

Study Of Cardiac Autonomic Control And Physical Fitness In Martial Artists

Aneesh Joseph, Elizabeth Tharion

Department of Physiology, Christian Medical College, Vellore

Background & Objectives: Higher physical fitness prolongs life. Exercise is physical activity done to achieve and improve fitness. Kungfu is a martial art altered into exercise which incorporates aerobic, anaerobic and breathing exercises with meditation. Each of these has been shown to have different effects on cardiac autonomic tone and modulations. What effect does Kungfu training have on cardiac autonomic status? To answer this question, cardiac autonomic parameters and physical fitness parameters of Kungfu trained subjects and control subjects matched for age, BMI and physical activity, were compared. **Method:** Twenty Kungfu trained subjects and twenty matched control subjects were recruited. Subjects rested in supine position for twenty minutes. Resting BP was measured. ECG and respiration data was acquired for five minutes after this, to obtain short-term heart rate variability parameters, resting heart rate and resting respiratory rate. The heart rate response to deep breathing, standing, valsalva and maximal hand grip were recorded and standard cardiac autonomic function parameters were computed. A maximal treadmill test was done and exercise duration, heart rate at maximal intensity and absolute heart rates at various periods of recovery in supine position were obtained. Recovery heart rates at various times, ratio of maximal to resting heart rate and work intensity were computed. **Results:** Heart rate variability parameters of SDNN and RMSSD were significantly higher in Kungfu subjects than in the control subjects. Kungfu group achieved a significantly lower maximal heart rate with maximal exercise compared to controls. **Interpretation & Conclusion:** Kungfu training improved overall heart rate variability and vagal modulations and allowed the subjects to do similar quantum of work at a lower heart rate than controls, as evidenced by the lower heart rate in the Kungfu group at similar maximal work intensities reached by both groups.

A Qualitative Analysis Of Efficacy Of Multivitamin And Micronutrient Supplementation On Semen Parameters In Patients With Primary Infertility.

A Prospective Randomized Control Study.

Deepali Kaderkar, Jaya Muneshwar, S.T.Khan, Shubhangi Deshmane

Department of Physiology, Government Medical College, Aurangabad

Background & Objectives: The study was undertaken to evaluate the efficacy of multivitamin and micronutrient supplementation on semen parameters in oligozoospermic patients with primary infertility. **Method:** n =30 patients with primary infertility having oligozoospermia were enrolled for the study. The age ranged between 25 - 35 years. The multivitamin and micronutrient supplements were given twice daily for 6 months. Semen parameters including sperm count, motility and morphology were studied before and after the therapy. Paired 't' test was used for statistical analysis. **Results:** The sperm count, motility and morphology improved significantly ($p < 0.05$) after multivitamin and micronutrient therapy. **Interpretation & Conclusion:** Multivitamin and micronutrient supplementation improves the seminal parameters and might have a place as an additional supplement in the treatment of male infertility.

Interaction Between Sympathetic Nervous System And Renin- Angiotensin System In Anaesthetized Rats With Acute Inhibition Of Nitric Oxide Synthesis

Meenakshi Chaswal*, Shobha Das*, Jagdish Prasad**, Anju Katyal***, Mohammad Fahim****

*Departments of Physiology and ** CTVS, Vardhman Mahavir Medical College & Safdarjang Hospital, New Delhi,

Department of Biochemistry, ACBR, Delhi, *Department of Physiology, HIM SAR, Delhi.

Background & Objectives: Nitric oxide (NO) appears to play a significant role in the regulation of blood pressure and autonomic tone to the heart. Pharmacological inhibition of NO by NG- nitro-L-arginine methyl ester (L-NAME) is known to result in hypertension with an associated impairment of cardiac autonomic tone. However, the mechanisms remain ill defined. We sought to determine the role of renin-angiotensin system in this model by examining the ability of the angiotensin II(Ang II) receptor antagonist losartan to reverse the hemodynamic changes produced by acute L-NAME (30 mg/kg, i.v.) and comparing its effects to sympathectomy. **Method:** Measurement of baroreflex sensitivity (BRS) was done to assess the status of cardiac autonomic functions. Chemical sympathectomy was performed using 6-hydroxydopamine (100mg/kg, i.p. twice in a week) and Ang II antagonism was produced by using losartan (10 mg/kg, i.v.). **Results:** Acute L-NAME treatment resulted in significant rise in blood pressure and a fall in heart rate. Besides this, baroreflex sensitivity for bradycardia response was augmented. Sympathectomy could not alter the pressor response of acute L-NAME, but normalized the augmented BRS for bradycardia response. On the other hand, losartan had no effect on pressor as well as baroreflex responses of L-NAME treated rats. **Conclusion:** These results suggest a role for sympathetic outflow in the mediation of the neural responses to acute L-NAME, while alternative mechanisms other than sympathetic nervous system, appear to be more important for the pressor response to L-NAME, such as the inhibition of direct vasodilator action of NO by L-NAME

Study Of Visual Evoked Potential In Primary Open Angle Glaucoma And Glaucoma Suspects

Sushma Sood*, Jyoti**, C.S Dhull***, Joshil kumar****

*Senior Prof and head of department of physiology, **Senior resident department of ophthalmology, ***Senior Prof Department of Ophthalmology, ****Senior resident department of physiology, PGIMS, Rohtak

Background & Objectives: Glaucoma represents a significant health problem affecting 67 million people in the world. Primary open angle glaucoma (POAG) is the most common type of glaucoma. According to one estimate 79.6 million people will be affected by glaucoma worldwide by the year 2020. Visual evoked potential (VEP) is an electrophysiological testing where electrical potential difference is recorded from scalp in response to visual stimuli. The present study was designed to assess the visual evoked potential in primary open angle glaucoma and glaucoma suspects. **Method:** the study was conducted in department of physiology in collaboration with department of Ophthalmology, PGIMS Rohtak. The subjects were divided into three groups of 25 patients each and both eyes of all the subjects were included in the study. Group A- 25 patients who were glaucoma suspect, group B- 25 patients of primary open angle glaucoma and group C comprising 25 controls. Intra Ocular Pressure (IOP) was measured by tonometry. The P-VEP test was carried out on EMG EP M7K2. Parameters which were studied were P 100 latency, amplitude P100-N70 and P 100 latency difference in two eyes. **Results:** unpaired student 't' test was used to analyse the data and subsequently pearson correlation coefficient was used between IOP and P-VEP. The mean IOP difference of POAG (19.12 ± 7.18 mm of Hg) and glaucoma suspect (17.92 ± 5.59) compared with controls (14.73 ± 2.67 mm of Hg) were found to be statistically highly significant ($p < 0.001$). The mean P 100 latency difference in two eyes showed highly significant difference in POAG compared with controls ($p < 0.001$) while significant difference in case of glaucoma suspects. P 100 latency was prolonged in 36% eyes of glaucoma suspects and 82% eyes of POAG. P100-N70 amplitude was

reduced in 28% eye of POAG and none in glaucoma suspect. **Conclusion:** The pattern visual evoked potential (P-VEP) latencies were prolonged and amplitude was reduced in both groups compared with control. There are few reports in favour of conventional P-VEP as a sensitive diagnostic measure in glaucoma. Nevertheless, visual evoked potential (VEP) can be a valuable tool in glaucoma research and may be used as an adjunct in glaucoma diagnosis and follow up, especially in patients for whom it is difficult to obtain reliable automated standard perimetry results; or where unavailability or high costs precludes the use of newer imaging technology.

Effect Of Glycaemic Control On Peripheral Nerve Conduction In Lower Limbs In Type 2 Diabetes Mellitus

Sonawane PP, Shah SH, Vaidya SM, Zingade US, Kowale AN

Department of Physiology, B. J. Medical College, Pune, Maharashtra.

Background & Objectives: Background: Presently, India has large number of patients with diabetes in the world. According to WHO estimates, India will have 80 million diabetics by the year 2030 making it the diabetes capital. Peripheral neuropathy is the most common and troublesome complication of diabetes mellitus, which can be diagnosed early by nerve conduction studies. This study was undertaken to assess peripheral nerve conduction parameters in lower limbs in type 2 Diabetes Mellitus patients and to compare it with age and gender matched healthy subjects. We also aimed to correlate peripheral nerve conduction parameters in diabetics with glycated haemoglobin levels (HbA1c). **Method:** HbA1c of all the patients was estimated by ion exchange resin method. Nerve conduction parameters were recorded in lower limbs using the standard RMS ALERON 401 machine in 30 type 2 diabetic male patients having HbA1c less than 9% (Group B), 30 type 2 diabetic male patients having HbA1c more than 9% (Group C) and 30 normal healthy control subjects (Group A). All patients selected were having diabetes mellitus for 0 to 5 years and age between 40 to 60 years. Parameters recorded were bilateral – sural sensory nerve conduction amplitude and velocity, peroneal motor nerve conduction amplitude and velocity. Nerve conduction parameters of diabetic patients and controls were compared by applying ANOVA test. Correlation between nerve conduction parameters and HbA1c in diabetics was analyzed by applying Pearson's Coefficient. **Results:** We found statistically highly significant decrease in sural nerve conduction amplitude and velocity in diabetics having HbA1c less than 9% and diabetics having HbA1c more than 9% as compared to controls ($p < 0.05$). Similar results were found for peroneal nerve conduction amplitude and velocity ($p < 0.05$). Also we found statistically significant negative correlation of HbA1c with all four parameters i.e. sural nerve conduction amplitude and velocity as well as peroneal nerve conduction amplitude and velocity ($p < 0.001$). **Interpretation & Conclusion:** This study shows that diabetic patients with higher blood glucose levels are at increased risk of diabetic neuropathy. Diabetic neuropathy in lower limbs worsens with increasing blood glucose levels. This can lead to serious complications in future viz. diabetic foot. Hence stringent action has to be taken in early stage to control blood glucose levels to prevent diabetic neuropathy.

An Observational Study On Association Of HLA-B27 Positive Cases With Hemoglobin E Trait And Level Of Uric Acid

Manoj Kr. Choudhury, K.L Talukdar, H.Bayan, Monalisa B Deka, Dhritiman Misra, Joytilak Bhattacharjee.

Gauhati Medical College & Hospital, Guwahati-32

Background & Objectives: This work was carried out to see the association of HLA-B27 positive cases with Hemoglobin E trait (HbE) and level of uric acid in the positive cases to enrich knowledge, so that it can be included in the differential diagnosis of patients positive for HLA-B27. **Method:** Sixty cases

were enrolled based on an inclusion criteria. EDTA Blood samples of the enrolled subjects were used as a DNA source. DNA were extracted using standard Manaitis et al. protocol and were screened for HLA- B27 allele using standard Sequence Specific primer (SSP-PCR) technique . Out of the 60 cases, 13 were found positive for HLA-B27. Positive cases were then further screened for presence of Hemoglobin E trait by HPLC method. Simultaneously; clotted blood samples from the subjects positive for HLA-B27 were checked for Uric acid level .The method used for uric acid estimation was an enzymatic photometric test using TBHBA (2,4,6 tribromo 3 hydroxy benzoic acid) from Diasys. **Results:** The frequency of HLA-B27 allele irrespective of homozygous and heterozygous condition was found to be 0.22% out of total enrolled subjects. Out of total 13 HLA-B27 positive cases, there were 10 males and 3 females; hence the ratio was 1:3. The percentage of HbA2 /E was found within the normal range in all 13 HLA-B27 positive cases which was observed by Hemoglobin variant analysis. Out of the 13 HLA-B27 positive cases 2 were found to be hyperuricemic, others were in higher normal range. **Interpretation & Conclusion:** From this observational study it has been concluded that HbE trait may not be directly associated in HLA B27 positive cases of Ankylosing Spondylitis and also it has not been clear that whether hyperuricemia is directly associated with HLA-B27 or not. Further investigation with more sample size would be required to arrive at a significant conclusion.

Prediction Equation And References Values Of Pulmonary Function Test For Age Group Of 17-25 Years

Rosemary Peter, Ashwani Dhawan

Department of physiology, MAMC, Agroha, Hisar, Haryana.

Background & Objectives: Spirometry is the most frequently performed lung function test. To determine a Normal range of spirometry results, References formulas are used. Predicted values play an important role in establishing whether the volumes measured in an individual fall within a range to be expected in a healthy person of the same gender, height, and age. Such standards enable to assess the development of the respiratory system in the youth, the early recognition of the influence of a disease on the respiratory system and the influence of environmental factors on lung function. The objective of the present study was to estimate lung function prediction equations and to identify appropriate normal References values. **Method:** The study was conducted in Maharaja Agrasen Medical College, Agroha, Hisar on 142 healthy, nonsmoking subjects between 17 to 25 years of age were included in the study. The study was approved by a local Ethics Committee and each subject gave his informed. The subjects included 53 males and 79 females whose pulmonary volumes and capacities were measured by spirometry. **Results:** Prediction equation was first derived and the References values were then calculated for FEV1 and FVC. The values for both these parameters were found to be lower in females and in males respectively when compared with those given by researchers for Caucasians. **Interpretation & Conclusion:** Pulmonary function test References values and prediction equations for both sexes between the ages of 17-25 years were derived for healthy, nonsmoking, urban Indian population. A considerable difference was found between prediction equations and References values obtained in present study compared with other studies conducted in western countries.

“A Study Of Blood Flow Index In Patients Of Type 2 Diabetes Mellitus Using Impedance Plethysmography Principle.”

D L Prajapati*, C V Parmar*, P A Gokhale, H B Mehta***, C J Shah****, H O Sharma*******

* 3rd Year PG Student, ** Additional Professor, *** Professor & Head, **** Associate Professor in Dept. of Physiology, ***** Professor & Head in Dept. of Biochemistry, Govt. Medical College, Bhavnagar – 364001, Gujarat.

Background & Objectives: Impedance Plethysmography (IPG) is a simple, low cost and non-invasive tool to assess the central and peripheral blood flow in human body. The literal meaning of IPG is “Recording of the blood volume changes indirectly in any part of the body by measurement of its electrical impedance. Diabetes is one of the leading cause of peripheral vascular diseases (PVDs) which begins mainly from distal part of lower extremities in diabetic patients. So Blood flow measurement in lower extremities may become useful predictor of PVDs. Goal: The goal of present study was to measure blood flow index (BFI) in patients of type 2 diabetes mellitus. **Method:** The study was carried out on two group- diabetic (27 male; 23 female) and control group (27 male; 23 female) in the cardiovascular laboratory, Department of physiology, Govt. Medical College, Bhavnagar. **Results:** BFI was lower in thigh and calf of Diabetic group as compared to Control group. BFI had correlation with LDL and HBA1C. **Interpretation & Conclusion:** Blood flow in lower extremities of diabetic group was reduced compared to control group. Poor control of diabetes affects blood flow in lower extremities of diabetic patients. By this simple, harmless, inexpensive, objective and non-invasive hemodynamic test, we can predict earlier onset of PVD in case of Diabetic patients and this test may replace other invasive hemodynamic test for screening vascular disorders.

Cardiorespiratory Fitness In Young Adults Of Northeast India

P Majumdar*, W Jahan**

* Postgraduate Trainee, ** Professor, Dept. of Physiology, Assam Medical College and Hospital, Dibrugarh, Assam

Background & Objectives: Obesity is a growing health issue among the youth affecting cardiorespiratory fitness. Our objectives are to determine association of BMI with VO₂ max and increase in heart rate after exercise. **Method:** VO₂ max was estimated in 43 young adults (21 males, 22 females), age group 18-22 years, using Sub Maximal Test: Queen’s College Step Test. Stepping was done for 3 minutes at the rate of 24 cycles/min for males and 22 cycles/min for females on a test stool of 16.25 inches/ 41.3 cm. Heart rate (HR) was recorded before and after exercise. VO₂ max was calculated using McArdle equation: In males, VO₂max = 111.33 - (0.42 x pulse rate in beats per min) In females, VO₂max = 65.81 - (0.1847 x pulse rate in beats per min) Results were statistically analysed, correlation was determined by using Pearsons correlation coefficient (r). Statistical significance was calculated. Mean ± SD of all the values were calculated. **Results:** BMI (mean = 26.055±4.36) was found to be positively correlated with increase in HR after exercise (mean=71.39±20.20), (r=0.6274, p<0.0001) and negatively with VO₂ max (mean =41.7±9.066), (r= -0.6382, p<0.0001). **Conclusion:** There is significant association between BMI and VO₂max and increase in heart rate after exercise.

Effect Of Training On NCV In Runners – A Cross Sectional Study.

Jyothi S, Sunil S. Vernekar, R N Raichur.

Department of Physiology, JNMC, Belgaum

Background & Objective: To assess the influence of duration of regular consistent training on motor nerve conduction velocity (MNCV) in runners. **Method:** This cross sectional study was done in the department of Physiology, JNMC, Belgaum. The study groups consisted of 31 runners (male and female) aged between 16 to 25yrs, divided into two depending on number of years of training. Group A consisted of runners with >2yrs and ≤ 3 years of training and Group B consisted of the runners with > 3 years and <10yrs of training. All the runners have undergone consistent training. On an average, practices were held for four to five hours per day, six times per week. MNCV of the ulnar nerve was assessed using computerized equipment “BIOPAC-MP150” by using the traditional double stimulation technique. Statistical analysis involved quantitative variables summarized through mean and standard deviation. Difference between mean of the two groups was tested using Student unpaired ‘t’ test, where significance of the p value was < 0.05. **Results:** Mean MNCV of the senior players (56.4m/sec) was higher than that of juniors (48.4m/sec) and was statistically significant (<0.05) **Conclusion:** Present study indicates that changes in MNCV may be an indicator of nervous system adaptation due to long term physical exercise training. Exercise can cause structural changes in skeletal muscle, increase in excitability in motor units and also increased axon diameter and myelination. Current evidences indicate that long term training is important for increasing MNCV.

A Comparative Study Of Computerized Spirometric Parameters Between Air Conditioner Users And Non Air Conditioner Users

Y.K. Kacha*, M.S. Varu, Dr .A. M.Vegad**, C. J. Shah*** & H. B. Mehta******

*Resident, ** Assi. Professor, ***Asso. Professor, ****Professor & Head, Dept. of Physiology, GMC, Bhavnagar.

Background & Objectives: Nowadays Air conditioners are one of the luxurious needs of human being and their use has been increasing day by day. According to few studies, inhalation of cold dry air leads to alteration in pulmonary functions. The present study was aimed at considering whether intensive use of air conditioner affected pulmonary functions. **Method:** The study was done at Physiology department, Govt. Medical College, Bhavnagar after institutional ethical committee approval. 50 male subjects between 25-50 years of age using air conditioners since at least last 6 months and for a minimum duration of 6 hours per day were selected for the study. 50 males of same age group who did not use air conditioners at all were taken as control. In all the subjects, computerized spirometric parameters were measured by SPIRO EXCEL. The parameters between both the groups were compared by applying unpaired t test. P value less than 0.05 was taken as statistically significant. **Results:** There was statistically significant reduction in PEFR (Peak Expiratory Flow Rate), FEF25 (Forced Expiratory Flow at 25% of Forced Vital Capacity), FEF50 (Forced Expiratory Flow at 50% of Forced Vital Capacity), FEF25-75(Mid Expiratory Flow Rate), and MVV (Maximum Voluntary Ventilation) in air conditioner users as compared to that in non air conditioner users. **Interpretation & Conclusion:** In the present study, there is definite impairment in PEFR, FEF25, FEF50, FEF25-75 & MVV. In the presense of normal FEV1, it suggests early small airway obstruction. So the present study suggests that inhalation of cold dry air leads to reflex brochoconstriction. These findings correlate well with other such studies.(Farah Khaliq et. al , R. Babita et. al, Yelam SB et. al, Laxmikant Borse et. al etc.). Intensive use of air conditioner may predispose to respiratory dysfunction in form of early small airway obstruction. However further studies including a large sample size is indicated for in depth evaluation.

Study Of CorrelatiOn Of Serum Creatinine With Left Ventricular Mass Index In Hypertensive Patients.

priti bhanderi, Varsha Joshi

Physiology dept, M.P.Shah Medical College, Jamnagar

Background & Objectives: To correlate serum creatinine level with left ventricular mass index (LVMI) in different age group. **Method:** The present study was carried in medicine department of G.G.G.H in collaboration with physiology department of M.P. Shah medical college on 65 patients suffering from essential hypertension. Out of these 65 patients 36 patients are of below 60 years of age and 29 patients are of above age of 60 year. All the patients gave their informed consent prior to participation in the study. Study design was approved by ethical committee of institute. Hypertension is defined as per JNC VII criteria. Each individual's name, age, sex, occupation, duration of hypertension were recorded. Serum creatinine was estimated by modified jaffe's reaction with initial rate colorimetry and single reagent density by using picric acid. (normal range for our laboratory- 0.5 – 1.2). Echocardiography was done by experienced echocardiologist in medicine department, GGGH. Two-dimensionally guided M-mode echocardiography was performed by standard methods using an 7340 ESAOTE echocardiograph. Left ventricular internal dimension (LVID) and interventricular septal and posterior wall thickness (IVST and PWT) were measured at end-diastole and end-systole, according to the American Society of Echocardiography guidelines. Left ventricular mass (LVM) was calculated at end-diastole by using the ASE convention. **Results:** Serum creatinine value in group 1 (patients below 60 years of age) is 0.84 ± 0.21 (mean \pm SD) and LVMI value in group 1 is 82.07 ± 22.22 . while in group 2 (patients above 60 years of age) serum creatinine is 0.96 ± 0.30 and LVMI is 92.55 ± 18.16 . Left ventricular mass index (LVMI) value in group 2 is higher than group 1 but it is not significantly high ($p = 0.20$). LVMI is a marker of hypertensive target organ damage. Relation of serum creatinien level with LVMI shows that serum creatinine level is correlate with LVMI in both the age groups (group 1, $r = 0.61, p = 0.00$)(group 2, $r = 0.59, p = 0.001$) and it is statistically significant because p value is < 0.05 . **Interpretation & Conclusion:** In our study, there was a significant correlation between serum creatinine level and LVM index in patients of both the age group. So from this study it can be said that the serum cratinine is sensitive indicator for estimating hypertensive target organ damage in both the age groups.

Comparison Between Hypolipidemic Effect Of Fenugreek (Trigonella Foenum Graecum) And Garlic (Allium Sativum) On Experimentally Induced Hyperlipidemia In Rabbits

Dr Varsha Gupta

Department of Physiology, SMS Medical College, Jaipur (Raj)

Background & Objectives The term hyperlipidemia means a high cholesterol and high triglyceride level. High lipid level can speed up a process called atherosclerosis or hardening of arteries. Atherosclerosis is the underlying pathological process that leads to the most prevalent cause of death due to coronary artery disease and myocardial infarction. The management of hyperlipidemia aims to reduce the risk of heart disease as well as other complications of atherosclerosis. There are many Pharmaceutical drugs like H M G Co Reductase inhibitors and bile acids resins which help in reducing blood lipid level but they are either too expensive or have undesirable side effects. On the other hand there is a growing global interest in herbal and other forms of traditional medicines and herbs. Many hypocholestrelemic medicinal plant products are available which are used as therapeutic agents like Garlic, Fenugreek, Amla, Neem, Guggal and Jamun etc. Present study was conducted to assess and compare hypolipidemic effects of ingestion of garlic (*Allium sativum*) and fenugreek (*Trigonella Foenum Graecum*) on lipid level of experimentally induced hyperlipidemia in rabbits. **Method:** The study was conducted at Dr S N Medical College, Jodhpur (Raj) on rabbits of either sex weighing 1-2kg. The breed of rabbit used for research was European rabbits (Order-lagomorpha, Family-laporidea, Genus-orictolagus, Species-cuniculus). In all rabbits experimental hyperlipidemia was induced by feeding cholesterol 500mg/kg body weight. After inducing hyperlipidemia rabbits were randomly divided in to three groups. Group 1 was given grass hey diet while group 2 and group 3 was given fenugreek extract and garlic extract respectively for four weeks. Changes of body weight and lipid level (serum cholesterol, LDL, VLDL and HDL) of each group were analyzed by annova test and turkey test. **Results:** It was observed that garlic has and fenugreek

caused highly significant difference ($p < 0.001$) in body weight, serum cholesterol, LDL, VLDL and HDL level. It was also revealed that hypolipidemic effect of garlic is significantly more ($p < 0.05$) than fenugreek. **Interpretation & Conclusion:** It was observed that garlic and fenugreek both caused highly significant difference ($P < 0.001$) in body weight, serum cholesterol, LDL, VLDL and HDL level. Whereas on comparing both it was found that garlic is more potent hypolipidemic agent.

Effect Of Generalized Anxiety Disorder On Heart Rate Variability

Pravin Rabari*, **Manjula Jamliya ****, **H.B.Mehta*****, **Ashok Vala******, **Pritesh Gandhi*******,
Gunvant Zinzala*****

*1st yr resident, **Assistant prof., ***Prof. & Head, *****2nd year resident, Department of Physiology, ****Assist. Prof.,
*****2nd year resident, Department of psychiatry, Government Medical College, Bhavnagar-364001

Background & Objectives: Heart rate variability (HRV) is easy, non-invasive, accurate and reliable tool in assessing autonomic function. Aim of this study was to determine whether the patients with generalised anxiety disorder have lower heart rate variability compared to healthy controls or not. Objective of our study was to determine heart rate variability in generalized anxiety disorder patient and in age and sex matched healthy controls and compare data of Heart Rate Variability in both groups. **Method:** Study had been done in 2 groups: 1st group comprises adult patient of generalized anxiety disorder ($n=50$) & the 2nd group of healthy controls ($n=50$). It was carried out on instrument windows based Heart rate variability analysis system variowin-HR with 100% accuracy at Govt. Medical College, Bhavnagar. Heart-rate variability was studied using the standard protocol and was statistically analyzed. **Results:** Significantly reduced variability of the heart rate was observed in both the time domain parameters like SDNN, RMSSD, NN50count, PNN50, SDSD as well as frequency domains parameters like LF, HF, VLF except LF/HF ratio in the disorder group as compared to the control group which are statistically significant ($p < 0.05$). **Conclusion:** According to this study, generalized anxiety disorder (GAD) is associated with significantly lower Heart Rate Variability (HRV).

Sleep Related Disorders Among Healthy Volunteers Working In A Multinational Company In Metropolitan City

Kavyashree H M, Deshpande D V

Department of Physiology, SSIMS & RC, Nh 4 bypass, Jnanashankara, Davangere 577005, Karnataka, 9449169221

Background & Objectives: To estimate the prevalence of sleep related disorders in subjects working in a company & to analyze different varieties of sleep related disorders and their causes. **Method:** Around 60 healthy persons of age between 20-50 years working in ABB a multinational company as Engineers will be included. Body mass index is calculated, Blood pressure is measured using sphygmomanometer. The data is collected using standard questionnaire to evaluate sleep quality & identify individual sleep disorder consisting of Sleep Disorders Performa, Epworth Sleepiness Scale, Pittsburgh Sleep Quality Index. **Results:** Methods of statistical analysis applied is Mean & standard deviation. Study is in progress. **Conclusion:** Changing lifestyle, work profile, eating habits, leisure activities & different life stresses influence sleep patterns & result in sleep related disorders. They share common risk factors with heart disease, hypertension & diabetes mellitus. These have to be addressed & awareness needs to be created about sleep disorders & their health related negative consequences.

Effect Of Anemia On Audiovisual Reaction Time In Adolescent Females Of 17-19 Years

Anita Kumari, Keerti Mathur

Department of Physiology, SMS Medical College, Jaipur

Background & Objectives: Anemia is defined as decrease in number of red blood cells or less than the normal quantity of hemoglobin in the blood. Adolescent girls are at highest risk of developing anemia, especially iron deficiency anemia because of their greater physiologic requirements, combined with increased menstrual losses and poor dietary intake. The measurement of auditory (ART) and visual reaction time (VRT) has been used to evaluate the processing speed of central nervous system and co-ordination between the sensory and motor system. This present study was undertaken to study the effects of anemia on auditory and visual reaction time in adolescent females of 17-19 years. **Method:** Adolescent girls between 17-19 years of age with similar socioeconomic status were selected from 1st & 2nd year MBBS students for the study. They were all screened and categorized into two groups depending on their hemoglobin status. Students having Hb>12 gm/dl formed the control group i.e. Group I (n=30). Students having Hb<12 formed anemic group i.e. Group II (n=30). The anemic status, Hemoglobin (Hb) was measured by autoanalyser and the Auditory and Visual reaction time were measured by reaction time software indigenously prepared in computer programming language Visual Basic 6.0. **Results:** The mean Hb levels in Group I was 12.623±0.5557 and Group II was 10.00±0.4347 (P<0.001). Both ART and VRT were significantly increased (P<0.001) in Group II **Interpretation & Conclusion:** Deterioration in sensorimotor performance in anemics.

Short Term Stress Affects Learning And Memory In Albino Mice-Experimental Study

N.Ethiya MD (Phy) T.Meena, MD, Maheswaran,

Assistant veterinary surgeon, Madurai medical college

Background & Objectives: Stress has been experienced by every living thing; it has become day to day problem, which affects attention, memory and learning. Majority of people work under enormous stress which is the leading factor for untoward incidences. Short term stress, in particular affects the working memory. Aims of our study were to know how stress affects Learning and Memory in Albino mice and to assess the cortisone level, before and after stress. **Method:** 12 Albino mice weighing about 25 -30 gram, male, from Selective in bred colony in central Animal house was taken for study. Period of study range between 30 -31 days. : A maze was designed with two long routes with provision for short cuts. One short route with diversion which makes the access distance longer. 12 albino male mice were taken for the study. two groups ,control and study group were trained in the maze to reach the feed .In both the groups, animals were withdrawn from feeds, and placed in one corner with feeds in the opposite corner. The time taken by both groups noted at the end of 21 days. **STRESS:** Study group was given heat stress, animals exposed to a temperature of 38-40 c, for 2 hours daily for seven days. After the stress period animal was again left in the maze, and time taken by it to reach the feed was absorbed. **Results:** The time taken to reach the feed was assessed in both study and control group. The level of cortisone was also estimated in both groups. The results were tabulated and analysed statically.

Gender Differences In PReferencess Of Sensory Modalities Of Learning Styles Among Undergraduate Medical Students

* Mitesh Sinha **Dr Shobha Naik***Dr J.M. Jadeja

*Resident B.J.M.C., **Additional Professor, Dept of Physiology, B.J.M.C*** Professor and head, Dept of Physiology, B.J.M.C

Background & Objectives: Students have individual learning style pReferencess including visual (V; learning from graphs, charts, and flow diagrams), auditory (A; learning from speech), read-write (R; learning from reading and writing), and kinesthetic (K; learning from touch, hearing, smell, taste, and

sight). These preferences can be assessed using the VARK questionnaire. The aim of the study is to find if gender differences in learning style preferences is present among undergraduate students. **Method:** We administered the VARK questionnaire to 100 undergraduate physiology (50 males and 50 females). **Result:** The responses were tallied and assessed for gender difference in learning style preferences; 54% of females and only 18 % of males preferred a single mode of information presentation. Among the female students, 2 % of the students preferred V, 30% of the students preferred A, 10% of the students preferred printed words (R), and 12 % of the students preferred using all their senses (K). In contrast, male students were evenly distributed in preferences, with 8%, of the students preferring A, or K, respectively, while 0% of the students preferred V and 2% preferred R. Furthermore, 46 % of female and 82 % of male respondents preferred multiple modes [female: 2 modes (26%), 3 modes (18%), and 4 modes (2%); males: 2 modes (50%), 3 modes (30%), and 4 modes (2 %)] of presentation. **Conclusion:** The majority of males preferred multiple modes of information presentation. Male students may adjust to the different teaching styles. In contrast; the majority of female students preferred a single mode of information presentation, either V, A, R, or K. Although female learners can use all of the sensory modes in learning, one mode is dominant and preferred. Thus, male and female students have significantly different learning styles. It is the responsibility of the instructor to address this diversity of learning styles and develop appropriate learning approaches.

A Novel Learning Tool In Physiology: Crossword Puzzle

Jitendra R Patel, Jasmin J Parmar, Kartik A Patel, Anita P Verma, Neeraj R Mahajan

Smt. NHL Municipal Medical College - Ahmedabad-6

Background & Objectives: In 21st century, field of medical education becomes very advance due to several novel learning tools. As medical educators we always think some novel ideas for making medical education more effective, interactive, informative and interesting. We used the crossword puzzle as a novel teaching technique to encourage students during the discussion session on the topic of experimental physiology. To determine utility and effectiveness of crossword puzzle as a novel learning tool in medical education. **Method:** Study was carried out on 60 students of 1st MBBS. In crossword there were total 16 questions. Time given was 20 min. Feedback was taken from students by likert scale in which total 6 question and each question having 5 graded response in which grade 5 (strongly agree), grade 4 (agree), grade 3 (neutral), grade 2 (disagree) and grade 1 (strongly disagree). Analysis was done by calculating the mathematical mean for individual question and also for each student. **Results:** Response of students on various aspects of crossword like, help in improve vocabulary and concepts in Experimental physiology (mean=3.92), enjoying by doing crossword (mean=4.13), reflected the key concepts of the course (mean=3.85), usefulness (mean=4.02), connection between topic (mean=3.93), effectiveness (mean=3.62) were obtained. Average mean of individual subject (mean=3.91). By individual response 73% (44) students were strongly agree or agree, 20% (12) neutral and 7% (4) strongly disagree or disagree. **Interpretation & Conclusion:** The crossword puzzle was very well appreciated by the majority of students. The rational use of crosswords was useful to transfer of content, provide an opportunity to discuss and recall essential concepts in undergraduate studies. To make medical education more fascinating and interactive, future development of a computer based interactive facility for teachers and students using compound crossword puzzles is suggested.

A Study Of Perceived Stress And Coping Styles Among Mid Adolescents

Ravi B. thaker, Hina G Chaudhari. , Rajesh M. Desai , Girish M. Kanvinde

Dept. of Physiology, N.H.L. Municipal Medical College, Ahmedabad

Background & Objectives: Comparative measurement of level of stress and preferred method of coping among 'central board school' students and 'state board government school' students, as these has good scope of early intervention. **Method:** In our present study we randomly selected two schools (one each of central board private and state board government) of Ahmedabad city. 36 physically healthy students of std.11 from each school having age 15-16years recruited for study after thorough physical examination. Perceived stress measured among 72 students using "perceived stress scale (PSS 14)" developed by COHEN. Coping methods measured by "revised version of coping questionnaire by FOLKMAN and LAZARUS". **Results:** Average stress score of students of central and state board school were $x=29.37\pm 5.33$ & 30.88 ± 4.72 respectively ($p>0.05$), that shows almost similar level of perceived stress in either settings with no significant difference. (As per COHEN score ranges from 0-56. no cut off limit for perceived stress. higher the value higher is the stress). However regarding coping methods students of state board government school adopted more NEGATIVE kind of coping strategies (mean score of negative strategies $x=45.81$) as compared to their counterparts ($x=23.50$) $p<0.05$ on calculated t value. **Conclusion:** Students of both settings having mean stress score on a higher side. Central board private school students have POSITIVE coping methods. Adoption of NEGATIVE coping style by students of state board government school possibly because of improper parenting, less parent-child interaction and lack of personality development. So they are to be focused for early interventions.

Association Of Obesity Status With Fasting Blood Glucose And Blood Pressure In Middle Aged Males.

Rasool Muayad Shukur Obaidi, Mrs. Asmita Phadke, A. Pranita, Mrs Anita Rao, Aniruddha Joshi.

Department of Physiology, Bharati Vidyapeeth Deemed University Medical College, Pune-43.

Background & Objectives: Incidence of obesity is rising even in a developing country like India. Obesity is a known risk factor for diseases like hypertension, ischemic heart disease, type 2 diabetes mellitus, colonic cancer and osteoarthritis. In our study we have tried to explore the association between obesity status, blood pressure and fasting blood glucose level. **Method:** A cross sectional study was done in 123 males in the age group of 36-60 years. They were divided in two groups based on their body mass index. Group I ($n=56$) comprised of subjects having $BMI \leq 24.99$ Kg / m² while Group II ($n=67$) comprised of subjects having $BMI \geq 25$ Kg / m². Systolic and diastolic blood pressures were recorded. Fasting blood glucose was estimated by glucose oxidase and peroxidase (GOD POD) an enzymatic method in all the subjects. Data was analyzed using Z test. **Results:** We found increase in systolic and diastolic blood pressure in Group II ($BMI \geq 25$ Kg / m²) as compared to Group I ($BMI \leq 24.99$ Kg / m²). This rise was statistically significant. We also found increased fasting blood glucose levels in Group II as compared to Group I, but it was not statistically significant. **Interpretation & Conclusion:** In our study we have found that higher BMI is associated with statistically significant higher levels of systolic & diastolic blood pressure. We have also noted higher BMI. So it is desirable to impart health education to people having high BMI regarding health risks associated with obesity. Remedial measures such as reduction in caloric intake and regulate physical exercise should also be prescribed to them. These measures will go a long way in reducing future disease burden due to obesity in our country.

Study Of Effect Of Obesity And CRP On Pulmonary Functions In Apparently Healthy Young Adult Males

Naveen Bankey

PCMS & RC, Bhopal (MP)

Background & Objectives: Obesity is a modern day epidemic which can be quantified by Body Mass Index (BMI). It is widely accepted that it is a state of low grade chronic inflammation which may result in impaired functions of many organ systems including pulmonary functions. The aim of the present study is to find if there is a relationship between BMI, pulmonary functions and low grade systemic inflammation in obesity. **Method:** The 36 volunteer participated in this study. After recording the anthropometric parameters the participants were divided into 2 groups, non obese group (n = 18, BMI 18.5-22.9 kg/m²) and obese group (n = 18, BMI >25 kg/m²). Both the groups were assessed for their parameters of pulmonary function (FeV₁, FVC, FeV₁/FVC, PEF and PEFr). Biochemical estimation of C-reactive protein (CRP) was also done in both the groups, as CRP is a marker of low grade systemic inflammation. **Results:** Multiple comparisons were done of the results obtained using one way ANOVA. There was a significant difference in the BMI (29.655±2.870, 21.756±1.288, p<0.05) and a significant difference was noted in CRP levels (25.22±6.907, 10.00±3.218, p<0.05) between the two groups. No significant difference was found in the pulmonary functions parameters (p> 0.05). Although there was no significant difference but a definite negative correlation was observed between CRP and all pulmonary functions. **Conclusion:** Excess body fat (as reflected by increased BMI) results in increased number of adipose cells in the body. These adipose cells, acts in an endocrine fashion leading to low grade systemic inflammation as reflected by increased CRP in obese individuals. This increased CRP can act as an independent risk factor for the development of future systemic diseases as reflected by its negative correlation with lung function parameters. This underscores the beneficial effect of regular monitoring and control of CRP.

Comparative Study Of Ankle Brachial Pressure Index, Lipid Profile And Blood Sugar Level In Cycle Rickshaw Drivers And Control Subjects

Manisha B. Makwana, M. B. Jani ,

Dept of Physiology, Baroda Medical College, Baroda. *Tutor, SBKS Medical Institute, Piparia, Baroda.

Background & Objectives: The ankle brachial pressure index (ABPI) is a non – invasive quantitative measurement for diagnosing Peripheral Arterial Disease (PAD). A high ABPI (>1.2) is associated with increased cardiovascular disease. A low ABPI (<0.5) is associated with impaired lower extremity functioning. **Method:** The present study of measurement of ABPI, blood sugar and lipid profile was conducted on 30 pedal rickshaw drivers (group A) and 30 sedentary healthy control subjects (Group B) of similar age group . **Results:** Fasting blood Sugar between two groups (A= 90.2± 4.89; B = 102.7±4.42 mg %) was significantly (P<0.0001) different and within physiological limits. LDL, triglyceride and total Cholesterol and were significantly lower in Group A (P<0.0006, <0.003 and < 0.004 respectively) compared to Group B. However, HDL concentration was significantly higher (P<0.0001) in experimental group. ABPI was calculated by measuring Blood Pressure with the help of hand held Doppler Machine (EMCO meditec India, model no. D-580). Systolic BP measured both in right and left arm in group A , was significantly (P<0.005) lower compared to Group B; whereas the Blood Pressure noted in right and left leg were similar in both the groups. ABPI in Group A was found to be 0.98±0.2 and 0.96± 0.01 in right and left leg respectively. The same Index in control group was found to be 0.91± 0.007 and 0.89±0.01 in right and left leg respectively. The data of both the groups was significantly (P<0.0001) different. **Conclusion:** This study suggests the possible protective role of strenuous exercise in controlling cardiovascular disease more specially PAD.

Analysis Of Gender Differences In The Brainstem Evoked Response Audiometry

Rekha.S, Neelambikai.N

Coimbatore Medical College, Coimbatore

Background & Objectives: The Brainstem auditory evoked potential (BAEP) measures the functioning of the auditory nerve and auditory pathways in the brainstem. In spite of various factors affecting BAEP, intersubject variability remains as a factor impinging on the significance of BAEP in clinical diagnosis. Aims & objectives of our study were to evaluate the role of gender in intersubject variability of BAEP latencies. **Method:** Thirty subjects of age group 18-20 were selected, of which 15 were males and 15 were females. All subjects were apparently healthy with no auditory problem & medical illness. Electrodes were placed on scalp and the potentials were recorded to the clicks presented at 80 db (SL) for stimulus rates of 10 clicks per second. Head circumference was measured in both the gender from nasion toinion. **Results:** When the latencies of waves were compared, significant difference in wave I ($p=0.0212$); III ($P=0.0009$); V ($p=0.0002$) and I-III interpeak ($p=0.0001$) were observed. Head circumference also showed significant difference between the gender ($p=0.0001$) **Conclusion:** Females have shorter latencies than males. The difference may be due to the relative distances of the anatomical generator that is the length of the auditory pathway. Because the precise origin of the sex difference cannot be stated with this time, attempts to develop normative data for BAEP should consider the possible influences of sex differences also.

Comparative Evaluation Of Lipid Profile Of Type II Diabetic Males & Females

Jain Meenu*, Jain AB**, Mehta Neeta***, Thakkar Dipti****, Jadeja JM*****

*Resident, ***Professor, ****Assistant Professor, *****Professor & Head, Dept of Physiology, BJ Medical College, Ahmedabad, **Ex Resident, Dept of Pharmacology, LLRM Medical College, Meerut

Background & Objectives To evaluate and compare the lipid profiles of male & female patients with diabetes mellitus type II. Design: Descriptive study. **Method:** : A total of 150 non obese, non hypertensive patients of DM type II with no other cardiovascular, renal or thyroid ailments reporting to Diabetic OPD, Civil hospital Ahmedabad. After obtaining informed consent from patients, detailed history was taken followed by thorough physical examination and investigations like fasting and post prandial blood glucose, HbA1C and lipid profile (Cholesterol, Triglycerides, HDL & LDL). Data was analyzed using student's unpaired t test. **Results:** Out of 150 patients 76 were females and 74 were males. The mean values of Fasting blood glucose, Post prandial blood glucose, HbA1C, Serum cholesterol, Serum Triglyceride, Serum HDL & Serum LDL for all patients were 127.03(SD±36.51), 207.17(SD±63.04), 7.51(SD±1.44), 155.04(SD±33.15), 148.56(SD±59.74), 51.97(SD±7.22) and 137.12(SD±17.65) respectively. There was no significant difference in lipid profiles of males and females except in Serum HDL level which was significantly higher in females as compared to males. **Interpretation & Conclusion:** Low values of HDL in males may lead to more chances of cardiovascular complications. This may raise need of more intense lipid profile monitoring in diabetic males than that required in females.

To Study The Effect Of The Body Mass Index And Waist Hip Ratio On Blood Pressure In Pre- And Post-Menopausal Women

Parvatha Rani.N, Neelambikai. N

Department of physiology, Coimbatore medical college, Coimbatore

Background & Objectives: Menopause is the transient period of declined ovarian activity and decreased oestrogen level with increased chances of obesity and increased comorbidities like hypertension, hyper-cholesterolemia, impaired cognitive function and cardiovascular dysfunction. Aims of our study were to see the effect of BMI, Waist Hip Ratio on Blood Pressure and to compare

the BMI, WHR and Blood Pressure in Pre- and Post-Menopausal Women. Design was Descriptive with purposive sampling. Participants were fifty premenopausal women in the age group of 40 to 45 years and fifty post- menopausal women in the age group of 50 to 55 years. **Method:** Standardised measurements of weight, height, waist circumference, hip circumference and Blood Pressure were done. Results were analysed by student't' –test. Statistical analysis was performed to find the association between Blood Pressure, BMI and WHR of premenopausal and post-menopausal women. **RESULTS:** Post- menopausal women are likely to be obese (Mean BMI 26.34) compared with the pre-menopausal women (24.39); $p < 0.05$. The post-menopausal women had a higher waist (91.14) and hip circumference (84.64); $p < 0.05$ as compared with the pre-menopausal women (84.64 and 98.06 respectively); $p < 0.05$. When compared with WHR, there is no significance difference between pre- menopausal (0.8618) and post-menopausal (0.8724); $p > 0.05$. Post-menopausal women had increased Blood Pressure, when compared with pre-menopausal women $p < 0.01$. **CONCLUSION:** These findings suggest that obesity has significant impact on Blood Pressure and they are at increased risk of developing Cardio vascular complications when compared with pre-menopausal women.

Study Of VO₂ Max And Anaerobic Power In Sportsmen And Control Group

Kapil G. Pallod, S.P. Surawase, S.T. Khan

Department of Physiology, Government Medical College, Aurangabad

Background & Objectives: Study was aimed to establish the values of VO₂ max and anaerobic power in the sportsmen and control group in Aurangabad city, Maharashtra, India. VO₂ max is maximum capacity of individuals body to transport and utilize oxygen during exercise which reflects the physical fitness of individual Anaerobic power is power produced without the requirement for oxygen to be present. **Method:** Sportsmen in age group 20-30 years playing the game for last 3-5 years were recruited according to there inclusion criteria. VO₂ max was calculated by Queen's College step test and anaerobic power was calculated by sergeant jump reach test. Values were reported as mean \pm SD. Sportsmen and control group comparison was analyzed by applying unpaired 't' test. **Results:** There was significant increased ($P < 0.001$) in VO₂ max and anaerobic power in the sportsmen as compared to control group. **Conclusion:** From this we can conclude that VO₂ max and anaerobic power is higher in sportsmen as compare to control group.

A Study Of Visual Evoked Potential Changes In Patients With Type II Diabetes Mellitus And Early Stage Of Primary Hypertension

Thenmozhi.S, Neelambikai.N

Department of Physiology, Coimbatore Medical College, Coimbatore

Background & Objectives: Visual Evoked Potential is a very sensitive test for detecting any abnormalities in the anterior visual pathway in various diseases like Diabetes Mellitus and Systemic Hypertension. Optic neuropathy in Type II Diabetes Mellitus is well documented but not in early stage of Primary Hypertension (Stage I and Stage II). Aim of our study was to evaluate the anterior visual pathway involvement in Type II Diabetes Mellitus and Early Stage of primary hypertension by using Pattern Reversal Visual Evoked Potential Response. **Method:** Study Group: 15 patients with 4 years duration of primary hypertension (Stage I and II) and 15 patients with same duration of Type II Diabetes Mellitus between the age of 30 to 60 years were compared with 15 controls of same age group. Methodology: Functional changes in anterior visual pathway of cases and controls were

evaluated by Pattern Reversal Visual Evoked Potential Response. Binocular stimulation was done by using checkerboard. 3 scalp electrodes were used: (1) Frontal (FPZ), (2) Occipital (OZ), (3) Grounding (CZ) electrodes. The distance between the TV screen and each subject was kept at a constant distance of 100 cms. The aim was to achieve maximal stimulation of the foveal and parafoveal fibers at 75% contrast and a reversal rate of 1.2 Hz. Uniform illumination was maintained in the laboratory and the electrode impedance was kept less than 2 ohms. An average of 100 sweeps of stimuli was given to each eye per pattern used. This was repeated twice and the averages of the two were superimposed to demonstrate reproducibility. The peak P100, N75 and N145 latencies were studied. **Results:** In the present study it has been found that the latencies of the waves P100, N75 and N145 are prolonged in both Type II Diabetes Mellitus and Early stage of Primary Hypertension. But when the values are statistically analyzed by unpaired T – test, it was found that statistically significant values were obtained only in Type II Diabetes Mellitus and not in early stage of primary hypertension. **Conclusion:** In the present study it was found that the Type II DM and Early Stage of primary hypertension (Stage I and II) were associated with impairment in anterior visual pathway.

A Crosssectional Study Of Effect Of Cigarette Smoking On Fasting Insulin Levels.

Shadab Munawar Moosa*, N.D.Somwanshi**, S.T.Khan*, Khaled Badaam*.

*Department of Physiology, Govt. Medical College, Aurangabad, ** Department of Physiology, GMC, Nanded.

Background & Objectives: Diabetes is a growing and massive silent epidemic that has the potential to cripple health services in all parts of the world. In India also, there is a rapid rise in the number of diabetics. The contribution of cigarette smoking in the development of impaired fasting glucose and type 2 diabetes is unclear. To determine whether there is a relationship between cigarette smoking and fasting insulin levels in young sedentary males. **Method:** Study Design: Crosssectional study. Thirty apparently healthy male sedentary subjects in the age group of 25-35 years, with history of smoking 10 or more cigarettes per day for 5 years or more were selected by simple random sampling from Aurangabad city of Maharashtra. Thirty matched controls were selected. Baseline assessment was done and fasting serum insulin levels were evaluated in both the groups. **Results:** The mean age (years) in smokers was 28.3 ± 2.3 and controls was 28.06 ± 2.25 BMI in the smokers was 20.5 ± 1.5 and controls was 20.4 ± 1.6 Systolic blood pressure (mm of Hg) in smokers was 124.8 ± 5.9 and controls was 125.06 ± 5.6 . Diastolic blood pressure (mm of Hg) in smokers was 80.06 ± 5.57 and controls was 78.8 ± 5.4 . Fasting blood glucose (mg %) in smokers was 84.6 ± 4.1 and controls was 83.07 ± 2.7 Postprandial blood glucose (mg %) in smokers was 106.7 ± 4.2 and controls was 105.7 ± 3.4 . There was no statistically significant difference found between baseline parameters of both the groups. The fasting serum insulin levels ($\mu\text{IU/ml}$) in smokers were 11.2 ± 2.93 and 4.93 ± 1 in controls. The difference in groups was statistically significant with a 'p' value of 0.0001. **Interpretation & Conclusion:** We found that there was a significant increase in fasting insulin levels in smokers as compared to controls although the blood glucose levels were maintained.