 111.01 degrees in those subjects.

CVS-06 ANTHROPOMETRY AND BLOOD PRESSURE NORMS IN SLUM CHILDREN OF NORTHERN U.P.

Deepak Kumar Garg *, Vinay Agarwal, Sudha Agrawal, Pratibha Dev
DEPTT.OF PHYSIOLOGY, LLRM MEDICAL COLLEGE, MEERUT.

The weight and height are powerful indicators of maturation in children. The maturation, not the chronological age, is the most powerful determinant of the normal blood pressure. Height is better correlated with skeletal age than chronological age and is also related with blood pressure, independent of age. Various normative blood pressure data's published in India and abroad show wide variations.

In the present study, correlation of height and weight with blood pressure is being tried in slum children of Northern U.P Preliminary datas indicate slight variation in systolic blood pressure in children between 3 to 5 years of age when campared with western datas. Beyond 5 years, it is similar to them. The diastolic blood pressure exhibits large variation with the reference data. Height and weight in these slum dwellers are below the normal Indian standards. These slum children are from poor socio-economic families and malnutrition may be an important factor for their stunted growth. The study is still continuing.

CVS-07 (Dr.) Jyoti Kumar

M.D., PROFESSOR OF PHYSIOLOGY, S.I.M.S., SUBHORTI INSTITUTE OF MEDICAL SCIENCES, MEERUT

It is now becoming increasing clear that Vascular Endothelium is just not an inert layer. It exerts a profound influence on maintenance of vascular tone of coagulation, etc. endothelial dysfunction has been implicated as important in the pathogenesis of atherosclerosis, coronary a diseas, myocardial ischemia, resulting from reduction in Nitric oxide concentration, increased release of Endothelial cell permeability and adhesion. Endothelial dysfunction is an important predictor of cardiovascular diseases and its modulation will be definitely beneficial in reducing complications of Hypertension, coronary a disease (CAD) hyperlipidemia and diabetes.

CVS-08 MEAN ELECTRICAL AXIS IN MIDDLE AND OLD AGE NORMAL HEALTHY SUBJECTS

Sangeeta Singhal, S.A.A. Rizvi, Meenakshi Gupta, P.N. Singh.
DEPARTMENT OF PHYSIOLOGY, J.N. MEDICAL COLLEGE, A.M.U., ALIGARH.

It is a common observation that middle and old age subjects become overweight or obese. This is

primarily due to deposition of fats over abdomen and this might lead to shifting of mean electrical axis (MEA). Here we are reporting our preliminary data on normal 95% confidence limits, (considered as normal range for any particular data) in 31 normal healthy subjects from middle and older age (25-60 yrs.)

The 95% confidence limit range for MEA was found to be – 5.8 to + 109.46

CVS-09 Effect of exercise on some cardio-pulmonary functions in trainees of physical training institute

N.V. Bansod A.R. Gawarle I.P.R. Gajbhiye A.B. warkar S.Z. Sorte

The moderate physical training developes some adaptive changes in Cardiovascular and Pulmonary systems. With the present study and attempt is made to determine the status of cardio-Pulmonary efficiency in the trainees of Physical Training Institute with definate protocol for a period of one or two years duration and to compare the status of this efficiency among themselves. The Cardio-Pulmonary adaptive changes were studied on 1st year, 2nd and 3rd year students (n=30) of Physical Training Institute. They were evaluated for structural and functional changes by analyzing their ECG, ECHO and Pulmonary test findings. Increased PR interval, QRS complex duration and resting bradicardia were the important features in ECG at rest. In ECHO study statistically highly significant increase in left ventricular internal diameter (LVID during diastole), Posterior wall thickness (PWT), Intraventricular septum thickness (IVST), left ventrivular end diastolic volume (LVEDV), Stroke Volume (SV), with no significant changes in left ventricular internal diameter during systole (LVID during systole) and Ejection fraction (EF) were reported. The Cadiac output (CO) calculated from heart rate and stroke volume was also significantly increased. In the Pulmonary function test significant difference was seen only in FEV1%, where as all the parameters like FVC, $FEF_{25-75\%}$, $FEF_{0.2-1lit}$, PEFR, MVV showed statistically no significant changes in the form of enlargement of left ventricular cavity and functional adaptations like resting bradycardia and increased stroke volume, that increased the Cardio-Pulmonary efficiency with physical training.

Present study suggests that the Cardiovascular system improves significantly while Pulmonary system remains unaffected with moderate physical training as this system has tremendous reserve capacity.

Key Words: - Physical training, Adaptive changes.

CVS-10 Assessment of Cardio-Pulmonary Efficiency of Students from Different States of India in Medical College Hospital and Research Center.

*** Ray, M.K., Kulkarni, V.a and ** Ray, Suranjana.**

* DEPARTMENT OF PHYSIOLOGY, BLDEA'S SHRI. B.M. PATIL MEDICAL COLLEGE HOSPITAL AND RESEARCH CENTER, BIJAPUR, KARNATAKA.

* DEPARTMENT OF PHYSIOLOGY, UNIVERSITY COLLEGE OF SCIENCE AND TECHNOLOGY, CALCUTTA UNIVERSITY, KOLKATA.

Student's of MBBS I-Phase in the age group of 18-20 years both male and female from different states of India were divided in to four zones. Zone I or East Zone, Zone II or West Zone, Zone III or North Zone, Zone IV or South Zone. To get sufficient number of students from each zone, the study period was for three years (1999-2002). Aerobic fitness was evaluated by measuring the VO_2 max, with Cycle Ergometer (pedal at a rate of 50 times per minute which is equivalent to about 120 r.p.m at the wheel, for 4 minutes with tension 2 kg.) and 2 km, brisk walk. Other parameters like Total Lung Capacities (TLC), FEV_1, Vital Capacity (VC), Maximum Breathing Capacity (MBC), Oxygen pulse was recorded by the computerized Lung Function (Spirowin '99) Instrument and Peak Expiratory flow Rate (PEFR) was recorded by the Peak Flowmeter.

The results were analyzed and compared by using 't' test to find out the significance of difference between the male and female students of different groups and found that environmental factors, body composition, nutritional status affect the physical performance.

CVS-11 HEMATOLOGICAL RESPONSES TO TREAD-MILL EXERCISE IN HUMAN VOLUNTEERS

Dr. M. Meher Kumar, M.D.

Muscular- Exercise is a common-condition which is associated with dramatic Cardio-Respiratory-Cum-Hematological Responses occuring in integrated manner. I have selected Tread- Mill Exercise which can be performed by Medical Students – studied Hematological Responses in 12 Medical Students.

Tread-Mill which is designed to 'diagnose' cardiac diseases with ECG can also be used to study Hematological Responses to exercise. This exercise is Iso-tonic in nature.

CVS-12 STUDY OF HEMODYNAMIC CHANGES DURING NORMAL PREGNANCY BY ECHOCARDIGRAPHY

Dr. M. Sarojini Reddy **Dr. Mrs. Afzal Jabbar**
UPGRADED DEPARTMENT OF PHYSIOLOGY, OSMANIA MEDICAL COLLEGE, HYDERABAD – AP

The importance of knowning physiological changes in pregnancy is high lightened by view point that if disease during pregnancy is to be well managed, the physiological changes in pregnancy must first be known. Hence the study of morphological and hemodynamic changes during pregnancy is undertaken.

The present study conducted includes two groups. The control or non pregnant and normal pregnant group further falling into 3 sub groups according to 3 trimesters of pregnancy with 20 cases in each group.

The study was done using M-mode echocardiography. It is observed that there occurred an increase in HEART RATE, EJECTION FRACTION, FRACTIONAL SHORTENING AND CARDIAC OUTPUT in all trimesters of pregnancy with significant change.

There occurred a fall in BLOOD PRESSURE during pregnancy and Blood pressure returning to pre pregnant values in later pregnancy.

There occurred no change in LEFT ATRIAL SIZE, INTERVENTRIBULAR SEPTUM.

KEYWORDS : PREGNANCY ECHOCARDIOGRAPHY
HEMODYNAMIC CHANGES

CVS-13 ECHOCARDIOGRAPHY IN EARLY DETECTIONO F CORPULMONALE IN PATIENTS OF CHRONIC OBSRUCTIVE PULMONARY DISEASES

DR. DHARITHRI PARMAR*, DR. AMAL BHATTACHARYA*.
* DEPT. OF PHYSIOLOGY, ** DEPT. OF MEDICINE, GOVT. MEDICAL COLLEGE, SURAT.

INTRODUCTION: Cor pulmonale is the alteration of right ventricular structure or function that is due to pulmonary hypertension caused by diseases affecting the lung or its vasculature. Right-sided heart disease resulting from primary disease of the left side of the heart or from congenital heart disease is not considered within this constellation of disorders.

Although most of the conditions that cause cor pulmonale are chronic and slowly progressive, patients may also present with acute and life-threatening symptoms. Such abrupt decompensation occurs when the right ventricle is unable to compensate for the imposition of sudden additional demands, resulting either from progression of the underlying disease or a superimposed acute process.

AIM : To estimate the value of echo cardiography in the diagnosis of cor-pulmonale in patients of chronic obstructive pulmonary airway disease (COPD) without overt right sided heart failure and to compare its sensitivity vis-a-vis physical, electrocardiographic, pulmonary function tests and radiological examination.

MATERIALS AND METHODS : 30 patients attending as indoor and outdoor department of New Civil Hospital and Govt. Medical College, Surat, Gujarat were taken into study. The diagnosis of COPD was made by physical, radiographic and lung function tests. Group-I: Clinically evidence of cor- pulmonale. Group-II: No clinical of cor-pulmonale. 30 cases of age matched healthy individuals were selected as control for the study.

RESULTS : In echocardiographic study all right heart parameters showed significant increase in group-I compared to group-II.

Parameters	Controls	Group-I	p value	Group-II	P value
RWA WT (cms)	0.51± 0.041	1.33±0.51	<.001	0.91±0.34	<.001
RVI (cm/m2)	1.185± 0.310	1.799±.293	<.001	1.453 + .342	<.001
RVarea(cm2)	13.6± 2.65	19.9±.342	<.001	14.93 ±.265	<.001
PAP(mmHg)	17.5±2.33	48.6±2.65	<.001	21.54±3.21	<.001

CONCLUSION: Stress on the right heart initially produces hyperkinesis. However, this is eventually followed by right ventricular hypokinesis, associated with right atrial dilatation and tricuspid regurgitation. The latter is not due to an intrinsic abnonnality of the tricuspid valve; it is a secondary manifestation of dilatation of the tricuspid annulus and right ventricle. In view of findings of our study we conclude that echocardiography is a important diagnostic method for early detection of cor- pulmonale and better management.

CVS-14 CLINICAL AND ECHOCARDIOGRAPHIC PROFILE IN ANAEMIA

DR. NEETA BACHLAUS*, DR. AMAL BHATTACHARYA.**
*DEPT. OF PHYSIOLOGY, ** DEPT. OF MEDICINE, GOVT. MEDICAL COLLEGE SURA T.

INTRODUCTION

Anemia can be defined as a reduction below normal in the number of red blood cells (RBCs) in the circulation. This is most accurately measured by obtaining a RBC mass via isotopic dilution methods. However, such blood volume studies are neither practical nor cost-effective for the vast majority of patients. As a result, anemia is operationally defined as a reduction in one or more of the major RBC measurements: hemoglobin concentration, hematocrit, or RBC count :

The major aim on physical examination is to find signs of organ or multisystem involvement and to assess the severity of the patient's condition. Thus, the presence or absence of tachycardia, dyspnea, fever, or postural hypotension should be noted. While evaluation for jaundice and pallor is a standard part of the physical examination, such signs may be misinterpreted, and are not as reliable indicators of anemia as once thought :

Pallor -The sensitivity and specificity for pallor in the palms, nail beds, face, or conjunctivae as a predictor for anemia varies from 19 to 70 percent and 70 to 100 percent, respectively, with wide interobserver differences and widely differing conclusions as to the clinical value of the presence or absence of this finding.

Jaundice -Jaundice may be difficult to detect under artificial (nonfluorescent) lighting conditions. False positives were mostly attributable to medical students, while false negatives were not related to the level of training.

Other items to search for include the presence or absence of lymphadenopathy, hepatosplenomegaly, and bone tenderness, especially over the sternum. Bone pain may signify expansion of the marrow space due to infiltrative disease, as in chronic myelogenous leukemia, or lytic lesions as in multiple myeloma or metastatic cancer.

It is also important to look for signs of other hematologic abnormalities, including petechiae due to thrombocytopenia, ecchymoses and other signs of bleeding due to abnormalities of coagulation, and recurrent infections secondary to neutropenia or immune deficiency states. The stool should always be tested for the presence of occult blood.

Cardiovascular symptoms and signs are common in patients with anaemia, and in some patients they dominate the illness. They include:

- Tachycardia, at rest, and during exercise
- Palpitations, due to both tachycardia and more forceful cardiac contraction
- Hyperdynamic precordium, indicative of the increase in cardiac contractility
- Systolic hypertension with widened pulse pressure

- Exertional dyspnea, which is due more to respiratory and skeletal muscle weakness than cardiac failure

AIM : Echocardiographic evaluation in anaemia

MATERIALS AND METHODS: 100 anaemic outdoor patients or admitted as indoor of New Civil Hospital and Govt. Medical College, Surat, Gujarat were taken into study with equal number as control. Clinical examination, biochemical, hematological examination, ECG, Echocardiography and other relevant examination were done.

RESULTS:

M:F::	36:64
Pallor:	100%
Weakness:	84%
Tachycardia, at rest:	66%
Palpitations:	48%
Hyperdynamic precordium:	22%
Systolic hypertension:	28%
Exertional dyspnea:	82%
Echocardiography:	
LVH:	24%
LV Dilatation:	16%
RV Dilatation:	32%
RA dilatation:	30%
PAP (High):	38%
P A dilatation:	36%
Hyperkinetic heart:	72%

CONCLUSION: Virtually all measures of cardiac function, including left ventricular ejection fraction, the rate of ventricular pressure development, diastolic relaxation, and cardiac output, are increased. As a result, cardiac output increases by as much as 250 percent (various studies)and pulse pressure widens. These include increases in heart rate and cardiac contractility and modest degrees of cardiac hypertrophy.

CVS-15 OT DISPERSION IN ACUTE MYOCARDIAL INFARCTION

DR# AMAL BHATTACHARYA,* DR# NEETA BACHLAUS*, DR. DHARITHRI PARMAR*, DR. ASIM DAS.**

*DEPT. OF PHYSIOLOGY, ** DEPT. OF MEDICINE, GOVT. MEDICAL COLLEGE SURAT.

INTRODUCTION: An acute transmural myocardial infarction (MI) presents with a current of injury pattern characterized by elevation of the ST segment in different leads, depending upon the location of the MI. The earliest change (which is not frequently seen) is the development of a hyperacute or peaked T wave that reflects localized hyperkalemia. Thereafter, the ST segment elevates with the following appearance:

- Initially there is elevation of the J point and the ST segment retains its concave configuration.
- Over time the ST segment elevation becomes more pronounced and the ST segment changes its morphology, becoming more convex or rounded upward.
- The ST segment may eventually become indistinguishable from the T wave; the QRS- T complex can actually resemble a monophasic action potential.
- An initial Q wave develops and there is a loss of R wave amplitude as the ST segment becomes elevated.

Over time there is evolution of these ECG changes: the ST segment gradually returns to the isoelectric

baseline; the R wave amplitude becomes markedly reduced; and the Q wave deepens. In addition, the T wave becomes inverted. These changes generally occur within the first two weeks after the event; however, in some patients they may progress more rapidly, within a few hours of presentation.

The leads affected by these changes depend upon the location of the infarction.

QT dispersion -There has been increasing interest in post-MI patients in the QT interval, which is a measure of ventricular repolarization, and in the disparity of QT intervals in various ECG leads known as QT dispersion. Each ECG lead derives information from a different view of the ventricle. The leads with the shortest QT interval indicate the area of earliest repolarization, while the leads with the longest QT interval represents the part of the myocardium that is the last to recover. Thus, the greater the difference between the maximum and minimum QT interval, ie, increased QT dispersion, the greater is the variability in repolarization within the myocardium which may be associated with an increase in arrhythmic risk. QT dispersion is determined by the amount of viable myocardium in the infarct region. As a result, it is lower in patients with successful thrombolysis after an MI. A recent study evaluated the effect of acute myocardial ischemia, induced by atrial pacing, on QT dispersion. Ischemia increased QT dispersion by an average of 62 msec (from 44 to 106 msec). The increase in QT dispersion was related to the extent of coronary disease, and was not observed in patients with normal coronary arteries.

AIM: To measure the QTc and to assess the QTc dispersion in myocardial infarct patients.

MATERIALS AND METHODS : 100 acute myocardial infarct patients admitted as indoor of New Civil Hospital and Govt, Medical College, S,urat, Gujarat were taken into study with equal number as controL 30 thrombolysed, 70 non-thrombolysed. Dynan1ic changes in QTd on admission, post-thrombolytic therapy after 24 hours, 48 hours and seven days of admission were assessed.

RESULTS: Mean QTd in AMI on admission was significantly higher than control group (72 ± 20 vs 40 ± 15 msec). QTd reached its peak levels after 48 hours of AMI. Post AMI Qtd dynan1ics were different in thrombolysed and non-thrombolysed patients. Significant reduction in QTd at 48 hours ws noted in thrombolysed group (Anterior MI: 80 ± 20 vs 6°± 15 msec; Inferior MI: 78 ± 14 vs 56± 16 msec; $p < 0.01$)

Ventricular tachycardia was observed in 14 cases with higher incidence in non- thrombolysed cases (20 vs 8%). QTd in both groups were higher in patients developing ventricular tachycardia.

CONCLUSION: Qtd appears to be an effective prognostic marker in AMI patients. Other studies: Directly measured dispersion of ventricular recovery times and QT dispersion seem to be correlated without any definitive mechanistic link. General abnormalities of ventricular repolarization, including those leading to regional dispersion of recovery times, modify the spatial T wave loop, As a result of any abnormality, the variations in the projections of the loop onto the individual ECG leads may be increased and the tenninal points of the T wave in the ECG tracings may become more difficult to be localized.

CVS-16 OT DIPRESION IN ALCOHOLICS

DR. DHARITHRI PARMAR*, DR. AMAL BHATTACHARYA.**

*DEPT. OF PHYSIOLOGY, ** DEPT. OF MEDICINE, GOVT. MEDICAL COLLEGE SURAT.

INTRODUCTION : Similar to the abuse of alcohol and the development of liver disease, the association between chronic alcohol consumption and alcoholic heart disease in hwnans is well recognized. Although the daily ingestion of moderate amounts of alcohol (usually defined as three to nine drinks per week) appears to have a beneficial effect on cardiovascular risk, even in patients with ischemic left ventricular systolic dysfunction, both acute and chronic conswnption of excessive amounts of alcohol have a deleterious effect on myocardial structure and function, and may be associated with myocardial dysfunction, hypertension, arrhythmias, sudden death, and angina pectoris. Long-term excess alcohol consumption is the leading cause of secondary, nonischemic dilated cardiomyopathy. However, recovery of cardiac function can occur if the disease is diagnosed early and further alcohol intake halted.

AIM : To measure the QTc and to assess the QTc dispersion in alcoholics without overt cardiac abnormalities.

MATERIALS AND METHODS: 50 alcoholics who have been consuming more than 6 units of alcohol

daily for more than 10 years attending as indoor and outdoor department of New Civil Hospital and Govt. Medical College, Surat, Gujarat were taken *into* study with equal number as control.. Qt dispersion measured from a 12 lead ECG and diseases which can alter QTd eg., diabetes, electrolyte imbalance, renal failure, antiarrhythmic drugs, IHD, *CCF,* valvular heart diseases were excluded.

RESULTS : Mean QTc of alcoholics was .43 ± .033 s and for controls 0.38± 0.02s (P<0.05). QTc dispersion was high in alcoholics-it was 60.6+/-24.00 ms compared to 38.8± 11.70 ms in controls which was statistically very significant «0.001).

CONCLUSION : Alcoholics have significantly elevated QTc dispersion and QTc prolongation compared to controls even without overt cardiac abnormality. Other studies showed- it is frequently possible to demonstrate mild depression of cardiac function in chronic alcoholics even before a reduced ejection fraction becomes clinically manifest on the echo cardiogram. In addition, as noted above, left ventricular function is impaired in many asymptomatic alcoholics or those with cirrhosis.

CVS-17 OT DISPERSION AND CARDIAC AUTONOMIC DISTURBANCES IN DIABETICS

DR. NEETA BACHLAUS*, DR. AMAL BHATTACHARYA, DR.R. SAXENA*.**
DEPT. OF PHYSIOLOGY, *. DEPT. OF MEDICINE, GOVT. MEDICAL COLLEGE SURA T.

INTRODUCTION : An accurate assessment ofQT dispersion requires all 12 leads of the ECG to be recorded simultaneously in order to avoid the effect of heart rate changes on QT dynamics. As a result, simultaneous 12-lead recordings have been proposed as the gold standard for the measurement of QT dispersion. Since rate-related changes in the QT interval develop slowly, QT dispersion measurements based upon simultaneous recording of six or even only three QRS complexes during ectopic-free sinus rhythm is acceptable for practical purposes. This approach, however, has never been properly validated.

In addition to the original expression of QT dispersion as the range of QT interval duration in all measurable leads, many other measurement possibilities have been proposed. To mitigate the effect of outliers in the QT interval data, standard deviation of the QT interval duration in all leads, coefficient of variation (SD of [QT/QT average] x 100), and the so-called "relative QT dispersion" have been used. However, the range and standard deviation values correlate very closely.

The threshold methods localize the T wave offset as an interception of the T wave or one of its differentials with a threshold above the isoelectric line, usually expressed as a percentage of the T wave amplitude. With the threshold methods, the amplitude of the T wave influences the measurement results.

AIM : To examine QT dispersion and cardiac autonomic dysfunction, which is easily obtained with routine ECG, in diabetics.

MATERIALS AND METHODS: 50 diabetic patients attending as indoor and outdoor department of New Civil Hospital and Govt. Medical College, Surat, Gujarat were taken into study. Qt dispersion measured from a 12 lead ECG and cardiac autonomic dysfunction was assessed by five standard function tests.

RESULTS: Both QT dispersion and QTc dispersion were significantly higher in cases as compared to the control group (Qtd = 48.65 ±12.54 ms vs 36.40 ± 17.50 ms; QTcd = 54.24 ± 15.47 ms vs 37.30 ± 16.65 ms) with a p value <0.001. Also there was significant difference in the QTd and QTcd between diabetic patients and normal cardiac autonomic function tests. (45.54 ± 10.11.52 ms vs. 52.66 ± 11.87 ms) and diabetic patients with definite cardiac autonomic neuropathy (58.36 ± 70 and 66.80 ±20.60) with a p value <0.001.

CONCLUSION: The QTd and QTcd were both significantly high in patients with type II diabetes and these measurements further increased significantly with the development of diabetic autonomic neuropathy.

RPO-01 PLACENTAL SIZE AS A CRITICAL FACTOR INFLUENCING BODYMASS INDEX OF THE NEWBORN

MD. EAJAZ AHMED, L. KALAVATHI

DEPARTMENT OF PHYSIOLOGY, DR. B.R. AMBEDKAR MEDICAL COLLEGE, BANGALORE.

The outcome of pregnancy is strongly influenced by maternal Bio-social factors. The Placental size could be a critical factor influencing it. An attempt has been made to establish a correlation between the placental weight and diameter with the Body mass index (BMI) of the new born. Fifty four female babies and Forty six male babies with full term normal delivery were considered for the comparison. The Body mass index of the Newborn was calculated by considering the weight in Kilograms and crown heel length in Meters for the height measured immediately after delivery. The babies were classified into 3 groups. Group I BMI < 10, Group II BMI 10-13, and group III BMI > 13. The mean placental weight (in gms) for the FEMALE babies in the 3 groups were 409.61 + 42.74, 489.71 + 43.57, and 521.43 + 48.79 and the mean placental diameter (in cms.) were 15.8 + 1.01, 17.0+ 0.81 and 17.2 + 0.76 respectively. The mean placental weight (in gms) for the MALE babies in group II and group III were 466.07 + 78.23 and 524.44 + 39.51 and mean placental diameter(in cms.) in group II and group III were 16.0+0.69 and 18.2 + 1.06 respectively. However there were no babies in group I. There was a Statistically significant positive Correlation between placental weight and diameter with the BMI in group I and II for the female babies and group II and III for the male babies

RPO-02 TO STUDY AWARNESS ABOUT HUMAN SEXUALITY IN STUDENT OF FIRST YEAR M.B.B.S.

Presenting person : Dr. Chinmay J. shah (P.G. Student)

Dr. Mrs. A.K.ANAND (Prof. And HOD)

Address : Department of Human physiology including Biophysics

Shri M.P.Shah Medical College, Jamnagar, Gujarat. 361008

Aim and Objective : To find out awareness about human sexuality & need of sex education in study group.

Material & Method : 50 Question concerning about human sexuality were given to first year student (total no.161)

Inferences : They were able to answer only 57% question appropriately. Some of the results are as follows.

82 % of students believe that deficiency of sperms leads to impotency

58 % of students believe that masturbation leads to physical weakness.

8 % of student believe that pregnancy may result from kissing.

Only 49 % of student were able to give full form of HIV.

92 %students are interested in participating in seminar of Human sexuality for purpose of improving their knowledge and for prevention of STD & AIDS.

Conclusion : There are many myths in study group which indicate need of sex education, preferably at higher secondary schooling level to help youth in maintaining safe and healthy life.

RP-03 PATTERN OF DISTRIBUTION OF MACROPHAGE SUBPOPULATIONS IN HUMAN ENDOMETRIUM DURING PROLIFERATIVE, PERI-OVULATORY AND SECRETORY PHASES OF MENSTRUAL CYCLE

Manisha Kar[1], Jayasree Sengupta[1], Sunesh Kumar[2], Geeta Kinra[3], VijayLakshmi Bhargava[3] and Debabrata Ghosh[1]

[1]DEPARTMENT OF PHYSIOLOGY, [2]DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI 110029

[3]SITARAM BHARTIA INSTITUTE OF RESEARCH AND SCIENCE, NEW DELHI 110029

The cells of mononuclear phagocyte system (MPS) are widely distributed throughout the body. Their properties vary depending on their functional states, as well as, on local interactions in their environment. The aim of the present study is to examine the pattern of distribution of different subpopulations of MPS and their association with the cellular distribution of receptors for estrogen and progesterone in human endometrium during different phases of menstrual cycle. To this end, 26 human endometrial samples were collected and examined histologically for endometrial dating as well as to rule out any pathological features. Finally, 18 samples were selected and classified into proliferative (n=4), periovulatory (n=6) and secretory (n=8) phases. 5 mm paraffin sections of these specimens were immunohistochemically stained using monoclonal antibodies against CD45 (common leukocytic antigen), CD68 (pan macrophage marker), CD44 (trans-membrane adhesion molecule), HLA-DR (trans-membrane heterodimeric protein involved in antigen presentation), L1 (calprotein), and receptors for estrogen (ER) and progesterone (PR), and the areas of immunoprecipitation were morphologically analyzed. There was an increase in the number of CD45+ cells ($P<0.01$) and CD68+ macrophages ($P<0.05$) in secretory phase samples compared with proliferative phase and peri-ovulatory phase samples. There was no remarkable cycle dependent pattern in the distribution of HLA-DR+ and L1+ cells. However, there was an increase in CD44 immunopositive area in peri-ovulatory phase ($P<0.05$) and secretory ($P<0.01$) phase samples compared with proliferative phase samples. A higher degree of immunopositivity for ER ($P<0.01$) was observed during peri-ovulatory phase, while PR was observed to be higher during peri-ovulatory ($P<0.05$) and secretory ($P<0.01$) phases compared with proliferative phase of cycle. Positive correlations between CD68+ cells and PR ($P<0.01$), HLA-DR+ and L1+ cells ($P<0.05$), CD45+ and CD68+ cells ($P<0.01$), CD45+ and L1+ cells ($P<0.05$) and PR and L1+ cells ($P<0.05$) were obtained. It appears that the recruitment of different subsets of macrophages is regulated through a complex multi-factorial process involving endocrine and paracrine factors in human endometrium in a physiological state specific manner.

RP-04 OCCUPATION BASED ENVIRONMENTAL INSULTS AND MALE FERTILITY STATUS

Kusum Soni*, John Pramod*, N.R.Kalla# and C.L.Arora##

* DEPARTMENT OF PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE & HOSPITAL, LUDHIANA # DEPARTMENT OF BIOPHYSICS, PANJAB UNIVERSITY, CHANDIGARH

DEPARTMENT OF SOILS, PAU, LUDHIANA

Occupation domains involving driving, furnace work and metal industry, welding, painting and varnishing and manufacture of rubber products have been dominated by males which makes them more prone to the environmental insults during working hours. The male factor can be attributed to approximately 40% of the infertile couple population (10-15%) of the world. The present study was conducted on 142 males exposed to high temperatures, welding and Zinc galvanizing fumes and compared to an age matched control group. Only 17% of the males in the heat-exposed group were proved to be fertile. The welding group showed 50% fertile status in contrast to 94% of the zinc-galvanizing group. The mean sperm counts in these groups were 37±58.6, 57.5±53.97 and 131.25±27.2 millions/ml, respectively. While the heat and welding exposures were proved to be reproductive hazards; exposure to zinc fumes has been seen to be associated with improved fertility status, as the average sperm count in that group was higher than that of normal fertile men (114.2±56.8 millions/ml). The study also analyzed the values of seminal trace elements and biochemical parameters and revealed that there could be potential serious damage to testicular as well as accessory reproductive glandular function due to ongoing environmental insult at work which is reflected in poor spermatogenesis, diminished fertility and fecundity in males engaged in such occupations.

RP-05 Electroencephalogram In Different Phases of Menstrual Cycle

S. Tewari, U. S. Pandey, N Srivastava, Raj Kumar Yadav, *Rakesh Shukla, **Ravindra Singh Rajpoot

DEPTT. OF PHYSIOLOGY, CSMMU, LKO. *DEPTT. OF PHYSIOLOGY AIIMS, NEW DELHI
** DEPTT. OF NEUROLOGY, CSMMU, LKO.

Hormonal undulations during menstrual cycle are known to produce many physiological alteration in human body. These hormones bring about alterations in the fluid and salt content of the body. These alterations thereby cause changes in the speed of axonal conduction. Menstruation as such, itself is a phase of physiological stress to the body. All these changes have their effect on the latencies and pattern of waveforms recorded by scalp electrodes.

In the study, 20 healthy female students of Ist Year MBBS batch of CSSMU (age group 17-20 yrs.) have been enrolled. In each case menstrual history has been recorded in detail E.E.G. will be recorded in pre & post menstrual phases. The results will be statistically analyzed & compared.

Key words : E.E.G. (Electroencephalogram) & Menstrual Cycle.

RP-06 RBC, reticulocyte count and vo_2 max changes during different phases of menstrual cycle.

Author: Dr. Sunita S. Dhule. MD (Physiology)

S.R.T.R. MEDICAL COLLEGE AMBAJOGAI

Seventy college girls of age group 18 to 24 years having regular menstrual cycle of 28 to 30 days with variation of _+ 5 days were included in the study.

On each subject RBC and reticulocyte count was done by routine haematological method and Vo_2 max by Harward step test with Astrand Rhyming Nomogram.

Above three parameters were done thrice on the following days of menstrual cycle.

9^{th} to 12^{th} day of menstrual cycle (proliferative phase)

20^{th} to 24^{th} day of menstrual cycle (Secretory phase)

1^{st} to 2^{nd} day of menstruation

from this study, we observed that RBC count is significantly increased in secretory phase than proliferative phase and menstruation phase.

Vo_2 max is significantly increased in secretory phase than in proliferative phase.

There is no significant change in reticulocyte count in three different phases of menstrual cycle.

From this result, we conclude that increased RBC count and Vo_2 max in secretory phase may be due to increased levels of prostaglandins in response to progesterone in this phase.

RP-07 PLACENTAL SIZE AS A CRITICAL FACTOR INFLUENCING BODYMASS INDEX OF THE NEWBORN.

MD. FAJAZ AHMAD. L. KALAVATHI

DEPARTMENT OF PHYSIOLOGY, DR. B. R. AMBEDKAR MEDICAL COLLGE, BANGALORE

The outcome of pregnancy is strongly influenced by maternal Bio-social factors. The Placental size could be a critical factor influencing it. An attempt has been made to establish a correlation between the placental weight and diameter with the Body mass index (BM) of the new born. Fifty four female babies and Forty six male babies with full term normal delivery were considered for the comparison. The Body mass index of the Newborn was calculated considering the weight in Kilograms and crown heel length in Meters for the height measured immediately after delivery. The babies were classified into 3 groups. Group I BMI 10, Group II BMI 10-13, and group III VMI 13. The mean placental weight (in gms) for the FEMALE babies in the 3 groups were 409.61 +/-42.74, 489.71 +/- 43.57, and 521.43 +/-48.79 and the mean placental diameter (in cms.)

were 15.8 +/- 1.01, 17.0+/-0.81 and 17.2 +/-0.76 respectively. The mean placental weight (in grms) for the MALE babies in group II and group III were 466.07 +/-78.23 and 524.44+/-39.51 and mean placentral diameter (in cms.) in Group II and Group III were 16.0 +/-0.69 and 18.2 +/- 1.06 respectively. However, there were no babies in Group I. There was a Statistically significant positive Correlation between placentral weight and diameter with the BMI in group I and II for the female babies and group II and III for the male babies.

RP-08 TITLE – CORRELATION OF BONE MINERAL – DENSITY WITH AGE, WEIGHT, HEIGHT, BODY MASS INDEX AND AGE OF MENARCHE, IN REPRODUCTIVE & MENOPAUSAL WOMEN

AUTHORS : BORADE N.G. ** SATHE S.H. * GAWLI S.*

** PROFESSOR, DEPARTMENT OF PHYSIOLOGY, B.J. MEDICAL COLLEGE, PUNE

LETURER, DEPT. OF PHYSIOLOGY, B.J. MEDICAL COLLEGE, PUNE

Osteoporasis is a major public health hazard nowadays. One in four women over the age of 50 years has osteoporosis.

Due to lack of adequate India data on this topic, this work was undertaken to study the correlation of age, body weight, height, body mass index (BMI), age of mearche with Bone Mineral density (BMD) in Reproductive & Menopausual women. In the present study the total number of women in reproductive age group were 172 and in menopausal age group were 320. Menopausal women were further classified into four group a) 1-5 years after menopause b) 6-19 years after menopause c) 11-15 years after menopause d) more than 15 years after menopause.

Our study shows that in the Reproductive age group, weight correlated highly significantly with BMD (tu Zu values) BMI also correlated significantly with BMD. In the menopausal age group (1-5 years) weight was significantly correlated with BMD BMI showed highly significant oorrelation with BMD.

In the menopausal age group (6-10 years) and menopausal age group (>15 years) height correlated significantly with BMD. However, there is no significant correlation of weight & BMI with BMD in this age.

RP-09 Hematological Changes During Normal Pregnancy

1 Debashish Chakraborty, 2 M Anita Devi

1 PGT, 2 ASSOCIATE PFOFESSOR, DEPTT. OF PHYSIOLOGY REGIONAL INSTITUTE OF MEDICAL SCIENCE, IMPHAN, MANIPUR

Blood undergo several changes in condition of stress like pregnancy. Some haematological changes during normal pregnancy are well established but in some haematological parameters dissimilar findings are reported by different workers. Therefore, the present study was conducted on 75 healthy pregnant women of 18-35 years age group who attended Antenatal OPD, RIMS, Imphal during different trimesters of pregnancy to find out any variation from other workers's findings.

The platelet count was found to decrease during third trimester although there was no significant change during second trimester. However, the prothrombin time was markedly decreased during second and third trimester. The present study showed a significant fall in haemoglobin (%) and haematocrit value as pregnancy advances. Total leukocyte count was also increased during second and third trimesters. The differential leukocyte count showed no significant changes except the increase in Neutrophil count the decreases in Lymphocyte count during the later part of pregnancy.

RP-10 Umbilical Artery Doppler Waveform In 1st Trimester of Pregnancy

1 Dr. M Anita Devi, Associate Prof. Physiology Dept. RIMS.

2 Dr. N Jitendra Singh, Addl. Prof. Obs. And Gynae. Dept RIMS

Umbilical artery flow velocity waveforms were studied in 50 pregnancies between 7-16 weeks of gestation. Flow velocity wave forms (FVWF) were measured and the resuls were analysed by calculating pulsatility index (PI) Satisfactory Umbilical artery (FVWF) recordings were obtained in 23 out of 50 cases.

End diastolic Flow Velocity were absent in 27 cases. In this study End Diastolic velocity (EDV) were absent until 10th week in all the cases. From this time onwards EDV in a precentage of pregnancies, progressively increasing with ggestational age and reaching 100% from 16 weeks, onwards. The mean P.I. value was found as 2.2 (SD = 0.6). There appears to be no relation between Umbilical artery P.I. and gestational age, suggesting unchanged Umbilical Placental Vascular resistance during 1st trimester of pregnancy. Absence of EDV in 1st trimester is hardly surprising in that this is the wave form pattern of the most peripheral arteries and appears to be physiological.

RP-11 Smoking : Does it alter seminal parameters ?

Authors : Atul M. Deshkar * Simantini S. Patnkar * Manish V. Sawane* Rajanand D. Gaikwad* Ashok H. Kale ** Neelam V Mishra ** Surekha D. Kaundinya * Shobha B Kaore ****

*LECTURER, ** ASSOCIATE PROFESSOR ***PROFESSOR ****PROFESSOR AND HEAD DEPARTMENT OF PHYSIOLOGY, GOVT. MEDICAL COLLEGE NAGPUR (MS)

The constituents of cigarette smoke are known to affect male reproductive capacity, The study was intended to evaluate the toxic effect of smoking on conventional seminal parameters of male partners of infertile couples. It was a cross-sectional case control study conducted at Govt. Medical College Nagpur.

The cases were 100 male partners of infertile couples who gave history of smoking. The controls were 100 nonsmoker male partners of infertile couples. The conventional seminal parameters were studies for all the subjects according to WHO criteria. The comparison for mean sperm count {million/ml} with standard error between smoker [55.64 ± 2.87] and nonsmoker [62.92 ± 4.11] did not reveal statistically significant difference [P>0.05]. Also, the mean percentage of sperm with standard error for normal morphology among smokers [47.84 ± 0.89] and nonsmokers [48.48 ± 1.05], exhibited statistically insignficant difference [P>0.05]. But when mean motile sperm count [million/ml] with standard error for smokers [28.6 ± 1.75] was compared with that of nonsmokers [35.65 ± 2.74], student's 't' test showed that the difference was significant at 5% level [t = 1.97, P< 0.05]. The decreases in spermatozoal motility among smokers might be due to axonemal ultrastructural abnormalities, elevated levels of free radicals or alterations in enzymatic machinery of the spermatozoa.

Key words : semen analysis, smoking, sperm motility.

RP-12 CORRELATION OF OXIDATIVE STATUS OF SEMEN WITH PARAMETERS OF ROUTINE SEMEN ANALYSIS.

A.S. Mahajan, I. Choudhary , K. Upreti*, D. Gautam,*, S.P. Chaki*, R. Babbar, M.M. Misro*

*DEPARTMENT OF REPRODUCTIVE BIOMEDICINE NATIONAL INSTITUTE OF HEALTH AND FAMILY WELFARE, NEW MEHRAULI ROAD, MUNIRKA, NEW DELHI – 110067

Parameters of a routine semen analysis may be affected by its oxidative status. Their correlation was studied in 87 male subjects attending the infertility clinic. On the basis of motility decline on exposure of semen to hydrogen peroxide in vitro, the samples were classified into "poor" and "good". The differential response in apparently normospermic subjects, was further investigated for lipid peroxidation, superoxide dismutase (SOD) and catalase estimation. The "good" category had a ahigher count, lesser number of leukocytes and better motility both before and after H2O2 treatment. In the "poor" group lipid peroxidation was high and the declined motility correlated negatively to the leukocytes number. SOD levels in seminal plasma, sperm, correlated negatively to the initial and post treatment motility respectively. The leukocyte count positively related to the catalase level in seminal plasma. In conclusion, SOD and catalase levels may be raised in response to an endogenous oxidative stress, which probably enhances the motility decline following invitro H2O2 exposure. A direct evaluation of reactive oxygen species can further substantiate the findings.

RP-13 CORRELATION OF PHYSICAL AND BICHEMICAL PARAMETERS OF HUMAN SEMAN IN ADDICT'S AND FUNCTIONAL IMPORTANTS/ IMPORTANCE

S.S. Jadhav, Afroz Syeeda, Bhore Usha, Karadkhedkar S.S., Dudhmal V.S.
DEPARTMENT OF PHYSIOLOGY, GOVERNMENT MEDICAL COLLEGE AND HOSPOITAL, AURANGABAD – 431 001

This study was carried to study the effect of addiction and functional impotence on fertility of male. Semen analysis of 125 males was done. Five groups were made 1st group was of 25 fertile male and this was control group. Another four groups namely, Topbacco Chewers, Smokers, Alcoholics and Functional importants; each contains 25 subjects.

The physical parameters studied were volume, motility and sperm count while biochemical parameters were ascorbic acid and fructose. The total count and total motile count was significantly decreased in tobacco chewers, smokers and alcoholics. The total count was decreased in functional importants' group but this was not significant, but decrease in total motile sperm count was significant.

The ascorbic acid concentration in semen of these studied four groups was lowered as compared to control group. But this decreased concentration was not significant. This finding indicates that lower quality of semen contains low concentration of ascorbic acid. While another biochemical parameter fructose, it's concentration is significantly increased in studied four groups as compared to control group. It shows that percentage of fructose in the semen depends on sperm concentration and it was inversely proportional to the sperm concentration. The present study indicates that addictions and functional impotence causes decrease in male fertility potential.

RP-14 Variation of Some Expiratory Lung Functions During The Menstrual Cycle

Dr. Dinesh Maskeri, Dr. (Mrs.) Rati B. Ichaporia, Dr. Ashutosh Bodhe
DEPTT. OF PHYSIOLOGY, T. N. MEDICAL COLLEGE AND B.Y.L. NAIR CHARITABLE HOSPITAL. MUMBAI CENTRAL. MUMBAI - 400 008

The relationship of exacerbation of asthma to specific phases of the menstrual cycle has been well documented. To determine normal trends in respiratory function under the influence of the menstrual hormones we studied changes in expiratory pulmonary function in 100 volunteers from the first MBBS batches for two successive menstrual cycles. The cycles were divided into four phases and the PEFR and FVC, FEV1, FEF 25-75% and FEF 200-1200 were recorded in each of these phases under controlled settings using Wright's peak flow meter and a Vitalograph. The results wer analyzed by Paired Student's 't' Test for comparing variation of mean values of the test results between the phases of the menstrual cycle. The results were significantly higher indicating bronchodilation during the proliferative and secretory phases and lower during the menstrual and ovulatory phases during which there is relative bronchoconstriction. The role of premenstrual tension syndrome and anxiety shall be discussed, along with, the smooth muscle relaxing effect of progestogens and estrogens.

RP-15 Respiratory Efficiency of Chronic Asymptometic Alcoholics and/or Smokers

Dr. M.B. Jani, Dr. S. Chandwani
DEPTT. OF PHYSIOLOGY, MEDICAL COLLEGE, BARODA, GUJARAT.

Participants in our study were of four different categories : (a) Control subjects (n = 30) who had never smoked of consumed alcoholic beverages during their life time. (b) Alcoholic subjects (n = 33) who were used to consume alcoholic beverages in the form of whisky, rum, wine, country wine (potli) and beers (occasional). These subjects has only the habit of drinking at least since five years and more and had never smoked, (c) Smokers (n = 30) subjects who had the habit of only smoking for at least five years of mote. (d)

Alcoholics + Smokers (n = 30) subjects had both the habits of smoking and drinking for atleast five years and more.

All the subjects of four different groups were males between the age group 28-52 years. At the time of participation all the subjects wer asymptomatic and were not under any sort of medical treatment related to major cardiovascular of pulmonary diseases in the past and specially, so on the day of test. We had selected the subjects randomly, fulfilling the above criteria and they volunteered to participate in the study.

Simple respriatory efficiency test such as Breath holding test 40 mm endurance test Maximum expiratory pressure test and maximum voluntry ventilation test remained significantly lower in all the three groups when compared with control group subjects.

HEM-01 DISTRIBUTION OF BLOOD GROUPS, SECRETOR STATUS AND DISEASE PREVELANCE IN SOUTH INDIAN POPULATION.

D. VENKATESH*, D.L. RAMACHANDRA AND D.V.L.N. PRASAD
M.V.J. MEDICAL COLLEGE AND RESEARCH HOSPITAL, CHANNASANDRA, NEAR WHITE FIELD, BANGALORE –560067.

There is a significant variation in the distribution of ABO and Rh blood groups in different geographical regions. ABO and Rh groups of 1059 South Indian subjects were identified by the conventional slide method using the Anti A, B and D sera. There was no significant difference in the distribution of blood groups among male and female subjects. It was observed that 42.96 % of the subjects belonged to 'O' group, 29.93 % to 'B' group, 20.59 % to 'A' group and 6.52 % to 'AB' group. 94.05 % of the subjects were Rh positive and the remaining 5.95 % were Rh negative. The secretor status was determined by using Haemagglutination inhibition test with the sample of saliva. 76 % of the normal volunteers were Secretors. The secretor status was also comparable in male and female subjects. However the patients with Pulmonary tuberculosis and Vaginal Candidiasis were predominantly non-secretors. Higher incidence of infections in non-secretors could be attributed to deficiency of glycosyl-trasferase, which facilitates increased adherence of the micro-organism to the mucosal surface causing the disease.

HEM-02 ALTERATION IN MURINE SPLENIC MACROPHAGE RESPONSE AFTER SYNERGISTIC EXPOSURE (*IN VIVO*) TO SODIUM ARSENITE AND LEAD ACETATE

Mahuya Sengupta and Biswadev Bishayi*
IMMUNOLOGY LABORATORY, DEPARTMENT OF PHYSIOLOGY, UNIVERSITY COLLEGE OF SCIENCE AND TECHNOLOGY, 92 APC ROAD, KOLKATA-700009, W.B., INDIA
*CORRESPONDING AUTHOR

Lead is a dangerous and pervasive poison that damages virtually every system in the body. Arsenic (As) is a highly toxic substance and can disrupt the regulation of the physiologic system in promoting an immune response. Arsenic and lead have been associated with various forms of cancer, nephrotoxicity, central nervous system effects, and cardiovascular disease in humans. Drinking water is a well-recognized pathway of exposure to these metals. In the present study, Swiss white albino mice were exposed (*in vivo*) with lead acetate (10 mg kg^{-1} b.w.) and sodium arsenite (0.5 mg kg^{-1} b.w.) simultaneously. *Staphylococcus aureus* is a virulent pathogen that has the ability to cause a variety of potentially life-threatening infections. The objective of our study was to demonstrate in an experimental mouse model of bacteremic *S. aureus* infection, bacterial clearance from blood and spleen from and spleen in arsenic and lead treated and control group of mice. Bacterial density was measured in blood and spleen after 0, 24, 48 and 72 hours post-infection. On giving bacterial challenge (with *S. aureus* MC524) to both control and multi-metal (As and Pb)-treated groups, bacterial load showed delayed clearance from blood, delayed uptake and prolonged persistence in spleen, as studied by *in vivo* clearance assay in the multi-metal treated group, as compared to control, thus highlighting an immuno-compromised state following heavy metal exposure, thus highlighting an immuno-compromised state following heavy metal exposure. Intracellular killing assay showed a greater persistence

of viable bacteria and decrease in effective bacterial killing on exposing splenic macrophages isolated from multi-metal treated group with respect to those isolated from control group. Chemotactic migration was studied as an important cell function parameter. We found that chemotactic migration significantly decreases in the multi-metal treated group (7.61 ± 0.788) from that in control (14.70 ± 0.707) at 60 min. Lysosomal enzyme release from splenic macrophages is decreased upon exposure to lead and arsenic, as is evident from the decrease in myeloperoxidase from 61.1 ± 0.396 % in control to 76.71 ± 0.311 % in lead and arsenic-treated group.

HEM-03 ABSORPTION KINETICS OF TWO DIFFERENT IRON FORMULATIONS AND THEIR EFFECT ON DIURNAL VARIATION OF SERUM IRON LEVELS

S Malhotra, SK Garg, GK Khullar*, Malhotra AS, A Kondal, H Rana**
PHARMACOLOGY & *BIOCHEMISTRY, PGIMER, **PHYSIOLOGY, GMCH, CHANDIGARH.

Objective : Iron polymaltose complex (IPC) is a recently marketed preparation with questionable bioavailability. We compared the absorption kinetics of IPC with ferrous sulfate. We also studied the effect of oral iron on diurnal variation.

Methods : The study was conducted in eight healthy, non-smoking, non-alcoholic volunteers after obtaining their written informed consent and after Institutional Ethical Committee approval. The study was conducted in three phases: during the first phase no drugs were given whereas in the second and third phases, ferrous sulfate (66 mg elemental iron) and IPC (100 mg) were given in a randomized, two-way, cross-over design, with a wash-out period of 1 week. The blood samples were collected, iron levels estimated and the pharmacokinetic parameters calculated.

Results : Circadian rhythm in iron levels was demonstrated by cosinor analysis with a mesor of 93.6 mg/dl, acrophase 10.40 h and amplitude of 26.4 mg/dl. Evening levels were higher as compared to morning levels. Drug treatment increased the mesor (115.7 mg/dl; $P<0.05$), delayed the acrophase (11.30 h; $p<0.05$) and increased the amplitude (38.5 mg/dl; $p<0.05$). The bioavailability of ferrous sulfate was significantly greater as compared to IPC with greater Cmax and AUC ($p<0.05$).

Conclusion: A clear cut circadian rhythm in iron concentrations was demonstrated. Ferrous sulfate has significantly higher bioavailability as compared to IPC.

HEM-04 DISTRIBUTION OF BLOOD GROUPS, SECRETOR STATUS AND DISEASE PREVELANCE IN SOUTH INDIAN POPULATION

D. VENKATESH*, D.L. RAMCHANDRA AND D.V.L.N. PRASAD
M.V.J. MEDICAL COLLEGE AND RESEARCH HOSPITAL, CHANNASANDRA, NEAR WHITE FIELD, BANGALORE – 560067

There is a significant variation in the distribution of ABO and Rh blood groups in different geographical regions. ABO and Rh groups of 1059 South Indian subjects were identified by the conventional slide method using the Anti A, B and D sera. There was no significant difference in the distribution of blood groups among male and female subjects. It was observed that 42.96% of the subjects belonged to 'O' group, 29.93% to 'B' group, 20.59% to 'A' group and 6.52% to 'AB' group.94.05% of the subjects were Rh, positive and the remaining 5.95% were Rh negative. The secretor status was determined by using Haemagglutination inhibition test with the same of saliva. 76% of the normal volunteers were Secretors. The secretor status was also comparable in male and female subjects. However, the patients with Pulmonary tuberclosis and Vaginal Candidiasis were predominantly non-secretors. Higher incidence of infections in non-secretors could be attributed to deficiency of glycosyl-trasferase, which facilitates increased adherence of the micro-organism to the mucosal surface causing the disease

HEM-05 Fibrinolytic Response to Venous Occlusion After Short Term Moderate Exercise Programme

Author : Dr. (Mrs.) V.S. Dalvi
PROF. & H.O.D. DEPT OF PHYSIOLOGY, TNM COLLEGE, MUMBAI CENTRAL.

Venous occlusion increases the fibrinolytic activity. Exercise also is known to increase the fibrinolytic activity. Therefore the fibrinolytic response to venous occlusion was studied in 24 healthy subjects having sedentory habits, on two occasions; before commencement and after completionof short term exercise programme to see whether the effects of the two are added up.

The fibrinolytic activity was measured by Euglobulin clot lysis time.

Since clotting and fibrinolysis are inter-dependent, clotting time was also studied.

The rise in fibrinolytic activity due to venous occlusion in local and systemic blood samples was more (50%) in pre-exercise samples than in post-exercise (15%) samples. There was no significant change in clotting time. The results of the present study indicates that after the exercise programme venous occlusion is less effective in increasing fibrinolytic activity.

P-01 EFFECT OF AGE ON HEMOGLOBIN OF MALE NATIVE HIGHLANDERS.

Jaideep J Rayapudi, John Pramod, Joydeep Singh & Subhasis Das
DEPT. OF PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE AND HOSPITAL, LUDHIANA-08

Hypobaric hypoxia is known to cause significant changes in the hematological indices most of which have been studied on subjects visiting high altitude areas for short spans. The present study was conducted on individuals staying permanently at an altitude of 12000 ft in the region of Ladhakh in India. Thirty-two volunteer native highlanders between the age group 15-60 years were included in this study for assessment of the hematological parameters. Medical history for possible symptoms of chronic mountain sickness as well as detailed systemic examination was recorded in each subject. Hemoglobin values ranged between 13-24 gm% and were seen to be increasing with advancing age. There was no native showing symptoms or signs of Monge's disease. All subjects were able to perform optimum physical activity even in the presence of significantly increased hematological indices, which will otherwise warrant treatment for polycythemia in any visitor in these high altitude regions or any individual residing in the plains.

P-02 ROLE OF BREAST FEEDING IN PREVENTING CHILDHOOD OBESITY

Joydeep Singh, Preet Sood*, Subhasis Das and Jaideep Rayapudi.
DEPARTMENT OF PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE AND HOSPITAL, LUDHIANA 141008
*DEPARTMENT OF PHARMACOLOGY, DAYANAND MEDICAL COLLEGE, LUDHIANA

The objective of this study was to assess the impact of breast-feeding on the risk of being overweight in children at the time of entry to school. Routine data were collected on the height and weight of 500 children participating in the health examination. Early feeding, diet and lifestyle factors were assessed using responses to a questionnaire completed by parents. Being overweight was defined as having a body mass index above 90th centile and obesity was defined as body mass index above the 97th centile. A clear dose-response effect was identified for the duration of breast-feeding on the prevalence of obesity in children. In developing countries promoting prolonged breast-feeding may help reduce the prevalence of obesity in childhood. Since obese children have a high risk of becoming obese adults, such preventive measures may result in a reduction in the prevention of cardiovascular and other diseases related to obesity.

P-03 Auditory Evoked Potential Responses In Chronic Malnourished Children

Authors :Vandana, OP Tandon, Piyush Gupta.
Presenting Author : Vandana
DEPTT OF PHYSIOLOGY, UCMS &GTB HOSPITAL, DELHI –95,INDIA.

Brainstem auditory evoked potentials (BAEPs) were recorded in 20 chronic malnourished children in age group 3-6 years and in 20 healthy age and sex matched controls using an MEB 5200 Neuropack plus (Nihoen Koden, Japan) evoked potential recorder. The absolute peak latencies (APLs), interpeak latencies(IPLs), and amplitude of wave I-V were analyzed . The middle latency resposes (MLRs) were also studied in these children . Malnutrition was characterized by stunting in these children , which indicates chronicity of nutritional deprivation .The children with chronic malnutrition had prolonged APLs of waves 1-IV . The APLs of waves 1-IV were 1.68+/-0.12, 2.67+/-0.13, 3.78+/-0.16, 4.55+/-0.34 as compared to the APLs of controls 1.56+/-0.07, 2.54+/-0.12, 3.75+/-0.10, 4.46+/-0.24 respectively(the values were in close correspodence with the data collected by Tandon et al 1989. The APLs were significantly different in chronic malnourished children as compared to controls with $p<0.01$ for wave 1 and $p<0.001$ for waves 11-1V. The IPLs of waves 1-111, 111-V, 1-V were also significantly different as compared to controls with $p<0.001$. The values of IPLs for malnourished children were 2.01+/-0.17, 1.94+/-0.14, 3.93+/-0.10 as compared to 2.25+/-0.21, 1.04+/-0.19, 3.93+/-0.10 of controls respectively. The amplitude of two groups did not show any significant difference. The middle latency components were also not significantly different suggesting that malnutrition affects the developmental process of auditory pathways only in the brainstem and not the thalamocortical projections . Thus malnutrition affects the peripheral nerves but the site of injury and whether this is permanent damage or is reversible with nutritional rehabilitation still needs to be demonstrated.

P-04 The effect of combined chemotheraphy on biochemical and heamatological parameters in post menopausal breast cancer patients.

P.Mahalakshmi, K. Vijayalakshmi and T. Kannan
PG DEPARTMENT OF BIO-CHEMISTRY, BHARATHI WOMENS COLLEGE (AUTONOMOUS) CHENNAI, INDIA. * MODE OF PRESENTATION (POSTER)

Background & Objective :

Combined chemotheraphy has adverse side effects on various metabolic functions. Cyclophosphomide, methotrexate, 5-flurouracil known as "CMF" is most commonly opted chemotherapy for breast cancer patients. It has been reported that, CMF treatment has many adverse side effects like, reduction in weamoglobin content and platelet count. Hence, we planned to study the effect of CMF on post manopausal breast cancer patients. Biochemical contituents like blood glucose, urea, creatinine, total protein and uricacid were analysed. Heamatological parameters like Heamoglobin, Total count, Differential count, Erythrocyte sediamentation rate and platelet count were investigated in post manopausal breast cancer patients before and after treatment with CMF.

Study Design and Methods :

We selected 25 female breast cancer patients, who visited the Oncology department, Stanely Government Hospital, Chennai, India. Mammogramy was done to confirm breast cancer. Patients did not receive any chemotherapy or radiotherapy before blood collection. The age of patients ranged between 55+ 2 for post menopausal women. The age of control subjects were of same range. Breast cancer patients studied were of ductal carcinoma type. Approximately 5ml heparinised blood was collected & plasma was separated immediately by centrifugation at 3000g for 10mts at 4°C. The heamatological and biochemical estimations were carried out. The study was approved by the Ethical committee of the Stanely Medical College, Chennai and all the women gave their consents.

Results and Discussion:

The levels of Heamoglobin, Total counts, platelet count decrease in post menopausal breast cancer patients, when compared with controls. However, Erythrocyte sediamentation rate and differential count

increased in post menopausal breast cancer patients. The biochemical parameters like glucose, urea, creatinine, total protein, increased in breast cancer patients when compared with normal healthy controls. Uric acid levels decreased significantly in breast cancer patients.

On CMF treatment these levels were brought to near normal. However CMF treatment does not show any change in uric acid level. These results are discussed with respect to the role of CMF in metabolic functions.

Conclusion:

It is observed that CMF contains anticancer agents like cyclophosphomide, methotrexate, 5-fluroouracil. Each of these anticancer drugs have cytotoxic effects, and in combination show more potent action which cause variation in these biochemical and heamatological parameters.

-- Corresponding author - Professor of Oncology, Stanely Medical College, Chennai, India.

P-05 ANTIOXIDATIVE EFFECTS OF EXOGENOUS ADMINISTRATION OF DEHYDROEPIENDROSTERONE (DHEA) IN THE AGING RAT BRAIN REGIOUS.

Nupur Sinha and Deepak Sharma
NEUROBILOGY LABORATORY, SCHOOL OF LIFE SCIENCES, JAWAHARLAL NEHRU UNIVERSITY, NEW DELHI-110067

DHEA is a precursor to several coticosteroid hormones like testosterone and estrogen and its level varies in humans throughout likfe from childhood to the old age. Since DHEA is also synthesized de novo in brain of both human and rodents from cholesterol and peripheral steroid precursor and maintains its level 6.5 times higher than in other tissues, its substantial fall with age and stresses have been shown to be associated with neuronal vulnerability to neurotoxic processes. Its synthesis in brain has been shown to protect hippocampal neurons against neurotoxine induced cell death.

The present work aims at study in Antioxidative effects of DEHA administered exogenously on the normal aging brain regions like cerebral cortex, cerebellum, hippopcampus, thalamus and brain stem. We have measured Catalase (CAT), Glutahione peroxidase (GP_x), Glutathione-e-transferase (GST), Superoxide dismutase (SOD), and nonenzymatic antioxidant Glutathione (GSH) in all the said regions of 12 and 20 months old rats. We have also measured the levels of Malonaldialdehyde (TMA product) and the lipofuscin concentration (Fluorescent product), believed to be one of the indexes of neuronal aging in all the regions.

Our results obtained form both the adult and old age groups following seven days of DHEA treatment show significant elevtion in the levels of CAT, SOD, GP_x and GSH in certain regions like cerebral cortex, hippocampus and cerebellum whereas medulla, brain stem and thalamus did not show any change expect in the increased level of SOD. The level of GST remained decreased in almost all the regions. Overall fall in the levels of MDA as well as fluorescent product (lipofuscin) in almost all the regions indicates antilipidperoxidative and antilipofuscinolytic ability of DHEA respectively.

In conclusion, it could be said that since different brain regions respond differently to DHEA, age-associated alterations in the levels of various antioxidative enzymes during normal ageing in the brain could be restored in some regions with the exogenous administration of DHEA. Inhibition in MDA and Fluorescence product concentration further strengthens the antiageing potential of DHEA.

P-06 Cardiac Fitness by Physical Exercises and Transcendental Meditation (TM) –A Comparison

V. Agarwal, Nidhi Gupta, B. Gupta,
DEPTT. OF PHYSIOLOGY & PHARMACOLOGY, L.L.R.M. MEDICAL COLLEGE, MEERUT.

One of the hazards of modern civilization is lack of muscular work which results in hypokinetic state. Regular physical activity is knwon to improve cardiac fitness. The ancient Vedas also proclaimed, the importance of yoga and meditative techniques as important tools to improve the same. Therefore the

comparison between these two was tried in the present study. Thirty male volunteers were divided into three groups of ten each control, exercise and transcendental meditation (TM) groups. The cardiac parameters were evaluated before and after the uninterrupted practice of respective schedules for 12 weeks. The results were analyzed by using ANOVA. Only heart rate exhibited a significant fall ($p<0.01$) in exercise and TM groups with greater fall in the former. However, a fall in systolic and diastolic blood pressure, maximal oxygen consumption (Vo_2 max), serum cholesterol whereas a rise in hemoglobin concentration was also observed in exercise and TM groups. But these changes were statistically not significant. Therefore, only after more prolonged practice of these techniques a significant effect on cardiac fitness might be evaluated to suggest the superiority between them.

P-07 CHRONIC CIGARETTE SMOKING & SNORING

DR. Sushil Kumar , DR Reena Apra , R. V. Joshi , Dr. A. D. Deepak
* DEPARTMENT OF PHYSIOLOGY & BIOPHYSICS, SMIMER, SURAT
** DEPARTMENT OF BIOCHEMISTRY, SMIMER, SURAT.

The present study was undertaken on heavy & chronic cigarette smokers who smoked more than 20 cigarettes per day in 50 men of various age groups, smoking for more then five years .The result of this study established that cigarette smoking was one of the predisposing factor for snoring apart from obesity , alcohol & sedatives. The underlying cause of the above study might be due to inflammation of the upper respiratory tract resulting in narrowing of the upper airway lumen due to persistent smoking. On the other hand chronic Cigarette Smoking may causes decline in tone of upper airway dilating mescals and their ability to maintain patency falls. The details will be discussed during presentation.

P-08 Clinical evaluation of ondansetron dexamethasone and lorazepam combination in cisplatin induced emesis

Dr. Jyoti Kaushal
DEPARTMENT OF PHARMACOLOGY PT. B.D. SHARMA POST GRADUATE INSTITUTE OF MEDICAL SCIENCES ROHTAK HARYANA

Ondansetron is a selective 5HT3 antagonist that has shown remarkable efficacy in controlling nausea and vomiting following administration of highly emetic anticancer drugs such as cisplatin. A double blind randomized crossover trail was conducted on 30 cancer patients, receiving cisplatin based chemotherapy, comparing the antiemetic efficacy of ondansetron plus dezamethasone (OD) schedule versus ondansetron plus dezamethasone plus lorazepam (ODL) schedule. Patients were given cisplatin in the range of 60 to 80 mg/m2 depending on the type of cancer. The patients were divided into two groups. One group was given OD schedule and the other group ODL schedule in the first cycle. For the subsequent cycle, crossover of the antiemetic schedules were done. The antiemetic effects were evaluated by recording frequency of vomiting, and acute and delayed frequency, intensity and duration of nausea. The clinical observations suggest that both the treatments were equally effective in controlling nausea and vomiting in acute phase. Complete response was 24/30 (80%) in OD schedule and 25/30 (83.3%) in ODL schedule. However for control of delayed nausea and vomiting, ODL schedule was better. Delayed nausea was reported by 40% patients in both the schedules and the mean duration was 32.25 hours with OD schedule and 12 hrs with ODL schedule.

P-09 Enhanced learning and memory with in a pyramid model Is it transient ?

Bharathi H, Dilip Murthy and Rao M S*
DEPARTMENT OF PHYSIOLOGY, INTERNATIONAL CENTRE FOR HEALTH SCIENCES, DEPARTMENT OF ANATOMY, KMC, MANIPAL, 576119

Introduction : Model pyramids with precise, shape and dimensions as that of the pyramid of Giza are known to generate energy field, which in turn can influence biological system. Previously we had found that exposure of mice, 6h/day for four weeks, enhanced spatial learning.

Aim : To find out whether enhanced learning with in a pyramid model is transient or long-lasting.

Methodology : Adult BALB/c strain mice were divided in to three groups (n=30 in each group). One group remained in home cage (NC) while other groups were either exposed to environment with in a square box (sqC) or pyramid (PE) 6h/d for four weeks. After two weeks ten mice from each group were tested for spatial learning (spontaneous alternation and rewarded alternation tests). Another ten mice from each group were tested after four weeks. The last group was subjected to spatial learning after six weeks. Performances of all the groups were compared with the results of our earlier study.

Results : Improved performance ($p<0.05$) in spatial learning was seen to persist in the PE group, after two, four and six weeks of post exposure period.

Conclusion : Energy field with in the pyramid brings about long term improvement in the learning ability of the animal. This encourages one to use the pyramid as therapeutic device in the learning environment.

P-10 Alteration in metabolic activities after in vivo glucocorticoid depletion in male Swiss albino rats.

Soumya Ghosh and Biswadev Bishayi*

CORRESPONDING AUTHOR:- IMMUNOLOGY LABORATORY, DEPARTMENT OF PHYSIOLOGY, UNIVERSITY OF CALCUTTA, 92, A.P.C. ROAD, KOLKATA-700009 WEST BENGAL, INDIA

Key Words :- Adrenalectomy, Glucocorticoid, Metabolic activity.

In vertebrates including man the study of glucocorticoid has contributed substantially to unraveling the complex relationship between immune endocrine interactions and the system involved. Glucocorticoids play a pivotal role in carbohydrate, protein and fat metabolism in the body. The study is under taken to determine the effect of adrenal corticosteroid depletion after unilateral adrenalectomy on the metabolic activities in mature Swiss albino rats. For this, blood samples were collected at different time intervals from the retro-orbital plexus, then several biochemical parameters in intact and adrenal ectomised rats were analysed. The surgical removal of single adrenal gland leads to the reduction in serum cortisol level was observed by cortisol hormone assay. The major finding of our study indicate that blood glucose, serum urea and total inorganic phosphate level showed a time dependent significant increase in adrenalectomised rats compared to control. The total glycogen content in liver and the serum protein content was decreased gradually due to adrenal corticosteroid insufficiency. These observations demonstrate that function which also supports the hypothesis that the endogenous glucocorticoid may play a role in maintaining the metabolism. However the exact mechanism by which adrenal corticosteroid insufficiency causes the aforesaid alteration is still unknown and needs further investigation.

P-11 Title : effects o shavasana on cold pressor test and hand grip in young adults

Dr. S.R. Sardessai, Dr. M.D. Nagvekar,
Dr. A.S. Borker and Dr. M.E. Abraham.

INSTITUTION AND PLACE: DEPARTMENT OF PHYSIOLOGY, GOA MEDICAL COLLEGE, BAMBOLIM-GOA –403202

The effect of 15 minutes shavasana on cold pressor test and hand grip was studied in 300 subjects. Their basal pulse and B.P. was recorded after taking rest for 30 minutes. After that they were asked to do hand grip with power dynamometer by left hand and pulse and B.P was recorded by using right hand. Once again they were allowed to rest till their pulse and B.P came back to basal valve and then cold pressor test was performed by immersing left hand in cold water at 42 C and recording pulse and B.P by using right hand. After this subjects were asked to do shavasana for 15 minutes and their basal pulse and B.p was recorded after shavasana. Next subjects were asked to do hand grip and cold pressor test and their pulse and B.P were recorded. These subjects were asked to do shavasana every day for 30 days and at the end of 30 days their pulse and B.P was recorded under 3 conditions i.e. basal, hand grip and cold pressor test.

It was seen that basal pulse and B.P decreased after shavasana. Also the increase in pulse rate and B.P was less with hand grip and cold pressor test after shavasana.

P-12 Effect of iron therapy on cognition in anemic girls

R bandhu, N Shankar, OP Tandon
DEPARTMENT OF PHYSIOLOGY, UNIVERSITY COLLEGE OF MEDICAL SCIENCES AND GTB HOSPITAL, DELHI-110095

Anemia is the most common nutritional disorder in the developing countries. In the present study the effects of anemia on cognitive functions and their potential reversibility with iron therapy was studied in girls aged 8-10 years. The cognitive functions were assessed by event related potentials (P_{300}) and by the psychometric tests, i.e., Raven's progressive Matrices Test and Digit Span Attention Test.

The girls with Hb <12 g/dl were classified into anemic and >1 g/dl in to control group. All girls were dewormed and for the next 90 days the anemic group received Fe2+ 3-4 mg/kg bw/d along with Ascorbic acid 100 mg/d. pretreatment hematological values of the control group were significantly ($p< 0.05$ to < 0.001) better than anemic group for Hb, Hct and MCH. Their P_{300} parameters and psychometric test paraments were also better but not statistically significant. Therapy resulted in significant ($p<0.05$ to < 0.001) improvement in hematological and cognitive parameters in both the groups. However anemic group improved much more than control group for hematological parameters. In the psychometric parameters the control group was found better than the anemic group but no statistical significance was found.

P-13 Study of hypoglycemic and anti-oxidant potential of a polyherbal formulation in rat

D.K. Katiyar, K.K. Pant, N. Mishra and Basheer Ali
DEPARTMENT OF PHARMACOLOGY AND THERAPEUTICS, C.S.M. MEDICAL UNIVERSITY (UPGRADED KING GEORGE'S MEDICAL COLLEGE), LUCKNOW –226003

In the present study the hypoglycemic and anti-oxidant potential of a polyherbal formulation was evaluated in alloxan-induced diabetic rats. Diabetic rats having fasting blood sugar in the range of 150 to 300 mg% were selected for the study. Lipid peroxidation (LPO), reduced glutathione (GSH) and glutathione-S transferase (GST) were estimated in the liver, brain and kidney as bioindicators of oxidative stress. The animals were divided in to 4 groups viz control, diabetic, herbal-treated control and herbal treated diabetic. An aqueous suspension of the herbal mixture containing equal amounts of 5 ingredients namely the leaves of Azadirachta indica (Margosa tree, Neem), fruits of Momordica charantia (Bitter gourd, Karela), leaves of Gymnema sylvestre (Gurmar), seeds of Syzygium cumini (Black plum, Jamun) and seeds of Trigonella foenum (Greek hays, Methi) was administered orally once a day (500 g/kg body weight) for a period of 4 weeks to diabetic animals. The results show that the herbal treatment restores the elevated blood sugar level to normal range in the diabetic rats. The formulation is also effective in preventing the diabetes induced decrease in the body weight of rats. A significant decline in LPO and an increase in GSH and GST levels in all the three tissues examined viz liver, brain and kidney of normal and diabetic animals indicates the strong anti oxidant potential of formulation. These observations further suggest the possible role of anti-oxidant properties of the herbal mixture in its anti-diabetic action. Hence, the formulation appears to have a promising role in the management of diabetes.

P-14 Role of oxidative stress in hepatotoxicity caused by isoniazid and rifampin

Sonica Sachdeva, K.K. Pant and Basheer Ali
DEPARTMENT OF PHARMACOLOGY AND THERAPEUTICS, CHHATRAPATI SHAHUJI MAHARAJ MEDICAL UNIVERSITY, (UPGRADED KING GEORGE'S MEDICAL COLLEGE) LUCKNOW –226003

The present study was designed to evaluate the role of oxidative stress in hepatotoxicity caused by isoniazed (INH) and rifampin (RMP), individually and in combination, in rat. Lipid peroxidation (LPO), a marker

of oxidative tissue injury, and reduced glutathione (GSH), a potent anti-oxidant, were investigated in rat liver and blood as parameters of oxidative stress. The activity of serum glutamate pyruvate transaminase (SGPT) was monitored as a marker of hepatic injury. Drug combination containing INH (125 mg/kg/day) and RMP (250 mg/kg/day) was administered intraperitoneally (i.p) for a period of 4,8 and 12 consecutive days to 3 different groups of Albino rats. In order to assess the comparative hepatotoxic and redox potential of the ingredients, INH and RMP were administered i.p for a period of 8 days to different groups of rats. This study reveals that INH-RMP combination is a potent inducer of oxidative stress in the liver. A good correlation exists between the pattern of changes in the parameters of redox state (GSH and LPO) and the magnitude of hepatic injury, with respect to the duration of exposure to INH-RMP combination. The individual ingredients are comparatively weak oxidants and are almost devoid of combination also elicited a delayed change in the blood parameters of oxidative stress indicating the possible predictive/ diagnostic value in cases of INH-RMP induced hepatotoxicity.

P-15 Salt taste preference in normal males

Punam Verma, K.K Mahajan, Sunita Mittal, A Ghildiyal, P Bhardwaj and N Jain.
DEPARTMENT OF PHYSIOLOGY, HIMS, SWAMI RAMA NAGAR, DEHRADUN 248140, U.A.

Salt appetite of an individual is directed and motivated by perceptibility, palatability and need of salt in the body. Salt palatability and saltiness on popcorn was assessed in 54 medical students, 18-21 years of age (group A) and 20 males working as laboratory staff (education high school), aged 30-40 years (group B). subjects were given popcorns sprayed with different concentrations (0M, 1M, 2M, 3M, 3+M) of salt (sodium chloride) solution and were asked to rate the popcorn for palatability and saltiness on 7 points Likert scale (1=least palatable/ salty – 7 = most palatable/salty), while popcorns were still in their mouths. Their height, weight, if eaten any food recently, were on any medication and preferences for sweet/salt/sour/bitter food were recorded.

Preference rating revealed following differences in two groups of males. Young males (group A) liked mild salty popcorn more than other salted popcorns ie. Their palatability was better for mildly salted (1M ,2M) popcorns. Acuity for saltiness correlated positively with increasing concentrations of salt sprayed on popcorn in group A subjects. Group B preferred popcorns sprayed with moderate (2M, 3M) concentrations, on popcorns and this subjective difference in perceptibility may be related to basic intelligence and sensitivity of taste buds in two groups. All male subjects preferred sweet over salty food. Palatability and acuity for saltiness of a subject should be considered as distinct entities.

P-16 Effect of endosulfan on plasma testosterone level in developing rats

S.D Manjula[1], Guruprasad[2], Susan Benjamin[1] K.L Bairy[3]
DEPT OF PHYSIOLOGY[1], RADIOBIOLOGY[2] AND PHARMACOLOGY[3]
KASTURBA MEDICAL COLLEGE, MANIPAL-576119 INDIA

Introduction – Endosulfan, a broad spectrum insecticide is known to cause toxicity along with its use. However there are lot of reports on its effect in adults rats and there are very few reports on its effects in developing rats.

Objective – To assess the effect of endosulfan on plasma testosterone level in developing rats.

Method – Ten groups of male rats (n=8) were used group I rats were treated with distilled water (control), group II were treated with ground nut oil (vehicle) group III were treated with vitamin C group IV were treated with Cyclophospamide (positive mutagen), group V-VIII were treated with different doses of endosulfan (3,6,9,10 mg/kg body weight respectively) group IX rats were treated with Endosulfan (9mg) + Vitamin C and group X were treated with Endosulfan (12mg) + Vitamin C.

The drug was given up to sixty days. On 70th day rats were sacrificed and blood was collected by cardiac puncture. Plasma was separated and the testosteron level was estimated by EIAgen Testosterone kit method.

Results – There was significant decrease in Plasma testosterone level in endosulfan and (9 and

12mg) treated rats compared to control and vitamin C treated rats. Co-administration of Vitamin C with endosulfan results in increase in plasma testosterone level.

Conclusion – Increase in Plasma testosterone level in vitamin C and endosulfan treated group shows that Vitamin C may be beneficial in reversing the toxic effect of endosulfan on testes.

P-17 Reliability of peripheral blood smears in diagnosis of iron deficiency anaemia (IDA)

Dr. Asha Srivastava
ASSOCIATE PROFESSOR PHYSIOLOGY, GANDHI MEDICAL COLLEGE BHOPAL
Dr. A. Kaul
PROFESSOR PHYSIOLOGY, GANDHI MEDICAL COLLEGE BHOPAL

Reliability of peripheral blood smears in diagnosis of iron deficiency anaemia (IDA)

Dr. Asha Shrivastava, Dr. A. Kaul
GANDHI MEDICAL COLLEGE BHOPAL

The study included 47 pre menarchal girls (Age 11-13 years) detected anaemic on clinical examination and 13 age and sex matched controls. Hemoglobin content RBC count PVC were determined and blood indices calculated. Serum iron, total iron binding capacity (Dipyridy1 Method) serum transferrin saturation were estimated. Mean values of hemoglobin, serum iron, TIBC, Serum transferrin saturation in Group I (HB<4gm/dl) were 3.03 + 0.84 gm/dl, *28.43*±8.05 mg/dl, 422.0±71054 mg/dl and 7.02±2.43% in group II (Hb 4-7 gm/dl) values were 6.04±0.8gm/dl, 40.5± 8.84 mg/dl, 455.68±49.96 ug/dl and 9.56±2.73%. in group III (Hb7 – 10gm/dl) 8.53±0.69 gm/dl, 31.0±14.95 ug/dl, 429.26±32.97 ug/dl and 7.13±4.0%. In group IV (Hb>12gm%) values were 13.11± 0.91 gm/dl, 88.89±10.05 ug/dl, 293.53±25.82 ug/dl, 30.17±5.32% respectively. Four observers examined blood smears. Intra-observer variability to diagnose IDA was 2.94% (Group I), 6.25% (Group II) and 6.66% (Group III). Repeatability in judgment of microcytosis and hypochromia in group-I was 93%, 93.33%, in group-II 100%, 93% in group-III 73% and 82%. The highest sensitivity 93.75% was observed in severe anaemia, 87.5% in moderate anaemia and 73.3% in mild anaemia.

P-18 Yoga and aerobic exercise influence lipid profile

Lalita chaudhary, k.k. Mahajan, sunita Mittal, S. Agrawal, V. Agrawal P. Dev and S. R. Arora
DEPARTMENT OF PHYSIOLOGY, HIMS, SWAMI RAMA NAGAR, DEHRADUN.
LLRM MEDICAL COLLEGE, MEERUT

Lack of physical activity is one of the foremost killer of people not only in elderly but also in young individuals. As a measure of prevention yogic and aerobic exercises are recommended for maintaining health by natural means with least expenses. Thirty male medical students 18-25 years of age, volunteered for this study. Fifteen of them performed various yogic postures and fifteen practiced aerobic exercise schedule, which is used in Royal Canadian Air Force. Subjects of both groups were trained accordingly and they practiced it regularly for 12 weeks. Complete lipid profile along with some physical parameters was measured in all individuals at the start of the project after 6 weeks and 12 weeks of their shcedules. Statistically significant lowering of heart rate, blood pressure and respiratory rate was experienced in both groups after 12 weeks but statistically significant decrease ($p<0.01$) in systolic and diastolic BP was observed 6 weeks earlier in yogic group. Statistically significant fall ($p<0.01$) in serum total cholesterol (TC) low density lipoprotein (LDL-C), very low density lipoprotein cholesterol (VLDL-C), triglycerides (TG) and increase in high density lipoprotein cholestrol (HDL-C) and HDL-C/LDL-C ratio was revealed in both group after 12 weeks. However TC, LDL-C and TC/LDL-C ratio decreased ($p<0.01$) earlier in yogic group. These findings suggest that yogic practices or aerobic exercises both have role to cause beneficial effects on physiobiochemical parameters. Further studies should be under taken to demonstrate summed up effects of two types of training together.

P-19 Effect of alcohol on lipid metabolism

Dr. Mrs. Meena Varma and Mrs. Sangeeta Paneri
DEPARTMENT OF BIOCHEMISTRY, MGM MEDICAL COLLEGE AND M.Y. HOSPITAL, INDORE (M.P.)

Regular consumption of alcohols disturbs the liped metabolic balance and liver functions.

Keeping in mind, this well known fact, the present study was undertaken in M.G.M Medical College and M.Y. Hospital Indore, on 250 males of the age group from 29 to 63 having the habit of consuming alcohol daily, to find out the reason of lipid metabolic disorders due to continuous alcohol injection.

The fasting blood samples were taken and total cholesterol, lipoprotein fractions and hepatic enzymes were estimated.

It was observed that the effect of alcohol on lipid metabolism and liver functions depends on the dose and the regularity of intake. Moderate amounts of alcohol lead to an increase in total cholesterol, HDL-cholesterol, alkaline phosphatase levels, but no change has been found in LDL-cholesterol and VLDL- levels. It was also observed that moderate alcohol consumers may have the risk of weight gain and obesity, due to suppressed rate of lipid oxidation, when alcohol consumption increases, the levels of total cholesterol, LDL-cholesterol, triglycerides and alkaline phosphatase levels also increases with the decrease in HDL-cholesterol levels. Daily high consumption of alcohol leads to a decline in most of the lipoprotein fractions may be due to hepatopathy. The results of study group were compared with normal healthy adult, a control group of same age and sex and found to be highly significant.

P-20 Variation in salt preference across menstrual cycle

Archna Ghildiyal, K.K. Mahajan, S. Mittal, P. Verma, D. Deepak, J. Dvivedi
DEPARTMENT OF PHYSIOLOGY, HIMS, SWAMI RAMA NAGAR, DEHRADUN-248140, U.A

There is a general acceptance that women prefer high salt and spicy food more than sweet but any association of palatability and acuity of saltiness to their hormonal status during different phases of menstrual cycle is still to be evaluated. To assess differences in salt preference during different phases of menstrual cycle, 56 women, 18-21 years of age were given popcorn sprayed with different concentrations (0M, 1M, 2M, 3M, 3M+) of salt (sodium chloride) solution. They were asked to rate the popcorn for palatability and saltiness on 7 point Likert scale (1=least palatable/salty-7=most palatable/salty) while the popcorns were still in their mouth. Subjects record their age, height, weight, if taken any food recently, were on any medication, details of menstrual cycle for duration, regularity, date of onset, flow etc. and preference for sweet/salt/sour/spicy/ bitter foods on preformed questionnaire. Subjects were divided into menstrual, follicular, ovulatory and luteal week groups. In forty subjects were palatability to medium concentrations (2M and 3M) was better, in comparison to least (0M) or maximum (3+M) salty popcorns during above mentioned 4 weeks of menstrual cycle. Women in luteal week preferred unsalted popcorns (0M) less than women in follicular, ovulatory and menstrual week. In other words salt palatability increased periovulatorily. Palatability remians least to alll concentrations of salt during on popcorns in all subjects, though not much difference was appreciated in two high concentrations (3M and 3M+). Subjectively 60% of women preferred salt and spicy food over sweet. Hormonal variations present in menstrual cycle seem to be responsible for non-consistent preference to salt in women.

P-21 Using "VARK Preferences"Of Medical Students in Physiology Teaching.

Manish Bajpai.
ASSISTANT PROFESSOR, DEPARTMENT OF PHYSIOLOGY, KING GEORGE'S MEDICAL COLLEGE.(C S M MEDICAL UNIVERSITY)LUCKNOW. 226004.INDIA

VARK is an acronym made from the initial letters of four means of communication (Visual, Aural, Read /Write and Kinesthetic). It is a perceptual mode of Learning Style, which means it is focused on the different ways that students take in and give out information. Students have a preferred style and preferences for the intake and the output of ideas and information.

Present study was done on One Hundred and sixty (160) First year Medical Students,both male and female,the average age being 19years in male and 18 years in female the learning preferences of these students were assessed through a questionnaire on VARK [1]. Most of the students (44%) have Kinesthetic learning preferences, Visual (13%), followed by Read & write (10%) and Aural (5%).Rest of the students (28%) were having multimodal preferences.

Physiology teaching methodology for these first year medical students was altered and simplified to include more hands on practical sessions in hematology, experimental and human laboratories. Using more audio-visual aids and flow-charts enriched didactic lectures, the lectures were also supplemented by demonstration of physiological processes. Students were encouraged to take part in active learning through home assignments. The performance of these students in the internal assessment examination has been remarkably better as compared to their predecessor.

1.Rhem. J. (1998)), The VARK Questionnaire, National Teaching and Learning Forum, Vol.7 No. 4. Oryx Press, USA.

YG-01 MODULATION OF CARDIOVASCULAR RESPONSE TO EXERCISE STRESS BY YOGA TRAINING

MADANMOHAN, KAVIRAJA UDUPA, ANANDA BALAYOGI BHAVANANI AND AJIT SAHAI*

DEPARTMENTS OF PHYSIOLOGY AND SOCIAL AND PREVENTIVE MEDICINE*, JAWAHARLAL INSTITUTE OF POSTGRADUATE MEDICAL EDUCATION & RESEARCH (JIPMER), PONDICHERRY - 605 006.

Beneficial effects of yoga training are well known. However, literature is deficient on the effects of yoga training on time course of cardiovascular response to exercise stress. Hence, we planned to study the effects of yoga training on cardiovascular response to exercise stress. Cardiovascular response to exercise was determined by Harvard step test on 21 male medical students using a platform of 45 cm height. The subjects were asked to step up and down the platform at a rate of 30/min for a total duration of 5 min or until fatigue, whichever was earlier. Heart rate (HR), systolic pressure (SP) and mean pressure (MP) response to exercise was measured in supine position before and at 1, 2, 3, 4, 5, 7 and 10 minutes after exercise. Rate-pressure-product (RPP = HR × SP × 10^{-2}) and double product (DoP = HR × MP × 10^{-2}) that are indices of work done by the heart were calculated. Exercise produced a significant rise in HR, systolic pressure, RPP & DoP and a significant decrease in diastolic pressure. After two months of yoga training, exercise-induced changes in these parameters were significantly reduced. It is concluded that yoga training modulates cardiovascular response to exercise-induced stress and improves exercise tolerance.

YG-02 Anal incontinence: Improvement through strengthening pelvic floor muscles by using Yogic intervention

G. Poojary, KK Deepak

AUTONOMIC FUNCTION LABORATORY, DEPARTMENT OF PHYSIOLOGY
ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI 110029
CORRESPONDENCE: KKDEEPAK@HOTMAIL.COM

Anal incontinence is a chronic debilitating problem requiring non-surgical intervention in several cases. Two such cases were referred to us for alternative intervention. It has been known that strengthening of pelvic floor muscles results in benefit. EMG biofeedback has been advocated as one of the procedure to strengthen pelvic floor muscles. We have used a series of Yogasanas for improving condition.

Three referred cases were given a series of Yogasanas, which were thought to strengthen the muscle of pelvic floor. The patients practiced the following Yogasanas:

In stage I Surya Nadi, Vajrasana, Trikonasana, Mool bandh and Shavasana were advised for 1-2 weeks. In stage II patients practiced Asvni mudra, Marjariasana, Parvatasana, Aswa sanchalana, Paschimottanasana, Shashankasana and Yoga mudra for 2-4 weeks. In stage III patients practiced

Sarvangasana for 2 weeks.

Throughout the intervention period, the patients were under supervision of an experienced Yoga instructor. The effects of these yogasanas were seen on clinical symptoms, anal manometry and reports from treating gastroenterologist or surgeon. Autonomic function & Electrogastrography was performed. Subjectively the patient reported improved control of pelvic floor muscles. The episodes of involuntary evacuation decreased. Objectively, in two cases the resting pressure in anal manometry was increased. Patients gained self control and confidence. In conclusion, the two months of intervention resulted in significant improvement in clinical symptoms and improvement in resting anal pressure as measured by anal manometry.

The research was funded by Central Council for research in Yoga and Naturopathy.

YG-03 Longitudinal Evaluation of Effect of Rajyoga Meditation on Cardiac Autonomic Parameters in Medical Students

Nandini kapoor*, K .Sri Nageswari, Brahmkumari Anita, Brahmkumari Kavita, Anita S. Malhotra, G. Kaur, Nitin Gupta*****

DEPARTMENT OF PHYSIOLOGY, GOVERNMENT MEDICAL COLLEGE, CHANDIGARH

**BRAHMKUMARI INSTITUTE, CHANDIGARH

***DEPARTMENT OF PSYCHIATRY, PGIMER, CHANDIGARH

Our earlier study conducted in first year MBBS students revealed significant stress [33% severely stressed, 50% moderately stressed and 17% normal] evaluated through physiological and psychological variables. Hence, it was felt mandatory to administer relaxation techniques to the medical students at their induction to the medical school curriculum so as to avert development of stress-induced disorders later. The first year MBBS students were divided into three groups. One group of 15 students were administered Rajyoga meditation practice (stress management course) at Brahmkumari Institution, Chandigarh for duration of 20 days. The pre and post relaxation cardiovascular parasympathetic parameters (30:15 ratio, Expiration: Inspiration ratio on deep breathing and Valsalva ratio) were compared. There was significant beneficial effect of Brahmkumari's way of meditation (30:15 ratio, pre 1.35 ± 0.18 & post 1.54 ± 0.17, $p<0.1$; E: I ratio on deep breathing, pre 1.57 ± 0.26 and post 1.70 ± 0.25, $p<0.01$; valsalva ratio, pre 1.73 ± 0.39 & post 2.06 ± 0.38, $p<0.01$). Such an improvement in parasympathetic control of the cardiac parameters/reflex vagal activity is proven to be beneficial for human body.

YG-04 EFFECT OF SAHAJ YOGA ON COGNITIVE FUNCTIONS AND PHYSIOLOGICAL PARAMETERS

SHARMA VK, DAS S, MONDAL S, GOSWAMI U, WALIA V, GANDHI A.

Sahaj Yoga is a form of meditation, which has beneficial effects on some physiological parameters. 30 healthy subjects (18-60 years), screened by Goldberg's General Health Questionnaire for any sub-clinical psychiatric illness, were randomly divided into two groups i.e. Yoga group and Control group. Yoga group (10 males & 5 females), was administered Sahaj yoga practice for eight weeks. Physiological parameters like Pulse Rate, Galvanic Skin Resistance, Respiratory Rate and Alpha Rhythm were recorded. Neurocognitive test battery consisting of Letter Cancellation Time, Trail making test A and B, Ruff Figural Fluency test and Forward and Reverse digit span test, was used for testing following cognitive domains: Attention Span, Visuo-motor scanning, Short term memory, working memory and Executive Functions like strategic analysis, manipulate information etc. HAM-A was used for scoring Anxiety levels. All parameters were recorded at 0 and 8 weeks. Data was analyzed by ANOVA, Wilcoxon Signed Rank test, Paired and Unpaired 't' tests. At 8 weeks, Yoga group showed decrease in Respiratory rate ($p<0.001$), Pulse rate ($p<0.001$) and increase in G.S.R. ($p<0.001$) and Alpha activity ($p<0.001$), whereas, no changes were observed in Control group. In neuro-cognitive tests, Yoga group showed improvement in Trail making test 'A', Control group not showing any change. Only Yoga group showed reduction in Anxiety scores ($p<0.05$). The results indicate Sahaj Yoga leads to decrease in sympathetic activity, improved attention span and visuo-motor speed, better mental relaxation and reduction in anxiety levels in normal healthy subjects.

YG-05 EFFECT OF YOGIC EXERCISES ON SERUM LIPID PEROXIDATION IN DIABETICS.

***VANI GUPTA, SUNITA TEWARI, U.S.PANDEY**

*LECTURER DEPT OF PHYSIOLOGY, C.S. M. MEDICAL UNIVERSITY, UPGRADED K.G.M.C. LUCKNOW.

Oxidative stress has been increasingly implicated in the development of Diabetic vascular complications. Oxidative stress can result in widespread lipid, protein & DNA damage including oxidative modification of LDL cholesterol. Oxidative stress as assessed by index of lipid per oxidation (M.D.A.) has been shown to be elevated in Diabetics. Research has shown that yogic exercises have preventive role in the development of Diabetic vascular complications. With this background knowledge we have seen the effect of yogic exercises (Asanas) on serum lipid per oxidation (M.D.A.) in Diabetic subjects of age group of 40-60 years. This is a case control crossover study. Control and study group comprises of age & sex matched Diabetic subjects, 20 in each group. Study group has done yogic exercises 2 hour daily for initial two months and than has stopped exercising for next two months. The control group has not done any exercise for initial two months and than has done Yogic exercise for next two months. The blood samples were collected on 0^{th} day and than at the interval of 15 days for 4 months. Serum was separated out for the measurement of Serum lipid per oxidation (M.D.A.). Blood glucose was also measured. Significant low values of serum M.D.A. were found as compared to 0^{th} day value at 4th, 6th & 8th week in study group Diabetics who were yogic exercises as compare to control group. In the control group there were no significant changes were found on 2^{nd} &4^{th} week as compared to 0^{th} day value, while significant decrease in serum M.D.A. were seen on 8^{th} week values as compared to 0^{th} day and 4^{th} week values. These results show that yogic exercises may have preventive role in the development of Diabetic vascular complications by decreasing the lipid peroxidation.

KEY WORDS : Diabetics, Yogic exercises, lipid peroxidation.

YG-06 A Comparative Study Of The Effect Of Yoga And Gymnastics On Selected Physiological And Biochemical Parameters.

Dhananjaya J.R., Vastrad B.C., Chandru M.C*.

DEPT. OF PHYSIOLOGY, * DEPT. OF BIOCHEMISTRY, KIMS HUBLI, KARNATAKA.

The enthusiasm for exercise and fitness is at an unprecedented level. Only limited studies are availabel on comparative study of physiological and biochemical parameters in yoga and gymnastics, hence this study was undertaken.

To study some selected physioloical and biochemical parameters before and after 6 months of yoga and gymnastics practice.

25 apparently healthy male subjects, practicing yoga and 23 apparently healthy male subjects practicing gymnastics of age group 20-35 years, were selected.

Height, Weight, Body Mass Index (BMI), Heart rate (HR), Blood pressure, Peak expiratory flow rate (PEFR), Breath holding time (BHT) Fasting blood glucose and Lipid profile.

Both the groups showed significant decrease in HR, BP, Fasting blood glucose with significant increase in PEFR and BHT and significant change in Lipid profile. HDL-C increased from 42.8 ± 10.2 to 63.2 ± 19 mg/ dL in yoga group and from 36.26 ± 5.96 to 46.6 ± 8 mg / dL in gymnastics group. Yoga group showed a greater change in lipid profile.

Regular practice of yoga or gymnastics causes a significant beneficial change in physiological parameters and lipid profiles; yoga practice affects greater beneficial change in lipid profile.

YG-07 Pranayam Increases The Mechanical Efficiency

Pradeep Kumar, Arun Goel, U. S. Pandey and S. Tewari

DEPTT. OF PHYSIOLOGY, CSM MEDICAL UNIVERSITY, LUCKNOW

A number of authors state that regular exercise increases fitness and mechnical efficiency. In present study, forty male healthy volunteers (medical students, 2001 batch of KGMC) between age group of 19-21

years having no history of regular exercise were selected for study to see the effect of Pranayam and anaerobic exercise on mechnical efficiency. Volunteers were divided in two groups of twenty each. Mechanical efficiency of both the groups was measured prior to study by the Harvard step test. One group (group A) was kept on anerobic exercise for 5 min. on every alternate days for 16 weeks by cycle ergometer. In the same way other group (group B) was allowed to practice Pranayam on every alternate days for 16 weeks.

Our results indicate that mechanical efficiency in group A before the study was 25.3% ± 2.5 SD and after study it was 26.6 % ± 3.5 SD. In group B, mechanical efficiency before study was 25.5% ± 3 SD and after study was 27.5% ± 3.5 SD. These findings suggest that mechanical efficiency increases more in subjects who practice Pranayam.

YG-08 YOGA-ASANAS AND OXIDATIVE STRESS

Sayeeda Afroz, Dudhamal V.B., Jadhav S.S., Karadkhedkar S.S.
DEPARTMENT OF PHYSIOLOGY, GOVT. MEDICAL COLLEGE, AURANGABAD.

This study was carried out to see the effect of Yoga-asanas on oxidative stress. Surum malondialdehyde level was estimated. MDA is by product of lipid peroxidation so it was used as indicator of oxidative stress. The study was carried out in 30 males regularly performing yogasanas for a 1 hour daily for the period of 2 months in age group of 35-45 years. Serum MDA level before yoga-asanas was 8.32± 1.05 and after yoga-asanas it was 6.65± 1.35. Thus from above observation we can conclude that yoga-asanas reduces oxidative stress thereby reducing biological ageing process.

YG-09 THE EFFECT OF VIPASANNA MEDITATION ON CARDIO-RESPIRATORY SYSTEM AND SERUM LEVEL OF MALONDIALDEHYDE

Dudhamal V.B., Solepure A.B. Sayeeda Afroz,
DHIVARE N.P., JADHAV S.S., KARADKHEDKAR S.S.

Vipasanna meditation has been practiced in our country since many centuries. In the current study effect of vipasanna meditation was studied on various physiological parameters. In this study 30 normal healthy male subjects were studied before meditation and just after 10 days course of meditation. The following parameters were studied pulse rate, systolic and diastolic blood pressure, respiratory rate, and serum level of malondialdehyde before and after meditation course.

The mean pulse rate before meditation was 78.12± 4.38 and after meditation was 70.97±3.40. The mean systolic blood pressure before meditations was 120.7 ± 3.40 and after meditation 115.8 ±3.70. The mean diastolic blood pressure before meditation was 80.75±2.19 and after meditation was 71.72 ±4.83. The respiratory rate before meditation ws 19.00±1.11 and after meditation was 16.35±0.89. The serum MDA level before meditation was 4.04±0.75 and after meditation 1.63±0.51.

From above results it is observed that pulse rate, blood pressure, respiratory rate and serum MDA level were decreased significantly after meditation. Therefore it is concluded that meditation gives physiological benefits to body in addition it also reduces oxidative stress.

YG-10 EFFECT OF SAHAJ YOGA ON COGNITIVE FUNCTIONS AND PHYSIOLOGICAL PARAMETERS

SHARMA V.K, DAS S, MONDAL S, GOSWAMI U, WALIA V, GANDHI A.
DEPARTMENT OF PHYSIOLOGY, LADY HARDINGE MEDICAL COLLEGE AND ASSOCIATED HOSPITALS

Sahaj Yoga is a form of meditation, which has beneficial effects on some physiological parameters. 30 healthy subject (18-60 years), screened by Goldberg's General health Questionnaire for any sub-clinical psychiatric illness, were randomly divided into two groups i.e. Yoga group and Control group. Yoga group (10 males and 5 females), was administered Sahaj yoga practice for eight weeks. Physiological parameters like

pulse rate, galvanic skin resistance, respiratory rate and alpha rhythm were recorded. Neurocognitive test battery consisting of letter cancellation time, trail making test A and B, ruff figural fluency test and forward and reverse digit span test, was used for testing following cognitive domains: Attention Span, Visuo-motor scanning, short term memory, working memory and executive functions like strategic analysis, manipulate information etc. HAM-A was used for scoring Anxiety levels. All parameters were recorded at 0 and 8 weeks. Data was analyzed by ANOVA, Wilcoxon signed rank test, paired and unpaired 't' tests. At 8 weeks, yoga group showed decrease in respiratory rate ($p<0.001$), pulse rate ($p<0.001$) and increase in G.S.R. ($p<0.001$) and Alpha activity ($p<0.001$), whereas, no changes were observed in control group. In neuro-cognitive tests, yoga group showed improvement in Trail making test 't', control group not showing any change. Only yoga group showed reduction in Anxiety scores ($p<0.05$). the results indicate Sahaj Yoga leads to decrease in sympathetic activity, improved attention span and visuo-motor speed, better mental relaxation and reduction in anxiety levels in normal healthy subjects.

YG-11 THE EFFECT OF SHORT TERM PRACTICE OF TOPSYTURVY YOGASANAS ON CARDIOVASCULAR AUTONOMIC FUNCTIONS.

***DR. ANAND DHARWADAR * DR. (MRS.) ASHA DHARWADKAR**
DEPT. OF PHYSIOLOGY, M.R. MEDICAL COLLEGE, GULBARGA-585105 (KARNATAKA)

In this study apparently healthy male medical students were randomly divided in to two groups of 25 each. One group of 25 students participated in regular training of Topsyturvy Postural Yogasanas for 12 weeks and other group of 25 students remained as control and did not participate in the training. In the group participated in Training (n=25) showed relative parsympatho dominance as indicated by decrease in resting heart rate resting systolic and diastolic blood pressure. Where as sympathetic response remaining unaltered. Decrease in Robound brady cardia in response to standing during first half of training schedule and rising tendency in resting heart rate and resting systolic blood pressure during second half of training schedule may indicate anenuated barroreflex function.

Key words: Topsyturvy Yogic Postures Training Cardiovascular autonomic parameters, Parasympatho dominance.

YG-12 EFFECT OF YOGA ASANAS AND PRANAYAMA ON PULMONARY FUNCTION IN ASTHMATIC PATIENTS

Dr. Karuna Dash (Asst. Prof.), Dr. Pranati Nanda (Asst. Prof.), Dr. A.K. Mishra (Asst. Prof.) Dept of Physiology, M.K.C.G. Medical College, Berhampur.

Yoga asanas and pranayama have been advised by udupa in case of asthma patients. It has been postulated by udupa that yogic practice and meditation reduces physical and mental stress, thereby reducing histamin, parasympathetic overactivity and increasing urinary cortisol excretion and sympathetic activity. The present study was undertaken to understand the effect of yogic asanas and pranayamas on pulmonary function in 25 male asthmatic patients. Before starting the yoga practice the following pulmonary function test – FEV_1, FVC, $FEV_1/FEV_{\%}$, MEFR and MVV were measured by using Toshniwal Expirograph in each subject. They perfumed yogic excercise under direct supervision of yogic expert in the morning hours in a yoga centre for 6 weeks. The PFT were repeated and compared with pre-excercise values. The increase in values of FEV_1, FVC, $FEV_1/FVC_{\%}$, MEFR and MVV after the pranayamic and yogic asanas regimn were statistically significant at PÐ 0.05. These findings suggest Pranayama and yoga asanas if done regularly in case of asthma, it relives airflow obstruction and improves pulmonary function.

Keywords : Yoga asanas Pranayama FEV_1
FVC MEFR MVV

YG-13 Positive Coding for Stress Management

Dr. Sanjeev Kr. Pandey, Director

In today's life, an individual is facing lot of stress through so many ways & factors, unknowingly & unwillingly, off course, willingly too. Stress, may be of any type, but they brings many hormonal, enzymatic, chemical & physiological even genetic changes within our body, which causes the decrease in mental & Physical strength and tolerance capability too, in result, after a period of time many incurable disease such as diabetes, Arthritis, Asthma, T.B., Colitis, hypertension. Coronary Hearth Disease, S. T.D. & Aid's, social evils like divorce, family break down appears, are can not be Cured even, managed by Modem System of Medicine, alone.

So, t.here are so many factor in life :ausing sti'ess, mostly due to negative thought coding in cerebenmi cells in brain. To defy, avoid & nullify the effect of these factors & stress, the ositive thou t codin have to be done in cereberum cells but How? The answer is only one i.e. meditatiQn for over of time alone:with essential supportive exercises. managements for getting actual state of Meditation & desired results, but scientifically (Systematically) under the controlled guidance of medically qualified Hygiene, Nature Cure, Yog, Pranayam, Clothing Science, Herbal Management Experts. Collectively we nomenclatured this whole process -The PUSHP-KRIYA.

MIS-01 TITLE : COST EFFECTIVE WAY TO VISUALISE THE MICROSCOPIC IMAGES USING WEB CAMERA

Dr. K. N. MARUTHY. Assistant professor, Department of Physiology, St.John's Medical College, Bangalore-34.

Microscopic studies are an essential part of the Physiology haematology curriculum. While real time demonstrations of the direct microscopy are effective; it would be useful to use methods that can catch a larger number of students, without any loss of clarity in the microscopic images. Microphotography and video camera techniques can be used to achieve these ends but are expensive and do not maintain clarity or colour. An alternative that has been explained in this project is the use of a modified web camera system. This with a modified optics mounted on a microscope and acquired into a computer allows real time images to be shown to a group of students without loss of clarity or colour. The images can also be stored for later use. Details of the method will be presented.

MIS-02 EFFECT OF (ALA^{8,13,18})- MAGAININ II AMIDE ON HUMAN TROPHOBLAST CELLS *IN VITRO*

Lamba P, Sengupta J, Jain S*, Ghosh D

DEPARTMENT OF PHYSIOLOGY, *DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI – 110029

Magainins are cationic peptides with antimicrobial and antitumour activity originally isolated from skin of African clawed frog, *Xenopus laevis*. It has been demonstrated that magainin II induces coupled transbilayer transport of ions and lipids by forming short lived pores during the peptide translocation, which form the basis of its high antimicrobial and anti-tumour activity. Blastocyst implantation involves high degree of proliferative activity in different cell types in maternal endometrium and conceptus. It is therefore possible that timed application of (Ala^{8,13,18})-magainin II amide can inhibit cellular process of implantation. We have earlier reported that the vaginal administration of (Ala^{8,13,18})-magainin II amide during cycle days 20 to 26 in mated ovulatory cycles inhibited pregnancy establishment in rhesus monkey, which was not associated with any marked changes in ovarian steriodogenic function or degeneration of endometrial cells. The aim of the present study was to investigate the effects of Magainin on human trophoblast cells *in vitro* on trophoblast cell attachment, viability and hormone (hCG and progesterone) production. The placental tissue from MTP (7-10 weeks of gestation) obtained by vacuum aspiration was digested using trypsin along with deoxyribonuclease. Purified trophoblast cells were cultured on collagen coated tissue culture plates at 37°C and 5% CO_2 (Ala^{8,13,18})-

magainin II amide at two concentrations (100 and 1000 ng/ml) dissolved in DMEM culture medium was administered and their effects on attachment efficiency and viability of cultured trophoblast cells were examined. It was revealed that these parameters were marginally affected by (Ala^{8,13,18})-magainin II amide *in vitro*.

MIS-03 Effect of different grade of sephadex on filtration based quality improvement of Murrah buffalo bulls semen.

V.P.Maurya, R.K.Tuli and R.L.Goyal

DEPARTMENT OF ANIMAL PRODUCTION PHYSIOLOGY, COLLEGE OF ANIMAL SCIENCES, CHAUDHARY CHARAN SINGH HARYANA AGRICULTURAL UNIVERSITY, HISAR, HARYANA-125004 INDIA

Twenty fresh semen ejaculates from four adult Murrah buffalo were utilized for the present study. Slurries of the sephadex G-15 (20%,w/v); G-100 (3.3% w/v) and G-200 (1.8% w/v) were prepared by allowing them to swell in Tris buffer for over night at room temperature. The filtration column was prepared in plastic syringe by pouring slurries of different sephadex grade in the syringe placed in vertical position . Each fresh semen ejaculates (approximately four ml) was divided into four parts. One part was kept as control (non-filtered) and other three parts were passed through columns of different grade of sephadex. The filtrate was collected in graduated test tube placed at the bottom of different column. The sperm concentration, percent progressive sperm motility, percent live and percent dead spermatozoa and spermatozoa with damaged acrosome were recorded before (control) and after filtration. The percent progressive sperm motility and percent live sperms improved significantly ($p<0.05$) in the filtrate obtained from sephadex G-15, G-100 and G-200 columns as compared to non-filtered semen. There was a significant ($p<0.05$) decrease in the sperm concentration, percent abnormal sperms and percent damaged acrosomes in the filtrates of G-15, G-100 and G-200 columns as compared to non-filtered semen. Among the different sephadex grades the filtrate of sephadex G-100 had significantly ($p<0.05$) higher sperm numbers than sephadex G-200 and G-15 grades. The comparative seminal characteristics were better in the filtrate of sephadex G-100 column followed by G-200 and G-15 columns.

To be presented in APICON held in Lucknow in 2002

Corresponding Address : Dr. V.P.Maurya (ARS) , Scientist (Sr. Scale), Deptt. Animal Physiology, C.S.W.R.I, Avikanagar, (Via-Jaipur) Rajasthan- 304501

MIS-04 Antinociceptive effect of asparagus racemosus in rats

Goyal RK, Singh J, Lal H.

DEPTT. OF PHARMACY, PHARMACOLOGY AND BIOCHEMISTRY, PGIMS ROHTAK (HARYANA)

Asparagus racemosus (Shatavari, Family-Asparagaceae) is commonly mentioned as a rasayana in the Ayurveda. A.racemosus is used in traditional system of medicine as galactogogue, aphrodisiac, nerve tonic, anti-inflammatory and to relieve backache. In the present investigation aqueous extract of root of A.racemosus was tested for its antinociceptive activity.

Albino rats of either sex weighing 150-160 g were used. Analgesia was evaluated using tail flick reaction time to thermal stimulus (Techno,Analgesiometer) and acetic acid (300 mg/kg, ip, 3% sol.) induced writhing test. Animals were divided into 4 groups of 10 rat s each. Animals of Group I-received (100mg/kg,ip) aqueous extract. In group II-morphine (4mg/kg,ip) was given. Group III- received acetic acid (300-mg/kg,ip, 3%sol.) and served as control. Animals of group IV-received aqueous extract (100mg/kg, ip) pretreatment along with acetic acid. Low doses (25 and 50 mg/kg, ip) of extract were also tested.

Aqueous extract of A.racemosus (100 mg/kg, ip) increased the tail flick reaction tiem to thermal stimulus in rats. Peak analgesic effect was observed after 60 min of inj and effect persisted for 1..5 to 2 hrs. analgesic effect of root extract was comparable to that of 4 mg/kg, ip morphine. Acetic acid induced writhing were also antagonized by pretreatment with A.racemosus aqueous extract.

MIS-05 Morphological and functional characterization of rabbit uterine epithelial cells grown on free floating collagen gel

Lakshmi Venkataraman, Sujata Upadhyay, P.G.L. Lalitkumar, Jayashree Sengupta and D. Ghosh

DEPARTMENT OF PHYSIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI-110029

In the present study isolated uterine epithelial cells from normal rabbits were maintained in culture on free floating rat-tail collagen matrix, and the morphological characteristics of these cells were examined. Additionally, the pattern of protein systhesis and secretion by rabbit uterine epithelial cells grown on free floating collagen gels following estradiol and or progesterone treatment in vitro was examined. Isolated epithelial cells cultured on collagen gels in complete medium containing serum attached to form monolayers, and eventually the gels became free floating and contracted giving rise to luminal arrangements. These cells also exhibited differential upregulation and down regulation in the synthesis and secretion of proteins in response to estradiol, progesterone, and estradiol plus progesterone, additionally, a permissive action between progesterone and estradiol in the synthesis of two species of secretory proteins was observed. It however remains to be examined whether different species of proteins produced in vitro in response to estradiol and progesterone bear any association with physiology states in resproductive cycle in this species.

Key words : collagen, endometrium, epithelial cells, morphology, three-dimensional culture, protein synthesis, protein secretion.

MIS-06 Mechanism of action of oduvanthalai leaf poison

Solomon Sathishkumar, Sathya Subramani, J.Prakasa Rao. Dept. of Physiology, Christian Medical College, Vellore-632002

Oduvanthalai leaf extract is one of the common suicidal poisons in rural South India. A study done in C.M.C and H. Vellore, showed hypokalemia in 72% and ECG abnormalities in 95% of the patients. Sudden cardiac arrest was the usual mode of death and was related to the hypokalemia in 7 out of 9 deaths. The renal potassium loss was found to be very high even in the presence of hypokalemia and ispite of continuing drop in serum potassium concentration.

We propose that the metabolic effects of the Oduvanthalai leaf poison is due to the inhibition of the Sodium-potassium pump.

If pump inhibition is the cause of hypokalemia in vivo, then we reasoned that in invitrored blood cell suspensions, the poison should produce a hyperkalemia. Our studies prove that this is the case. Pump-inhibition in cardiac cells will render the sodium calcium exchanger as the only mode of sodium extrusion resulting in calcium up-take and positive inotropism. This we have showed in the from myocardium.

MIS-07 A method for recording metaboreflex from first dorsal interrosseous muscle

Elizabeth Tharion, Suresh Devasahayam, J. Prakasa Rao,

DEPARTMENT OF PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE, VELLORE-632002

Isometric contraction of large muscle groups is knwon to produce an increase in heart rate and blood pressure. A part of this response is due to the metaboreflex, elicited by accumulating metabolites stimulating the muscle afferent nerve endings. And unanswered question is whether the contraction of a small muscle will be able to elicit the metaborelex?

We established the following method to study the contraction of a small hand musclethe first dorsal interrosseous (FDI) in isolation and its effect on the heart rate and blood pressure. Isometric tension of the FDI was recorded by a physiograph through a strain gauge coupler connected to a force transducer, during abduction of the index finger against the transducer. The signal was also fed into the analogue-digital converter

in a PC, for display and storage for subsequent analysis. The surface EMG and ECG were also acquired on the PC by suitably placed electrodes coupled to appropriate amplifiers. Blood pressure was recorded manually using a Sphygmomanometer. A typical recording of an exercising subject will be shown.

MIS-08 A method for studying the mitochondrial rich cells of frog skin.

J. Prakasa Rao, J. Silviya Rajakumari and S. Devasahayam,
DEPARTMENT OF PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE, VELLORE-632002

The mitochondrial rich cells (MR cells) constitute about 3% of the cells in the epidermal layer of frog skin. These cells are involved in transport of chloride, bicarbonate and hydrogen ion. We have used neutral red to stain these cells. Ventral abdominal skin of the frog Rana hexa dactyla was mounted in the Ussing appartus and was bathed in Ringer solution. Neutral red was added to the mucosal compartment. The skin was incubated at room temperature for 30 minutes. The skin was removed and kept under a microscope fitted with a digital camera. It was examined under low power (100x), high (x400) power and oil immersion lens (x1000). In some cases the skin was split by application of hyaluronidase and the dermis was discarded. The epidermis was treated as above. The MR cells show up as yellow stained structures on a dark pink background. Since neutral red is also an indicator it is inferred that these cells are secreting a base. These findings agree with the observation that MR cells secrete bicarbonate. A detailed study of the MR cells is in progress.

MIS-09 Eeffect of ingestion of water on maximum urea clearance rate in borderline hypertensive adults

Dr, (Mrs), Dharwadkar Asha A., Dr. Dharwadkar Anand, Dr. Doddamani B.R.

This study was conducted to measure Urea Clearance Rate after ingestion of water (2% body weight) on empty stomach in the morning in 8 apparently healthy borderline hypertensive male adults who were compared to 12 normotensive male adults. The results observed in borderline huypertensive adults showed significant increase in Blood Urea concentration and decreased in Maximum Urea clearance Rate compared to Normotensive adults.

Keywords : Ingestion of water, Blood Urea, Maximum Urea clearance Rate, Borderline hypertensive

MIS-10 Role of Alpha tocopherol pretreatment on renal reperfusion injury

Vinodini Na*' Tripathi Y*' Raghuveer Cv**
DEPARTMENT OF PHYSIOLOGY, KASTURBA MEDICAL COLLEGE, MANGALORE.
DEPARTMENT OF PATHOLOGY, KASTURBA MEDICAL COLLEGE, MANGALORE.

The present study was designed to examine the role of alpha tocopherol pre-treatment on oxyzen free radical (OFR) mediated reperfusion injury in rat model. Six animals in each group underwent 60 minutes of renal ischemia followed by 90 minute reperfusion. Treated animals received alpha tocopherol (100mg/kg/bw) orally for 30 days prior to renal ischemia and reperfusion. Changes in free radical activity following ischemia and reperfusion in renal tissue were measured by estimating tissue lipid perosication, glutathione, and superoxide dismutase activity. Ninety minutes of reperfusion in ischemic kidney significantly decreased the superoxide dismutase and glutathione activity when compared with untreated animals whereas lipid peroxidation was significantly higher. In alpha tocopherol pretreated animals the lipid peroxidation was significantly lower in comparison to untreated rats and a significant increase in tissue superoxide dismutase and glutathione activity was observed. The above results suggest that pre treatment with alpha tocopherol can reduce the free radical injury caused by reperfusion of kidney in rats.

Keywords: free radicals ischemia reperfusion, and tocopherol.

MIS-11 Smoking or Health

Dr. Surya kant,
M.B.B.S, M.D. (GOLD MEDALIST), ASSTT. PROFESSOR, DEPTT. OF TB AND CHEST DISEASES, C.S.M MEDICAL COLLEGE LUCKNOW. UPGRADE K.G'S MEDICAL COLLEGE LUCKNOW. SECRETARY GENERAL INDIAN SOCIETY AGAINST SMOKING (ISAS).

Smoking is posing a major health problem worldwide in general and in India specifically. Around 1.26 billion people are smoker globally. In India, according to Indian council of medical research out of 184 million tobacco consumer, 20% cigerette smokers, 40% bidi smokers and rest are tobacco chewars. In India, 35% men and 12% women are smokers.

Smoking can lead to innumerous health hazards other than psycho social, behavioral problems, work loss and impact on economy. First reports of the association of smoking and disease began in the 1950s and since then more than 70000 research paers have been published worldwide relating with smoking and health hazards. It has been proven that there is a decrease in life expectancy in all smokers irrespective of their health status. 50% of smokers die of a smoking related illness. 4 millions tobacco related death per year occu worldwide. In India 2200 persons are dying daily due to tobacco related diseasesm. It can cause more than 25 type of cancer and 40 types of diseases in teh human body. Oral cancer, caner of pharynex, larynx, lung, oesophagus, are the man cancer attributed to smoking. This can effect almost each patient and system of the body including respiratory system, cardiovascular system , gastrointestinal system, gail blader, brain etc.

Chronic bronchitis, emphysema, lung cancer, heart attack, raised blood pressure, gangrene and cerebral strokes are most important diseases which one can have due to smoking. It can also lead to impotency and decreased sperm mortality in males, early menopouse in female and low birth weight baby and sudden infant death syndrome (SIDS) in babies of smoker mothers.

Peers of the smokers get affected unknowingly due to ill effects of passive smoking.

Smoking is not a habbit as it in supposed to be strong addiction, rather it is a stronger addiction than smack or heroin. As a ill effect smoke creats a feeling of pleasure by affecting to chemicals in the brain i.e norepinephrine and dopamine with in 10 seconds and later on forms basis of addiction.

The reasons why people start smoking are also very obvious. It may be due to quriosity, relief from worry, tension, etc. attention diversion poor pressure feeling, basic destructive instinct need to model like other and over all the impact of advertisement,

For cessation individual approaches and mass approaches are required. Individual approaches like behavioural techniques drug intervention or combination can be used. Few words of simple advice and motivation can increase quit rate. Among the drugs necoting replacement and bupropion can be used with some good results. In mass approach discouraging methods can be used against misleading advertisement and positive reinforcement can be used for smoking cessation. Cessation not only decreased burden of ill effect on body but also on society.

MIS-12 Absorption of glucose, water and electrolyte from commercialy available oral rehydration solutions in small intestine of rats.

Santosh L Wakode, Sushil C Mahapatra, Ashok Jaryal, Ramesh L Bijlani
DEPARTMENT OF PHYSIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI-110029

The efficacy of oral rehydration solutions (ORS) for the treatment of acute diarrhea is well established but the ideal composition of ORS remains controversial. The present study was conducted on 30 male wistar rats divided in to three equal groups. Polyethylene glycol (PEG) was used a s non absorbable marker to measure the net water absorption. The small intestine was perfused i9n situ at 0.5 ml/min with either Punarjal who based ORS (group I) [na 90 mEq/1, glucose 111mmol/l,. electrical (group II) [Na 51mEq/l, k20mEq/l, glucose 150mmol/l], enerjal (group III) [Na 22mEq/l, K 6.7 mEq/l, Glucose 237.5 mmol/l]. Net water absorption in group I was 0.85± 0.33 ul/min/cm, in Group II it was 00.48±0.25 ul/min/cm and in Group III it was 0.32±0.22 ul/min/cm. Group I showed significantly greater net water absorption compared to Group II ($p<0.05$) and

Group III ($p<0.001$). Net sodium absorption in Group I was 76.94±36.45 uEq/min/cm, Group II and III showed net secretion of –7.44±2.53 uEq/min/cm and –9.72±2.39 uEq/min/cm respectively. Net potassium absorption in Group I was 37.05±10.56 uEq/min/cm in Group II it was 22.24±9.21 uEq/min/cm and in group III it was 5.25±3.78 uEq/min/cm. The difference between group I and other two groups and group II and III was significant ($p<0.001$). Net glucose absorption in group I was 165.08±41.42 umol/min/cm. Thus the study shows that the rate of water, sodium and potassium is higher in group I (Pinarjal, WHO based ORS) than in other two groups in the perfusion model using rat intestine, and that the rate of sodium transport is dependent on ORS sodium content.

MIS-13 An alternate method to determine volume of water consumed in laboratory animals.

Panneer Selvam. P and Chandrashekar C.N.
DEPARTMENT OF PHYSIOLOGY K.M.C MANIPAL, EMAIL : SHEKARDON@YAHOO.COM

In certain behavioral/psycholpharmacological experiments involving especially taste aversion studies the volume of water certain fluids of low concentration consumed would be measured. Since prevalent procedure requires a specially designed glass burette to measure volume of water/other fluids intake, there is a need for an alternate simple method.

In our method, volume of water withdrawn confirmed by the difference in weight of the bottle with/ without correction for density variation. The error involved in resolving the volume from weight and density with and without correction for temperature was determined. The error was not significant. Therefore the difference in weight of container before and after drinking can be used to calculate volume intake.

MIS-14 EGG: A novel non-invasive technique

S.N. Sarbadhikari, P. Nayak and S.K. Saxena
DEPARTMENT OF PHYSIOLOGY, SIKKIM MANIPAL INSTITUTE OF MEDICAL SCIENCES, SIKKIM-737102, INDIA

The main function of the stomach is to digest and transport food. For that the physiologic processes involved are mixing, grinding and transporting consumed food. The necessary gastric motility is mainly controlled by electrical activity of gastric smooth muscle (GEA). Electrogastrography (EGG) is the recording of GEA from superficial cutaneous electrodes placed on the abdomen. Presently a lot of research is going on finding the utility of EGG in recognition of normal and abnormal gastric motility. It has been observed that variety of stressors like anxiety, cold-restraint result in a significant delay in emptying of a liquid meal. Cold pain and labyrinthine stimulation has been shown to inhibit antral motility and also gastric emptying of solid meal. Thus, EGG seems to be an ideal non-invasive and inexpensive method for diagnosing stress related gastrointestinal motility disorders.

Keywords : electrogastrography (EGG), gastric electrical activity (GEA), stress, gastrointestinal motility disorder.

MIS-15 Assay of micronuclei (MN) as a simple and effective method to assess the radio sensitivity in breast cancer patients.

Usha H, Pawan K. Dhar, G.K. Bhat, Department of Physiology, K.M.C. Manipal

Even though study of chromosomes may afford a far more accurate method of assessing radio sensitivity in cancer patients, yet it is technically difficult. MN assay are regarded as a suitable alternative, in that it is far more easier and quicker. It is possible to use MN assay of human peripheral blood lymphocytes as biological dosimeter in the field of radiation protection. The present study consisted of a comparison of MN assay between a control group (n=10) and breast patients (n=37) both before and after in-vitro irradiation with predetermined dosage. MN frequency showed a significant increase ($p<0.05$) in breast cancer patients when compared to healthy controls. Further Mn frequency showed a correlation with the stages of amlignancy.

MIS-16 A study of hemoglobin level, total leucocyte count and platelet count in cancer patients under going chemotherapy and radiotherapy

Dr. Sarada. N. , Dr. (Mrs). N. Sumati Devi, Dr. (Mrs) . M. Anita Devi*, Dr. Th. Tomcha Singh**

DEPARTMENT OF PHYSIOLOGY *, RIMS, IMPHAL., DEPARTMENT OF RADIOTHERAPY** RIMS, IMPHAL.

The present study was conducted in 50 (fifty) confirmed cases of cancer patients at the regional institute of medical sciences, imphal to evaluate changes in Hb%, total leucocyte counts and platelet counts. Blood samples were collected on weekly basis from 25 (twenty five) patients undergoing radiotherapy and at three weekly intervals from 25 cancer patients receiving chemotherapy. Hemoglobin levels were done by haemocytometry. Control studies were done in 50 normal subjects of same age and sex and the findings were statistically analysed. A statistically significant reduction was observed in the haemoglobin leve ($p<0.001$) total leucocyte count ($p<0.001$) and platelet cout ($p<0.001$) in the cancer patients at the end of either radiotherapy or chemotherapy.

MIS-17 Study of hemostasis after surgical trauma

Dr. Madhuri, Dr. Afzal Jabbar

DEPARTMENT OF PHYSIOLOGY, OSMANIA MEDICAL COLLEGE, HYDERABAD

The human organism has evolved complex mechanisms to ensure that no massive blood loss follows tissue damage and that circulating blood maintains its fluidity and shows response to any vascular insult by forming a haemostatic plug.

This project is aimed at achieving a greater understanding on the coagulation cascade and essential laboratory tests following surgical trauma.

In a study conducted at Osmania General Hospital in the department of Surgery 30 patients of different age groups and sex in the pre and post operative periods were evaluated for hemostatic factors using the recent laboratory techniques which includes estimation of Bleeding time by Ivy method, clotting time by capillary tube method, platelet count with a cell counter prothrombin time by using tissue thromboplastin, activated partial thromboplastin time using cephalin phospholipid and calcium chloride and thrombin time using thrombin reagent which also gives the fibrinogen concentration.

It was observed that in the post operative period there was a significant decrease in the B.T, C.T, APTT and T.T the fibrinogen concentration was increased. However, there was no significant alteration in the prothrombin time.

Following surgery, high level of coagulation markers are seen due to activation of fibrin forming and degrading pathways which maybe due to release of procoagulant activity from the wound.

Key words : Hemostasis, Pre and Post Surgery, Hemostratic tests.

MIS-18 IS ALCOHOL A HEALTH DRINK? – A STUDY IN ARMY PERSONS

Neena Srivastava, Pradeep Srivastava, Manish Kumar,

DEPTT. OF PHYAIOLOGY, C.S.M. MEDICAL UNIVERSITY, LKO. BASE HOSPITAL, LKO.

Regular consumption of alcohol either in low or in high concentration causes dependency on alcohol is called Alcoholism. Alcohol has some harmful effect for heavy drinkers but moderate drinkers tend to have better health and live long. Some researchers have found evidences that alcohol in moderate amount, infact improves the lipid profile and reduces risk of hear attack.

This study was performed in Army persons of Base hospital, Lucknow, aged 35 years and above. A total number of 90 cases (alcoholics) and 60 (non-alcoholics) controls were taken. A relationship of amount of alcohol consumption and lipid profile was established. In the present study cholestrol, triglycerides and HDl were observed to be significantly associated with the amount of alcohol intake, whereas no significant association was found in between LDL levels and amount of alcohol taken. HDL (good cholestrol) level was found to be increased in moderate drinkers (60-90 ml/day). Values of other lipids were found to be increased

significantly with increase in the amount of alcohol consumption per day. So alcohol in moderate quantity could be used to improve the health status, specially the cardiac health.

KEY WORDS – Lipid Profile & Alcohol

MIS-19 AWARENESS OF AIDS IN NEWL Y ADMITTED MEDICAL STUDENTS

DR. ASIM DAS,* DR. NEETA BACHLAUS*, DR. DHARITHRI PARMAR, DR. AMAL BHATTACHARYA*.

DEPT. OF PHYSIOLOGY,** DEPT. OF MEDICINE GOVT. MEDICAL COLLEGE SURAT.

INTRODUCTION: It is not clear why rates of mv infection have increased dramatically in some geographic areas while rates in neighboring countries remain stable over a period of years. However, several societal factors clearly have influenced the shape of the epidemic. It is advisable to know about the disease in detail specially by medical students as they are the backbone of society to treat and prevent the epidemic which is emerging.

AIM: To know about AIDS awareness in our newly admitted medical students.

MATERIALS AND METHODS : 120 newly admitted medical students at Govt. Medical College, Surat, Gujarat were intervied based on a prestructured questionnaire, age group: 16-18 years.

RESULTS: 94% know about mv and the resulting AIDS. 92% know about sexual route. 48% know about other routes of transmission. 82% knew AIDS is fatal. 44% knew about opportunistic infection and only about tuberculosis. 38% knew about treatment of AIDS. 30% said-it is curable, 44% -incurable and 26% did not know about the fate. The main source of information and education- audiovisual, newspaper and TV. Sex education was wanted in 42%. 62% suggested social isolation. 100% agreed for positive participation.

MIS-20 EFFECT OF URSODEOXY CHOLIC ACID ON COPPER-INDUCED OXIDATION OF LOW DENSITY LIPOPROTEIN ISOLATED FROM OBSTRUCTIVE JAUNDICE PATIENTS WITH HYPERLIPIDEMIA

Dr. (Mrs). A. Geetha

LECTURER (SS), P. G. DEPARTMENT OF BIOCHEMISTRY, BHARATHI WOMEN'S COLLEGE (AUTONOMOUS), NORTH CHENNAI

Background: Oxidation of low density lipoprotein (LDL) is a crucial step in the development of hyperlipidemia associated with various pathological conditions including hepatobiliary diseases and arteriosclerotic lesions. The oxidized LDL (ox-LDL) provokes the formation of anti ox-LDL antibodies, which are one of the mediator groups of inflammatory reactions in cholestasis. Ursodeoxy cholic acid (UDCA) is a well known drug for the treatment of liver abnormalities in chronic cholestasis and primary biliary cirrhosis. We have already reported the protective effect of UDCA on free radical mediated damage to DNA and mitochondria.

Aim: The aim of this study is to investigate the effect of UDCA on copper induced oxidation of LDL isolated from obstructive jaundice patients with hyperlipidemia and normal healthy volunteers.

Subjects and Methods : Blood samples were obtained from normal healthy volunteers (n=30) and from obstructive jaundice (OBJ) patients (n=43) with hyperlipidemia. LDL was isolated and oxidation was induced by 5mM CuSO4 with /without UDCA at different concentrations. LDL oxidation was assessed at different time intervals in terms of formation of conjugated dienes, hydroperoxides and 'thiobarbituric acid reacting substances' (TBARS). The change in the level of endogenous LDL á -tocopherol was also monitored simultaneously.

Results: The oxidisability of LDL isolated from OBJ patients was significantly higher and showed steep increase in the level of conjugated diene formation without any lag phase. In normal samples the oxidation proceeded slowly with a lag phase. This was also evidenced by the level of formation of hydroperoxides and TBARS. The basal level of LDL á – tocopherol was significantly low in OBJ samples. UDCA was found to delay the oxidation of LDL in a dose dependent manner with prolonged lag phase at

different levels in both normal and OBJ samples. The consumption of á – tocopherol was found to be minimum in the presence of UDCA.

Conclusions: The results of this investigation show that there is a high susceptibility of LDL to oxidation in OBJ cases and this may be due to low endogenous LDL á –tocopherol content. UDCA minimizes LDL oxidation in dose dependent manner, which is an additional evidence for its antioxidant nature. So one of the way of actions of UDCA may be the preventive effect on LDL oxidation in cholestatic liver diseases. The drug may also be recommended for the treatment of arteriosclerosis in which the pathological consequences of ox-LDL formation such as transformation of macrophages and polymorphonuclear lymphocytes as neoantigens and immunological reactions against these cells may be prevented.

Key Words : ursodeoxy cholic acid, obstructive jaundice, hyerlipidemia, LDL, á - tocopherol.

MIS 21: Role of oxidative stress in aging: a case control study

Rajkumar Yadav
DEPARTMENT OF PHYSIOLOGY, A.I.I.M.S., NEW DELHI

The purpose of this study was to assess the level of oxidative stress in an elderly as compared to a young age group by measuring serum MDA (Malonaldehyde). Sera from 53 healthy elderly adults (age 57.81 + 8.15 yr) 9 females and 44 males, BMI (20.2 + 2.1 Kg/m^2) were used. Subjects with chronic disease, smokers, alcoholics and /or subjects on vitamin supplements were excluded. Diet was assessed by a questionnaire and was found to be adequate in both groups. Lipid profile was also done to eliminate dyslipidemias. MDA was estimated spectrophotometrically. The mean MDA levels in geriatric age group were 2.24+ 1.08 while in young age group were 1.123 + 1.11 nmolar/ml, the differences was statistically significant ($p<0.05$) the results suggest that oxidative stress, measured by MDA in the study is higher in elderly as compared to young age group. (All the values are in mean + SD).

MIS-22 *STUDY* OF SERUM *TUMOR* NECROSIS FACTOR-a. IN PRE-ECLAMPSIA

Dr. Sazina Muzammil.; Dr. Osha Singhal.; Dr. Rajiv Gulati. and Dr. Imam Bano..
*DEPARTMENT OF PHYSIOLOGY, **DEPARTMENT OF OBSTETRICS & GYNAECOLOGY

Serum TNF-a. was determined in 10 normal and 30 pre-eclamptic pregnancies as such and with special reference to maternal age, parity and mean arterial blood pressure. TNF-a. levels were determined using sandwich ELISA technique. The serum TNF-a level in normal pregnant females was 9.3:t9.56 pgiml. while in pre-eclamptic pregnancies it was 67.66:t61.83 pg/ml. This increase in TNF-a. was highly significant ($p < 0.001$).

Subjects were divided into two groups according to age i) Group I age < 25 yrs. ii) Group II age> 25 yrs. There was no significant change in TNF-a. in two age groups in both controls and pre-eclamptics.

TNF-a. was studied in two parity groups. Primiparous and multiparous. No significant change was observed in TNF-a. levels according to parity.

Preeclamptic pregnant women were divided into two groups according to mean arterial BP I) Group I MBP 110-115 mmHg. II) Group II MBP > I 15 mmHg. Levels of TNF-a. did not change significantly with increase in mean arterial BP above 115 mmHg.

KEY WORDS: SERUM. TNF-a., PRE-ECLAMPSIA

PH-01 Evaluation of the role of potassium channels in acute morphine withdrawal syndrome.

Vikas Seth, J.N. Sinha
DEPARTMENT OF PHARMACOLOGY, INDIRA GANDHI MEDICAL COLLEGE, SHIMLA-1.

In the present study, we investigated the role of potassium channels in morphine withdrawal syndrome

using the acute dependence model of Yano and Takemori (1977). Since we were interested in protection as well as facilitation of the acute morphine withdrawal, we evaluated different dose combinations of morphine and naloxone In the present set-up, giving morphine 125 mg/kg s.c. and 4 hr. later naloxone 10 mg/kg s.c. was found to induce maximum response (medium score 10). This dose combination was used for protection experiments. Morphine in doses of 100 mg/kg s.c. and 4hr. later naloxone 2mg/kg induced withdrawal syndrome of median score of 3. This dose combination was used for facilitation experiments. Minoxidil (opener) and glibenclamide (blocker) were used as pharmacological tool to study potassium channels. Prior treatment of the mice with different doses of minoxidil produced dose related inhibition of the withdrawal syndrome. The highest dose used (minoxidil 100 mg/kg) completely blocked morphine withdrawal syndrome. Prior treatment of mice with different doses of glibenclamide produced dose related facilitation of morphine 100mg/kg and naloxone 2mg/kg induced withdrawal syndrome. In 50 mg/kg dose, glibenclamide facilitated the response to the extent that median score became 10. Interestingly, glibenclamide could also block the inhibitory effect of minoxidil on the development of withdrawal syndrome. It is therefore evident that potassium channels play an important role in the development of acute experimental opioid withdrawal in mice.

PH-02 CARDIOPROTECTIVE POTENTIAL OF WITHANIA SOMNIFERA IN THE EXPERIMENTAL MODEL OF MYOCARDIAL NECROSIS IN RATS

Arya DS, Mohanty I, Bansal P, Saxena A, Gupta SK.
DEPARTMENT OF PHARMACOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES

The present study evaluated ther cardioprotective potential of hydroaachoholic extract of Withania somnifera (Ws) in the isoproterenol (ISP) model of Myocardial necrosis. Further, the effect of chronic effect of Ws on myocardial endogenous antioxidants, haemodynamic and histopathological parameters were also studied. Hydroalcoholic extract of Ws was administered orally to Wistar albino rats (150-200 g) of drug control and treated group at doses of 25, 50 and 100 mg/kg for 4 weeks. On the 31st day hemodynamic parameters systolic, diastolic and mean arterial pressure (SAP, DAP, MAP), heart rate (HR) left ventricular and dislotic pressure (LVEDP), left ventricular peak (+) dP/dt and (-) dP/dt were recorded. Hearts were removed and processed for histopathological and biochemical studies : myocardial enzymes, creatine phosphokinase (CPK) and lactate delydrogenase (LDH), antioxidant parameters: malondialdehyde (MDA), glutathione (GSH), superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx) were estimated. On day 29th and 30th the rats of ISP control and drug treatment group were administered ISP (85 mg/kg), subcutaneously at an interval of 24 h. A significant decrease in GSH ($p > 0.05$), activities of SOD, CAT, LDH and CPK ($p<0.01$) as well as increase in MDA level ($p>0.01$) was observed in the control group rats as compared to sham group. The changes in levels of protein and GPx was however, not significant. A slight decrease in the hemodynamic parameters was also recorded in the control group. Histopathological examination also confirmed myocardial damage. Ws (25,50,100 mg/kg) does significantly reversed myonecrosis, augmented endogenous antioxidants and restored haemoodynamic parameters though not significantly. The results of the present study clearly indicate that Ws provides significant protection in ISP model of MI. The antioxidant mechanisms seem to play significant role in its cardioprotection.

PH-03 FEXOFENADINE : ITS SAFETY AND EFFICACY IN THE INDIAN POPULATION SUFFERING FROM ALLERGIC RHINITS AND CHRONIC URTICARIA

Medhi B., U. Gupta., Puri R.
DEPARTMENT OF PHARMACOLOGY O& ENT. MAMC & LNJP HOSPITAL, NEW DELHI –01

The present study was designed to evaluate the safety and efficacy of Fexofenadine in patients receiving treatment for allergic rhinitis and chronic urticaria in the Indian population. A total number of two hundred patients of either sex with similar demographic profile were included in the study according to the inclusion and exclusion criteria. These patients were receiving fexofenadine 120mg O.D. for allergic rhinitis and fexofenadine 180 mg o.D. for chronic urticaria for o7 days. Patients were advised to visit on the 3rd day and

on the 7th day of completion of treatment for adverse effect and efficacy evaluation. On the 1st day baseline investigations (LFT & ECG) were carried put. The same investigations were repeated on the 7th day of completion of treatment. The efficacy was evaluated was evaluated on the basis of symptoms evaluation scale score and medication effectiveness scale score at baseline, on the 3rd day and on the 7th day of completion of treatment. And during these visits adverse effects of fexofonadine were evaluated. Results indicated that fexofenadine is highly effective in the Indian population (P>0.001). Patients complained of dyspepsia, throat irritation, throat irritation, fatigue etc., but none of the patients had ECG changes. So it was concluded that fexofenadine is highly effective and well tolerated in the indian population suffering from allergic rhinitis and chronic urticaria.

Key words : Fexofenadine, Allergic Rhinitis, Chronic Urticaria.

PH-04 A CRITICAL APPRAISAL OF PRESCRIBING INFORMATION TO THE PATIENTS IN A DERMATOLOGY OUTPATIENT DEPARTMENT OF A TERTIARY CARE HOSPITAL

M.C. GUPTA, S. BHANWRA, S. DHILLON, S. DAYAL AND V.K. JAIN
DEPARTMENTS OF DERMATOLOGY AND PHARMACOLOGY, POSTGRADUATE INSTITUTE OF MEDICAL SCIENCES, ROHTAK.

Topical steriods are the most commonly prescribed drugs to be used on skin. The clinicians need to be aware of the best approach for their appropriate use so as to achieve satisfactory therapeutic results without having serious adverse effects. This study was carried out to critically evaluate the prescribing information in correlation with the information as imparted to the patients. A total of 300 patients receiving topical steroids were randomly selected. Their prescriptions were analysed and they were interviewed through a questionnaire. The results revealed that most of the patients were given adequate information regarding frequency, duration and the site of application, while only very few patients were aware of the amount of the drug to be applied and the method of application. Since topical steroids can produce a lot of adverse effects not only in relation to skin ibut also the body as a whole, it is important to give a full prescribing information to the patients for an appropriate and safe use of topical steroids.

PH-05 AN EXPERIMENTAL EVALUATION OF ANTICONVULSANT ACTIVITY OF VITEX NEGUNDO

R.K. Gupta dn V. Tandon
DEPARTMENT OF PHARMACOLOGY, M.G. INSTITUTE OF MEICAL SCIENCES, SEVAGRAM – 442 102 DISTT. WARDHA (MS)

The effect of leaf extract of vitex negundo was studied on maximal electroshock seizures (MES) in rats and pentylenetetarazole (PTZ) induced convulsions in albino mice. The oral administration of vitex negundo in the does (250, 500, 1000 mg/kg) did not show protection against MES to any significant extent but significant postical depression was observed in the doses of 500 & 1000 mg/kg in comparison to control. However, sutherapeutic dose of vitex negundo (100 mg/kg po) potentiated the anticonvulsant action of diphenylhydantoin. The test drug in the dose (1000 mg/kg po) showed 50% protection in clonic seizures and 24 hours mortality against PTZ induced convulsions. It also prolonged time of onset, decreased number and duration of convulsions. Vitex negundo potentiated the anticonvulsant activity of carbamazepine. These findings suggest that vitex negundo possesses anticonvulsant activity particularly against PTZ induced convulsions. Moreover the potentiation of diphenylhydantoin and carbamazepine by vitex negundo indicates that it may be useful anticonvulsant as an adjuvant therapy and can lower the requirement of diphenylhydantoin and carbamazepine. The mechanism of its anticonvulsant action appears to be due to increasedf level GABA in CNS.

PH-06 Effect of corticosteroid impratropiam and terbutaline inhaler on recovery from acute asthma

Author : N.S. Raj, R. Guleria
ADDRESS : SRB CENTER FOR CLINICAL PHARMACOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI – 110 029

Ovjective : To observe the effect of corticosteroid, ipratropium and terbutaline inhalers on the recovery from acute asthma.

Method : Forty-four adult asthma patients (15 male, 29 females) were admitted in medical ward for treatment of acute asthma. All the patients with other disease and complications were excluded from this study. Written consent was obtained from all the patients. The patients were given oxygen during first 12 hours of admission 18 patients (5 male, 13 females, age 41.2+16.6 years; weight 58.3+8.8 kg) were treated with Beclomethasone dipropionate inhaler 200 ug/dose 2 puffs 8 hourly. 12 patients (4 male, 8 females; age 44.+18 years weight 58.3+6 kg) were treated with Impratropium bromide inhaler 20 ug/dose 2 puffs 8 hourly. 14 patients (6 males, 8 females, age 48.7+18 years, weight 58+6.3kg.) were treated with Terbutaline sulphate inhaler 250 ug/dose 2 puffs 8 hourly. Patients were discharged when their condition improved and remained stable for 12 hours.

Results : 18 patients who were treated with beclomethasone had average duration of treatment for recovery 5.4+2.8 days (t, test; $p<0.03$) 12 patients who were treated with ipratropium had average duration of treatment for recovery 8.4+3.2 days.

Conclusion : Patients treated with corticosteroid inhaler had significantly ($p<0.03$) shorter duration of treatment for recovery from acute asthma. Patients treated with ipratropium inhaler had longer duration of treatment for recovery from acute asthma.

PH-07 THERAPEUTIC DRUG MONITORING (TDM) IN EPILEPTIC PATIENTS – DOES IT HELP>

S.K. GARG, M.C. GUPTA, S.S. HANDU AND V.K. BHARGAVA
DEPARTMENTS OF PHARMACOLOGY, PGIMER, CHANDIGARH AND PGIMS, ROHTAK

A retrospective analysis of therapeutic drug monitoring data for phenytoin (DPH) and carbamazepine (CBZ) was carried out to assess its utility to the prescribing physician. A total o 239 patients, 116 on DPH and 123 on CBZ were put into four categories based upon plasma drug concentration i.e. therapeutic, sub-therapeutic, toxic and not detectable. Clinical records of these patients were examined to see the follow up action taken. In CBZ group 93 patients (75.6%) had therapeutic, 22 (17.9%) sub-therapeutic, 3(2.45) toxic and 5(4.1%) sub therapeutic, 12 (10.3%) toxic and 3 (2.6%) no detectable levels of the drug. In all these patients a necessary folow up action was initiated. The study revealed the wide interpatient variation of plasma drug levels and the usefulness of carrying out TDM of DPH and CBZ to help the clinicians in optimizing the dose for a more effective seizure control.

PH-08 Effect of KPD (a herbal formulation) on blood glucose, cholesterol and triglyceride on alloxan induced rats.

Saraswati Yadav, Srinivasan K. K.m Chandrashekar C. N., Shivanand Nayak B
DEPARTMENT OF PHYSIOLOGY, KMC MANIPAL

The study was undertaken to test the effect of KPD (a herbal formulation) on blood glucose, cholesterol and triglyceride levels. The rats of 2-3 months old and weighting about 120-180g weight were induced diabetes by i.p. injection of alloxan at 100 mg/kg body weight. The diabetic state was confirmed in the group after a period of 7 days of stabilization (blood glucose 349.16 ± 28.62) KPD was administered intragastrically once daily in the morning between and 10 a.m. at 500 mg/kg body weight.

The blood glucose was determined again after 15th and 30th days of treatment which was found to be 210.5 mg ± 31.62 and 210.3 ± 8.26 respectively. Cholesterol and triglyceride estimation was done with the

last sample only after 30th day. It was observed that the mixture has the ability to exert moderate hypoglycemic effect. There was no significant alteration in the cholestrerol and triglyceride levels.

PH-09 Effect of KPD (a herbal formulation) on blood glucose, body weight and testicular changes in alloxan induced diabetic rats.

Rajashree B. K., Shrinivansan K.K., Chandrashekar C. N., Gopalkrishna K.
DEPARTMENT OF PHYSIOLOGY, KMC MANIPAL

The study was undertaken to test the effect of KPD a herbal formulation on blood glucose, body weight and testicular changes. The rats of 2-3 mionths old, weighing about 120-180g were induced diabetes by intraperitonial injection of alloxan at 100 mg/kg body weight. The diabetic state was confirmed in the group, after a period of 7 days of stabilization (blood glucose 349.16 mg ± 28.62). Than KPD was administered to the group intragastrically, once daily in the morning between and 10 a.m. at 500 mg/kg body weight. The blood glucose was determined again after 15 days and 30 days of treatment (210.5 mg ± 31.62 and 210.3 mg ± 8.26 respectively).

Testicular changes were observed after 30 days of treatment and sacrificing the animal. Results have shown that, the mixture has the ability to exert moderate hypoglycemic effect and there was no protective action against body weight loss. Neither it could prevent weight loss of testis and cauda epidydimis nor revert the sperm count.

PH-10 Title : A study of prescribing pattern f drugs used in Manic depressive disorders in psychiatry OPD of tertiary care teaching hospital in Uttaranchal.

Bhardwaj Reena, Sharma Taruna, Patnaik Shaktibala, Dhasmana D.C., Mishra K.C.
DEPTT. OF PHARMACOLOGY, HIMALAYAN INSTITUTE OF MEDICAL SCIENCES, JOLLY GRANT, DEHRADUN – 248140

Objective : Psychotropic drugs are widely prescribed, but how new classes of psychotropic medications have affected prescribing pattern has not been well established. Present study was conducted to find out the prescribing pattern in psychiatry practice.

Methods : Prescriptions were collected at random from psychiatry OPD of a tertiary care teaching hospital (N = 110) over a period of 6 months. Patients suffering from manic depressive disorders, diagnosed according to ICD-10 criteria were included in this study.

Results :

Total number of patients in manic – depressive disorder = 110

Total number of drugs prescribed = 334

Average number of drugs per prescription = 3.0

Fixed dose combination = 24

Total number of oral formulations = 290

- Tablets = 258
- Capsules = 13
- Syrup = 19

Total number of parenteral preparations = 44

Out of 334 drugs, commonly prescribed drugs were antipsychotics 111 (33.2%), anticholinergics 54 (16.1%), antiseizure 51 (15.2%), antidepressants 22 (6.5%), vitamins and minerals 36 (10.7%), anxiolytics 16 (4.7%), followed by lithium 8 (2.3%),

Among antipsychotics, Haloperidol (52.2%) was most commonly prescribed drug, followed by Olanzepine (34.2%). Among anticholinergics, Trihexyphenidyl (92.5%) was most commonly prescribed durg.

Among antiseizure durgs, sodium valproate (96%) was most commonly prescribed, whereas among antidepressants, venlafaxine (45.4%) was the most commonly prescribed drug.

Conclusion : This preliminary study may help us to promote rationale use of drugs which could be facilitated by periodic feedback to the prescribers.

PH-11 Double-Disc synergy test for Detection of Extended – Spectrum Beta-Lactamases.

*** Arora (Ray) Suranjana and Bal Manjusri**
SECTION MICROBIOLOGY, DEPARTMENT OF PHYSIOLOGY ; UNIVERSITY COLLEGE OF SCIENCE AND TECHNOLOGY; CALCUTTA UNIVERSITY; KOLKATA – 700009
* PERMANENT ADDRESS : BLDEA'S SHRI B.M. PATIL MED COL. BIJAPUR, KARNATAKA.

Detection of clinical strains with Extended-spectrum beta lactamases (ESBL) related resistance phenotypes is becoming important in clinical microbiology. One of the reliable test is Double Disk synergy test, where a beta-lactam disk and that of a beta-lactam/beta-lactamase inhibitor, are placed on a lawn of the test organism on an agar plate. If ESBL is present in the organism, the zone of inhibition around the beta-lactam/betalactamase inhibitor should be enhanced than that of the beta lactam disk, giving rise to an elliptical or key hole zone in between the disks. In our study we determined the in vitro activity of 12 antimicrobial agents, which included third generation cephalosporins, by disk diffusion testing and minimum inhibitory concentration (MIC) method on fifty-one hospital isolates. We identified the ESBL producers using NCCLS criteria and than confirmed it by double-disk synergy test (DDST) using discs of amoxicillin, cefortaxime, ceftriazone, cefpodoxime by themselves and combined with beta lactamase inhibitors like clavulanic acid. The disc were placed 15 mm apart on a lawn of bactera and incubated for 18 hrs. at 35^0 C. The cnhancement of zone of inhibition between the beta-lactam disk and that containing the beta-lactamase inhibitor was noted. Of the fifty-one clinical strains. Fifiteen were found to have zone diameter in DDST greater than 5 mm, phenotypically confirming ESBLs production.

RES-01 EVALUATION OF PULMONARY FUNCTION PARAMETERS IN WORKERS EXPOSED TO YARN FIBERS IN A SPINNING MILL IN LUDHIANA.

Subhasis Das, Joydeep Singh, John Pramod & Jaideep J Rayapudi.
DEPARTMENT OF PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE, LUDHIANA 141008.

Adverse effects of "fly" generated during processing of yarn fibers include cough, bronchitis, byssinosis & bronchial asthma and is typically evident on the first day back to work after an absence of 48 hours or more. The objectives of the study were to assess adverse health effects of organic dusts generated during the processing of cotton fibers on textile mill workers and to compare with normal subjects who are not exposed to any pollutants. In 30 workers who were exposed to fly during the processing of cotton in a local cotton-spinning mill, a careful history was taken and a physical examination was done. Subsequently the subjects underwent spirometric measurements at the beginning and at the end of the first shift after a break of 48 hours and on the fourth day of the workweek. Thirty controls (age and sex matched) working in areas where there was no exposure to organic dust or other pollutants were also studied. Parameters such as FVC, PEFR, FEV_1 and MVV were compared between the two groups.

RES-02 Study of Pulmonary Functions of School Going Children in Relation to Age, Height & Weight

Shraddha Singh, Deepak Saxena, S. Tewari, U. S. Pandey, Suryakant
DEPT. OF PHYSIOLOGY, CSMMU, LKO.

Pulmonary function tests are an essential part of the investigation of many respiratory diseases. The present study was planned to determine the pulmonary functions in healthy school going children of Lucknow.

262 boys & 240 girls 9-16 years were selected from City Montessori School Lucknow for PFT. The children were excluded from study who had sign/symptoms of structural deformity of thoracic cage, major medical illness of deformity, evidence illness or deformity, evidence of grossly enlarged tonsils, adenoids, acute upper or lower respiratory tract infection within seven days of the study, chronic respiratory diseases, allergic diseases any cardiac diseases, anemia, smokers, family history of asthma, complete physical examination, particularly for respiratory & cardiac system were done. Age, height, weight were recorded by spirolab – II computerized machine. Statistical analysis were done by using students "t" test. The FVC level of boys were significantly higher ($P < 0.01$) than girls. FEVI were also higher in boys than girls though it were not statistically significant. The level of PEFR were significantly higher in boys than girls. These parameters were highly correlated with age, height & weight of boys & girls. All the co-relations were highly significant. In boys maximum correlation was observed in relation to height, followed by weight & age. The girls maximum correlation was observed in relation to weight followed by age and height.

Key words : PFT – Pulmonary function test FEVI – Forced Expiratory Volume.
FVC – Forced Vital Capacity PEFR – Peak Expiratory Flow Rate.

RES-03 ECG Change in Asthmatic Patients

Dr. Manoj Kumar, Dr. Narsingh Verma, Dr. Suryakant Prof. Uma Shanker Pandey and Prof. Suneeta Tiwari
DEPT. OF PHYSIOLOGY AND DEPT. OF CHEST AND TB*, CSM MEDICAL UNIVERSITY, LUCKNOW

Previous studies on bronchial asthmatics have suggested a dysfunction of neural control which is responsible for the clinical presentation of the disease. In the present study, twenty asthmatic patients of age group 20 to 30 years were chosen whose asthma had developed within the last five years and who had no cardiac problem and/or diabetes. A sample of normal population of the same age group was taken for comparison. ECG was recorded at lead L2. A slow rising R wave was noticed in case of the said patients which is indicative of parasympathetic hyperactivity.

RES-04 Cross sectional Spirometric study of asbestos factory workers

Sandeep Bhattacharya, U S Pandey, N.S.Verma
DEPARTMENT OF PHYSIOLOGY, K.G.M.C. LUCKNOW

Asbestos is a known occupational health hazard for workers of factories utilizing asbestos cement as one of its raw material. Inhalation of asbestos dust can cause damage to the pulmonary membrane structure and mechanical efficiency. This leads to alteration in the functional properties of the lungs, resulting in various respiratory diseases. Duration of exposure, ageing and smoking can together complicate pulmonary functions. Pulmonary function tests give an idea about the condition of pulmonary dysfunction. Hence this study was undertaken with a view to analyze the respiratory status of workers of an asbestos-using factory in Lucknow.

A total of 82 male workers from UP Asbestos Ltd, Lucknow, were selected for the study. In each case, age of the subject, smoking habits, type of work, duration of exposure, type of irritants, physical status and health conditions were recorded through questionnaire. Subjects with less exposure period were excluded from the study. Clinical data were collected from the workers and pulmonary function test was carried out in the Department of Physiology, K.G.M.C. Lucknow. Same procedure was undertaken for the controls. Twenty-three age group matched non-smoking normal male controls were selected from non-industrial area.

Among 82 workers in the exposed group, 29.3% (n=24) showed restrictive changes and 17% (n=14) showed an obstructive changes in the Pulmonary Function test. Normal Pulmonary Function test was obtained in 35.4% (n=29). The FVC showed a non-significant decrease as compared to control group, 2.37 ± 0.65 and 2.61 ± 0.26. FEV_1 showed a significant decrease from 2.49 ± 0.24 in control group to 1.94 ± 0.72 in exposed group. PEFR and ratio of FEV_1/FVC also showed a significant decrease as compared to the control group.

RES-05 The effect of 3-5 years of tobacco smoking on Aerobic capacity

Ravindra P. N., Kulkarni S.B.
DEPARTMENT OF PHYSIOLOGY, KIMS, HUBLI, KARNATAKA

Tobacco consumption (Smoking) seems to be increasing throughout the world especially among yuongsters. At the same time health consciousness and concren in maintaining physical fitness is also increasing. These two trends are contradictory to each other.To our knowledge few studies are done on the effect of short-term smoking on aerobic capacity particularly on the effect just after smoking.

Methodology : The present study was conducted on 30 apparently healthy sedentary male students (18-25 years) with history of smoking for 3-5 years duration. Equal number of age and sex matched students were taken as controls. All underwent submaximal Treadmill exercise test, heart rate and the work done was determined at the end of the exercise. The aerobic capacity (VO2 max) was calculated from Astrand's Nomogram.

Results : Aerobic capacity was significantly lesser in smokers (s) compared with non smokers (NS) expresed in ml/cm/min (NS = 14.09 ± 272, S = 12.37 ± 0.91) but when expressed in ml/kg/min showed no difference statistically (NS = 38.83 ± 2.53, S = 39.65 ± 5.73). This is attributed to lower body weight in smokers. In smokers VO2 max decreased immediately after smoking when expressed in both the units.

Conclusion : Short term tobacco smoking decreases aerobic capacity at submaximal exercise. Any condition, which influences the anthropometric variables, has to be interpreted cautiously. Smoking habit may impair the work demanding heavy labour and performance in competitive sports of endurance type.

RES-06 Effect of 2-5 Years of Tobacco Smoking on Lung (Ventilatory) Function Tests

Bajentri A.L., Veeranna N, Kulkarni S.B. , Deptt. of Physiology, KIMS, Hubli

Smoking is a pernicious scourge of the world todya. There is paucity ofliterature on effect of acute smoking and lung function. The present work is undertaken to study the effects of 2-5 years tobacco smoking on lung (ventilatory) functions.

Methodology : The study group consisted of 30 male young healthy subjects with history of smoking of 2-5 years duration on an average of 10 cigarettes per day and free cardio-pulmonary diseases. The lung function tests were carried out usine electronic spirolyser.

Results : There was a significant lowering of the following parameters in smokers VC, IRV, IC, FVC, FEVI, MMEF, PEF, MEF 75 and MVV.

Conclusion : This study shows the 2-5 years of tobacco smoking leads to a definite tendency to narrowing of both large and small airways, although from the clinical standpoint the values obtained in the smoker group do not appear to be abnormal.

Key words : *Smoking, Pulmonary Function Tests.*

RES-07 Lung Volumes in Relation to Height, Weight and Body Surface Area in Young Adults of Assam.

Dr. (Mrs.) Wasima Jahan.
DEPTT. OF PHYSIOLOGY, ASSAM MEDICAL COLLEGE, DIBRUGARH, ASSAM.

In the presente study pulomnary function tests (VC, FVC, FEVI, FEV% PEFR And FEF 25-75%) were evaluated among 150 young healthy medical students, both male and female, Physical parameters like age (yrs), height (cm), weight (kg) and body surface area (sq m) were also measured. The data's were statistically analysed. The average female values showed a reduction compared to adult male subjects. Among both male and female progressive increase in ventilatory functions were observed with increase in height, weight and body surface area. Among males mean VC, FVC, FEVI, PEFR and FEF 25-75% were found to be 3.69 (0.99) litres, 3.20 (0.89) litres, 6.87 (2.10) litres, 4.68 (1.4) litres. The corresponding figures for females were

2.99 (0.44) litres, 2.75 (0.45) litres, 2.39 (0.46) litres, 5.28 (1.38) litres, and 3.92 (1.02) litres.

The correlation cofficient of physical parametres (ht, wt, bsa) with lung funcitons (VC, FVC, FEVI, PEFR, FEF 25-75%) was also done. The tests are commonly used parameters in assessing the pattern of ventilatory impairment in chest disease patients and in epidemiological studies exposed to toxic dust and fumes. When compared with othe Indian subjects a wide variation of these parameters in Indian subjects was observed which attributed to regional variation, pollution and climate etc.

RES-08 Four Quadrant Analysis Method As A Screening Technique for Comparing The Respiratory Functions of Non Smokers Versus Smokers.

Dr. Ashutosh Bodhe, Dr. L. N. Joshi, Dr. Dinesh Maskeri
DEPT. OF PHYSIOLOGY, T. N. MEDICAL COLLEGE AND B.Y.L NAIR CHARTIABLE HOSPITAL, MUMBAI CENTRAL, MUBAI-400 008

Smoking leads to deterioration in PFT : an established fact. We studied the abnormalities of PFT in smokers using an unique four quadrant analysis method using MBBS students as volunteers (Control Groups non smokers) and comparing their results with those of age matched smokers of similar background. All the PFT parameters were recorded on a jaeger's computerized spirometer. The four quadrants were plotted with FEV1 /FVC (%) as y-axis, FVC observed/FVC predicted (%) as x-axis with 75% FEV1/FVC and 70% percentile FVC as 0,0 abscissa respectively, dividing the observed values into four quadrants normal, obstructive, restrictive and combined patterns. Smokers exhibited mainly an obstructive pattern, the non-smokers largely fell into the normal pattern. The unpaired 't' test was used to compare variation of mean values between smokers and non smokers. The quantitative and qualitative relevance of the changes in PFT pattern seen shall be discussed with reference to the chronic inflammation and bronchospasm seen in prolonged cigarette smoking.

RES-09 Effect of Aging On Lung Functions

Dr. Nusrat Aziz, Dr. Afzal Jabbar
DEPT. OF PHYSIOLOGY, OSMANIA MEDICAL COLLEGE, HYDERABAD

Aging is an involutionary process which operates cumulatively with the passage of time and which is revealed in different organ systems as inevitable modification of cells, tissues and fluids. These changes also occur in repiratory system and effects of these on lung ventilation which is the basis for lung functions at rest and during dynamic performance has been studied. This decrease in ventilatory function makes an old person unfit for quick and effective adaptive ability required in muscular efforts. This study was aimed to show the mainfestations ot these so that it would be helpful for future studies methods for prevention or delay of these changes. The subject include healthy male and female of age group 60-70 yrs., 71-80 yrs. and 81 + years as different grups divided age wise along with control gruop which inclueded males and females of age grup 20-40 years. Medspiror was used and results analyzed. The subjects showed significant decrease in FVC FEV1 PEFR and MVV indicating respiratory deficiency which can be atributed to increased rigidity of toracisc cage, reduction of elastic lengthening and elastic recoil of tracheobronchial tree, weakness of intercostals muscles and therefore decreased to and for movement of respired air which alos corresponds to decrease in MVV is seen.

Key words : aging, lung functions, medspiror.

RES-10 Post Prandial Study of Lung Functions

Dr. D. Joya Rani, Dr. Afzal Jabbar
UPGRADED DEPT. OF PHYSIOLOGY, OSMANIA MEDICAL COLLEGE, HYDERABAD

The study was planned to see the effect of lung functions preprandial and immediate postprandial state.

The study was conducted at Clinical Physiology Laboratory, Dept. of Physiology, OMC on 20 Male Subjects with Age groups 30-57 yrs. using a Medspirar, wer tested preprandial and after a major meal.

The various parametrs of lung function like FVC, FEV1, FEV/FVC and MVV showed a decrease in values in postprandial state. These decreased values after a major meal is due to mechanical disadvantage which the diaphragm has to face as a result of filling of stomach to its maximum capacity.

The limitation of ventilation following a heavy meal imposes a hazard as a result of which physical activity over and above the basal level should not be resorted to

Key words : Lung Functions ; Pre & Post prandial state; Medspriar.

RES-11 PULMONARY FUNCTION TESTS IN CASES OF CARCINOMA LUNG AFTER RADIOTHERAPY

D.K AGRAWAL*, P.GULATI, S.A.SIDDIQUI AND R.BHARGAVA
DEPARTMENT OF PHYSIOLOGY, JAWAHARLAL NEHRU MEDICAL COLLEGE
ALIGARH MUSLIM UNIVERSITY ALIGARH
PRESENTER : - DR. D.K. AGRAWAL,
PROFESSOR, DEPARTMENT OF PHYSIOLOGY, J.N. MEDICAL COLLEGE, AMU
ALIGARH U.P. - 202002

AIMS AND OBJECTIVES – The present study was planned to assess improvement or decrement of pulmonary functions in cases of carcinoma of the lung after radiotherapy.

INTRODUCTION – Radiation therapy to treat the thoracic malignancies is used since early 20th century. Various workers detected beneficial as well as harmful effects on lung functions. Earliest paper presented by Grooves and Colleagues reported lung damage due to radiation. The lung damage in radiotherapy will depend on the dose, frequency and duration of radiation. In cases of malignancies of lung treated with radiotherapy variable results have been obtained. In some cases there was a decrement in lung function (Kaufman et al, 1986), no change was found by (Saunders et al, 1978, Fazio et al, 1979), while improvement in lung function in cases of carcinoma of lung treated with radiotherapy was reported by (Choic et al, 1985).

OBSERVATIONS AND RESULTS – Study was performed on ten cases of carcinoma of lung, the mean age of the group was 61.75±19.09 yrs, average height was 161.5±2.02 cms and average weight was 50±5.66 kgs. Pulmonary functions of these patients were recorded on a computerized Spirometer (Spirowin 99), at first visit before start of radiotherapy, at second visit one month after radiotherapy and at third visit six months after radiotherapy. The readings of the first visit were treated as controlled reading and were compared with the predicted values of PFT given by Spirowin 99. Mean of the three visits were determined and the percent mean reduction between visit one, visit two and visit three were determined. All the values of the parameters of lung function were compared with the mean values of percentage of predicted values.

It was concluded in the study that there was improvement in the value of FEV_1, PEF and FEF (25-75%) and V_{max} 50% when percent mean change between visit one and three was determined. The value of FEV_1 was found significantly increased after radiotherapy. Effect on pulmonary functions depends on balance between direct tissue loss due to radiation fibrosis and the traction on adjacent lung tissue produced by fibrosis, which tends to maintain or increase patency of the airways. Patients with markedly reduced reserve (as with lung cancer) have much less function to loose in the irradiated areas and fibrosis. Volume loss by radiotherapy have a distending effect on the airways of lung providing counter acting balance and overall little loss or small gain.

RES - 12 Study of Best Predictor for Pulmonary Function Test in healthy school going children

Deepak Saxena, U.S. Pandey, Sunita Tewari, Shraddha Singh and N. S. Verma
DEPT. OF PHYSIOLOGY, C.S.M. MEDICAL UNIVERSITY, (UPGRADED KGMC), LUCKNOW

Respiratory disorders are a major group of illness affecting children especially in India and are an

important cause of childhood morbidity and mortality. Predictive normal values are essential for meaningful clinical interpretation of these tests. Present study was planned to determine the best predictor for Pulmonary Function Test in school going children of Lucknow.

262 boys & 240 girls aged 9-16 yr. were selected from CMS Lucknow for PFT. The children were excluded from study who had sign/symptoms of structural deformity of thoracic cage, major medical illness, evidence of grossly enlarged tonsils or adenoids, acute upper or lower respiratory tract infection within seven days of the study, chronic respiratory diseases, allergic diseases any cardiac diseases, anemia, smokers, family history of asthma. Complete physical examinations particularly for respiratory & cardiac system were done. Age, height and weight were recorded. Pulmonary Function Test including FCV, FEV1, PEFR and FEF 25-75% were recorded by Spiro lab II, a computerized machine. Stastical analysis was done by using students "t" test.

All the study variables were thereafter regress over Age, height and weight separately for boys and girls. All possible combination of regression variable of Age, height and weight were considered to propose the prediction equations. In boys Height was observed to be a single best predictor followed by Weight. In boys Age did not make any significant additional contribution. In girls Weight was observed to be best predictor followed by Age and Height i.e. The Height influences the prediction equation in males to a great extent where as Age and Weight had greater influence in girls.

RES-13 Cross sectional Spirometric study of asbestos factory workers

Sandeep Bhattacharya, U S Pandey, N.S.Verma
DEPARTMENT OF PHYSIOLOGY, K.G.M.C. LUCKNOW

Asbestos is a known occupational health hazard for workers of factories utilizing asbestos cement as one of its raw material. Inhalation of asbestos dust can cause damage to the pulmonary membrane structure and mechanical efficiency. This leads to alteration in the functional properties of the lungs, resulting in various respiratory diseases. Duration of exposure, ageing and smoking can together complicate pulmonary functions. Pulmonary function tests give an idea about the condition of pulmonary dysfunction. Hence this study was undertaken with a view to analyze the respiratory status of workers of an asbestos-using factory in Lucknow.

A total of 82 male workers from UP Asbestos Ltd, Lucknow, were selected for the study. In each case, age of the subject, smoking habits, type of work, duration of exposure, type of irritants, physical status and health conditions were recorded through questionnaire. Subjects with less exposure period were excluded from the study. Clinical data were collected from the workers and pulmonary function test was carried out in the Department of Physiology, K.G.M.C. Lucknow. Same procedure was undertaken for the controls. Twenty-three age group matched non-smoking normal male controls were selected from non-industrial area.

Among 82 workers in the exposed group, 29.3% (n=24) showed restrictive changes and 17% (n=14) showed an obstructive changes in the Pulmonary Function test. Normal Pulmonary Function test was obtained in 35.4% (n=29). The FVC showed a non-significant decrease as compared to control group, 2.37 ± 0.65 and 2.61 ± 0.26. FEV_1 showed a significant decrease from 2.49 ± 0.24 in control group to 1.94 ± 0.72 in exposed group. PEFR and ratio of FEV_1/FVC also showed a significant decrease as compared to the control group.

MET-01 EFFECT OF HIGH DIETARY CHOLESTEROL AND FISH OIL ON LIPID PEROXIDATION IN ERYTHROCYTES IN MICE

* **SHARMILA UPADHYA,MD., **SUBRAMANYA UPADHYA,MD**
* DEPARTMENT OF BIOCHEMISTRY, KASTURBA MEDICAL COLLEGE, MANIPAL
** INTERNATIONAL CENTER FOR HEALTH SCIENCES, MANIPAL

This study is an attempt to evaluate the extent of lipid peroxidation in erythrocytes in mice.

Male albino mice in three groups, each containing 10 animals were used for the study. Control group (NC) received normal lab diet containing negligible cholesterol while other two groups (HC and HCF) received high cholesterol diet. HCF mice received fish oil in addition to high cholesterol. Serum cholesterol and malonyldialdehyde (MDA) in erythrocyte were estimated after seven weeks' treatment.

. There was a significant increase (P=.01) in serum cholesterol in HC while a decrease (P=.0001) in HCF mice compared to NC. The MDA level in erythrocytes of HC has been significantly increased (P=.001) but the same in HCF mice does not show significant difference from NC.

We have observed an increased MDA in erythrocytes of mice treated with high cholesterol diet indicating that the erythrocytes are exposed to an oxidative stress. Also, we have found that addition of fish oil to this diet has got a hypocholesterolemic effect, which in turn has reduced the lipid peroxidation in erythrocytes. Erythrocytes are protected from peroxidation in the presence of fish oil despite the high dietary cholesterol content.

MET-02 ENVIRONMENTAL GOITROGEN

P.N. Singh, Department of physiology, J.N. Medical College Aligarh Muslim University Aligarh –202002, India

Iodine deficiency has been the major factor in endemic goitrogenicity in the past. But even after the universal salt iodination and other means of iodine supplementation programs under taken by the governmental agencies, goiter rate of endemic proportion is still being reported from different parts of the world. Recently in one our goiter survey we have come across the similar situation in which disproportionate goiter rate was observed than what the urinary iodine excretion suggested. An in depth ivestigation in this anomaly lead us to the conclusion that it is the dietary habit (exes consumtion of the millets containing goitrogenic substances) by the subjects resulted in this anomalous situation.

These goitrogens are either sulfur containing organic compounds like thiocynate isothiocynate, thioglycosides, cyanogenic compounds or flavinoids having thiourea like activity with a C6-C3-C6 structure present in various food stuffs of plant origin or the in the drinking water of the areas rich in coal. Similarly the phthalates present in plants and drinking water have been reported to posses the goitrogenic activity.

Besides a number of organic compounds being goitrogenic, exes iodine and lithium consumption are only two inorganic compounds listed to be goitrogenic.

MET-03 Effect of Centrally (i.c.v) administered insulin on small intestinal transit and blood glucose in mice

PMK Reddy, Department of Pharmacology, Jipmer, Pondicherry –605006
E MAIL : PMKREDDY@JIPMER.EDU

The study was designed to find the effect of intracerebroventricular (i.c.v.) administered insulin on small intestinal transit and blood glucose in adult male mice. Small intestinal transit (SIT) was measured by intragastrically (i.g.) administered charcoal meal marker. Blood glucose (BG) was estimated by sensor. Insulin was administered i.c.u. at the doses of 2, 250, 500 micro U, 1,2 milli or 2 U/Kg. After 20 min. BG was measured then charcoal meal was administered (0.3 ml, i.g) after 20 min, animals were sacrificed and SIT was measured. Insulin (i.c.u) at the doses of 250 micro U, 1 milli, 2 milli or 2 U/kg reduced BG significantly ($p<0.001$; n=6) in dose dependent manner except 500 micro U. Insulin of 2 micro U reduced SIT ($p<0.01$), whereas 2 U accelerated SIT significantly ($p<0.001$). however intermediate insulin dosage schedules did not modify the SIT. These results suggest that insulin possess biphasic response at the lowest and highest doses used in SIT and without any correlation with BG level, in mice when administered centrally.

MET-04 Effects of Salacia reticulata root bark on glucose, cholesterol and triglyceride levels in alloxan induced diabetic rats.

Chandra Shekar C.N. Srinivasan K.K, Susan Benjamin, Gopalkrishna K.
DEPARTMENT OF PHYSIOLOGY, K.M.C MANIPAL.

The ethanolic extract and their fractions of root bark of Salacia reticulata were tested for antihyperglycemic, hypocholestermic and hypotriglyridemic activity and also their effect on body weight on alloxan induced diabetic rats. Alloxan induced diabetic rats were administered the extracts at dose of 50 mg/kg body weight once daily

for 30 days. The blood glucose level and body weight were determined after 15 and 30 days of treatment. Whereas the cholesterol and triglyceride levels were determind at the end of 30 days. A highly significant hypoglycemic effect fraction besides imparting hypocholestremic effect also provided protection against body weight loss. There was no significant hypotriglyceridemic effect. The study indicates that the extracts of the plant have the ability to affect the metabolism of carbohydrate, fats and proteins in the body.

MET-05 Study of Lipid profile in night shift workers

Dr. B.P. Das Assoc. Prof., Dr. Rituparna Barooah

The ongoing study was undertaken to find out the changes in the lipid profile due to a disruption of normal sleep wakefulness cycle for a given period. Ten (10) apparently healthy nurses with no history of any metabolic disorders or diseases were selected for the study purpose which was carried out in Guwahati Medical College Hospital. All the subjects were female and belonged to same cultural background with similar food habits and were required to undergo night duties for seven consecutive night. Their serum lipid levels were estimated on the 0 day (before commencement of the night duties, 4th 6th and 10th day of night duties. The level on 0 days was taken as control and compared with subsequent results of the lipid profiles obtained on the other days. A trend towards increased levels was observed which could be attributed to increased level of ACTH secreted under stressful conditions having a bearing on the lipid profile of subjects under study. The profile thus obtained may serve as guidelines in the study of health and diseases especially in the night shift workers. Further continuation of the current study is necessary on order to arrive at a definite conclusion.

MET-06 Association of Body Fat Percentage with Serum Lipid Levels in Obese and Non-Obese Subjects

Wg Cdr D.K Dubey
READER, DEPT. OF PHYSIOLOGY
ARMED FORCES MEDICAL COLLEGE
PUNE –411040

Dr. M. Banerjee
SC 'D', BIOPHYSICIST
DEPT OF PHYSIOLOGY
AFMC, PUNE-411040

The present study was undertaken in 50 subjects (40 males aged ± years) to clarify the association of % body fat (%BF) with serum lipid levels in obese and non obese subjects. We measured the body fat percentage using various formulae based upon anthropometric measurements viz. Body circumferences in cm and skin fold thickness (SFT) in mm. Body fat percentage was also estimated by using TBF-531 analyzer (Tokyo-Japan) based upon bioelectrical impedance analysis (BIA) technique. BMI and waist hip (w/h) ratio were also calculated from anthropometric measurements. The serum lipid profiles of these subjects were also estimated using Autopac Miles India Ltd Kts. Results of the study shows that among both males and females the % BF was poorly correlated with LDL, TG, TC and HDL fractions of lipid profile. However, both male and female subjects % BF correclated well with BMI, body weight, waist size and SFT. BMI matched and age matched comparison between males and females showed that mean fat percentage and serum lipid levels were more with female subjects. Stepwise regression analysis showed that the serum lipid levels are not directly related to body fat percentage in both obese and non-obese subjects. In conclusion, the serum lipid level is not determined by %BF in isolation. It is probably mainly regulated by genetic factors and also by dietary factors, level and type of exercises sex and age etc.

Key words: Lipid Profile, Skin fold Thickness, % Body Fat, BMI

MET-07 LEVELS OF THYROID HORMONE IN DIFFERENT AGE GROUPS IN KANGRA VALLEY OF HIMACHAL PRADESH

Neeta R. Sharma*, Rajinder Yadav*, Anita Padam, Suman yadav*****
DEPARTMENT OF BIOCHEMISTRY*, PHYSIOLOGY**, ANATOMY***, DR. REJENDRA PRASAD GOVT., MEDICAL COLLEGE, KANGRA AT TANDA, HIMACHAL PRADESH –176001

Study comprised one thousand patients (884 females and 116 males) reported for the screening for

throid disorders of different age and sex from Kangra valley of Himachal Pradesh. History, sign and symptoms of individuals were recorded and 5-ml. Blood was drawn for estimation of total triiodothyronine (TT3), thyroxin (TT4), and thyroid stimulating hormone (TSH) levels by using micro well ELISA. Overall 35.7% were having visible goitre and 16.3% were presented with tremors. Puffiness of face was (first sign) presenting feature in hypothyroid patients. 43.2% females and 5.2% males were found to be suffered from thyroid dysfunction. The percentage of females suffered from hypothyroidism and hyperthyroidism was 23.6 and 19.6 respectively. In males the percentage of hypothyroidism and hyperthyroidism was noted 2.7 and 2.5 respectively. Females of 21 to 50 years age group affected maximally (34%) with thyroid disorders.

Key words : Thyroxin (TT4), Thyroid stimulating hormone (TSH), Hypothyroidism, Hyperthyroidism, Kangra.

TM-01 STRUCTURED ESSAY TYPE QUESTIONS (SEQ) VERSUS SHORT NOTES (SN) AS A TOOL FOR EVALUATION OF UNDERGRADUATE STUDENTS IN PHYSIOLOGY.

Dr. Sheena Singh MD
READER, DEPTT PHYSIOLOGY, CMC, LUDHIANA –141008, PB.

Currently the Summative and Formative Evaluation Test Papers contain Short Notes of equal marks. University papers also contain long answer or Essay Type questions.

The weakness of the Essay Type question is that they are often not specific and students may interpret it differently from the examiners. They lack objectivity- marking depends on the individual preferences of the examiners.

Improvement suggested is that questions should be more specific and objective, structured essay type questions. That is, number of questions should be increased and broken up into specific parts and marked separately.

To test this, a comparison was made between short note and structured essay type question.

A short test of 4 question was administered to a class of I MBBS students. The first question paper had the usual short Note format. Then the test was read ministered. The same questions were asked in the format of structured essay questions.

Both the sets of answer papers were evaluated by several teachers of physiology with an objective to see the Intra examiner and Inter examiner variation in marking the short note vs the structured essay type paper.

Observations to be discussed.

TM-02 EFFECTIVE ASSESSMENT TOOL IN EDUCATION OBJECTIVES

Sunita Mittal, KK Mahajan, Poonam Verma, Archana Ghildiyal and Lalita Chaudhry
HIMALAYAN INSTITUTE OF MEDICAL SCIENCES, SWAMI RAMA NAGAR, P.O. DOIWALA, DEHRADUN-248140, U.A.

Medical teachers are highly concerned for proper evaluation of their students. To increase the reliability and validity of written examinations, a large number of formats have been used. Multiple choice questions (MCQs) are interesting, objective and quick method of testing vast knowledge of a candidate. It is a popular and widely accepted means to rank participants in different competitive examinations. Marking procedure is easy, reliable and more scoring especially for bright candidates. Lately, MCI has recommended use of MCQs in the assessment of students appearing in different professional examinations of MBBS as well. All of us as academicians need to know different aspects ie. Construction, evaluation, validation and question banking of MCQs. Along with number of benefits of this format, its limitations cannot be overlooked. Useful tips to frame quality MCQs will be discussed.