in physiological parameters such as BP, SpO2, ventilation, ECG in disease states.

Conclusion : Formal and informal feedbacks taken from students and teachers have been very encouraging. Inclusion of simulations for teaching/learning physiology is highly recommended. However, the cost benefit of using high fidelity simulator is yet to be ascertained.

Abs.ME.21

Clinically Oriented Model of Pharmacology Practicals For Undergraduates : An Initiative

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Objective : In the current era of technical advances traditional pharmacy and animal experimentations are mere exercises. Moreover sacrificing of innocent animals has always been criticized. This is an initiative to modernize pharmacology practicals while remaining attached to the old roots.

Method : Practical curriculum is modified as per the recommendations of MCI and DGHS with regard to our limited resources. Entire exercise is divided into 5 'phases'.

Phase I : Imparts knowledge regarding basic concepts of pharmacology and recent terminology through short discussions.

Phase II : Modernized version of pharmacy without dispensing tools. Students demonstrated different dosage forms and given project work to collect a particular dosage form from associated hospital.

Phase III : Phase of animal experimentation with the help of drug charts, graphs, computer assisted learning [CAL], etc.

Phase IV : Clinical oriented exercise where students are demonstrated different clinical devices, setting up of i.v. line, drip rate calculation, etc.

Phase V : Applied and therapeutic exercise in which students learn and practice clinically relevant prescription writing, FDCs, drug interactions, PBL and drugs under special conditions.

Students are assessed by a viva after the completion of each phase followed by a final grand viva.

Results : Feedback from students and clinicians has been very encouraging. Students taught by this pattern found it to be interesting and quite useful, specifically phases IV & V, while studying clinical subjects and doing internship. The pattern is also appreciated by examiners from different colleges and universities.

Conclusion : Pharmacology is the backbone of medical curriculum but out dated pattern has reduced the interest of students and fails to impart desired clinical skills. Small efforts, like ours, can help change this scenario.

Abs.MT.01

Poincaré Plot of Heart Rate Variability : A New Approach Towards Explaining the

Cardiovascular Risk in Obesity

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Objective : Obesity has been shown to affect cardiovascular function. Heart rate variability (HRV) has been an accepted method of measuring cardiovascular autonomic function. The objective of the study is to evaluate the impact of obesity on HRV using Poincare plot analysis. Though there are various methods available for idenfying the CVS risk in obesity, a finding of sympathovagal imbalance in pre-obese adults in respiratory sinus arrhythmia could provide important diagnostic information about early subclinical autonomic dysfunction.

Method : Twenty one obese (BMI 26.84±2.47) adult males (25.42±7.86 years) were compared with 21 normal subjects (25.38±4.61 years). In all participants, anthropometric and blood pressure (BP) measurements were performed. After rest at supine position for 5 minutes, they were asked to do controled deep breathing for 1 minute. HRV was measured in terms of Poincare plot analysis.

Results : Differences in Resting heart rate (P≥0.025), Pulse pressure (P≥0.048), SD1 (P≥0.042) and SD2 (P≥0.039) of the Poincare plot analysis between the two groups were significant. Correlation between Body mass index and Pulse pressure (P=0.19); SD1 (P=0.47) and SD2 (P=0.39) of the Poincare plot analysis were significant in obese groups.

Conclusion : Obesity is related to sympathovagal imbalance characterized by depressed parasympathetic tone and increased sympathetic activity. Nonlinear methods like Poincare Plot analysis permit simple assessment of autonomic balance, despite measuring different aspects of HRV. Poin care plot analysis gives a simple and early research tool in identifying the CVS risk in obesity.

Abs.MT.02

Does Body Mass Affect Cardiac Autonomic Activity ?

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Objective : Obesity is a risk factor for cardiovascular morbidity and mortality. The relation between cardiovascular morbidity and heart rate variability [HRV] is well established. We hypothesize that body mass affects cardiac autonomic activity as assessed by HRV.

Method : 124 healthy adults (63 women) in the age group of 18-20 years were recruited. Body mass parameters like body mass index (BMI), body fat (kg), body fat (%), lean body weight (kg) and waist hip ratio were computed in all. Based on BMI, subjects were divided into underweight [UW, n=13], normal [NW, n=79] and overweight [OW, n=44] groups. Resting ECG in lead II was recorded for 5 minutes and analyzed for frequency domains of HRV using software (Labchart 6 PRO, [ADInstruments, Australia]) according to established standards. Data was statistically analyzed and presented as mean±SD. P<0.05 was considered significant.

Results : No significant relation observed between body mass parameters and HRV. Though not significant, LF/HF and LF components in absolute and normalized units were higher and HF was lower in OW compared to NW [LF: HF 1.48±1.07 vs. 1.09±0.90, LF 47.75±15.76 vs. 40.35±17.52 nu HF 41.82±16.01 vs. 47.99±16.33 nu in OW and NW respectively]

Conclusion : HRV is not related to body mass in our study sample. The changes in autonomic activity begin in young healthy overweight persons that may continue in obese thus increasing the cardiovascular risk. Early prevention of excess weight gain potentially reduces the cardiovascular morbidity and mortality.

Abs.MT.03

Assessment of Obesity Status in I Mbbs Students

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Objective : Obesity is an important cause of morbidity & mortality for various diseases like hypertension, type 2 D.M. Body mass index (BMI) is a simple index used to classify overweight and obese status in adults. This study was undertaken to assess the obesity status in I MBBS students of last three batches admitted in the medical college.

Method : During medical checkup conducted after admission, anthropometric measurements such as height and weight were measured to their accuracy. BMI was calculated by Quetelet's Index & students were grouped into normal (BMI = 18 to 24.99), preobese (BMI = 24.99 to 29.99) & obese (BMI > 30) groups.

Results : Out of 407 students (177 male+230 females) 68% were found to have normal BMI. 21.62% were found overweight and 10.32% were found obese.

Conclusion : This data suggests a high incidence of obesity amongst medical student population who are future doctors. Many of them are having family history of obesity, hypertension and diabetes. Interventional strategies are essential for them in form of diet control, life style modifications and regular muscular exercises during their medical career.

Abs.MT.04

Correlation Between Altered Lipid Profile and Carotid Doppler Study in Cerebral Ischemia

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Objective : Cerebrovascular accident or stroke is the third major cause of morbidity and mortality worldwide. One of the major cause of stroke is cerebral ischemia and carotid atherosclerosis is a reasonable risk factor for this stroke subtype. Our study is to evaluate the role of dyslipidemia in causing atherosclerosis and thereby ischemic stroke.

1. To find the association between altered lipid profile and cerebral ischemia in CT Scan diagnosed stroke patients.

2. To find the correlation between carotid Intima Media Thickness (IMT) and altered lipid profile in the above cases.

Method : An observational case control study was performed at R.G. Kar Medical College & Hospital, Kolkata (January, 2010-July 2011). 50 diagnosed cases (age group 50-70 yrs) of cerebral ischemia and 50 age and sex matched controls were taken randomly following exclusion/inclusion criteria fixed for the study. Then subjects underwent proper history taking and clinical examination and special investigations [(A) Cholesterol by CHOD/PAP method, Triglycerides by GPO method, HDL-C by PTA-method, LDL-C calculated indirectly by Friedeweld equation. (B) Carotid Doppler Study]. Data analysis was done using SPSSv17 software.

Results : There is a significant ($P<0.001$) dyslipidemia (NCEP ATIII guidelines) in cases as compared to controls. There is significant positive correlation between levels of Cholesterol ($r=+0.675$, $P<0.001$), LDL: HDL ($r=+0.664$, $P<0.001$) and Triglycerides ($r=+0.294$, $P<0.05$) with average IMT. Among them, Multiple Regression Analysis shows that there is most significant positive correlation (beta=+0.383, $P<0.05$) between increased LDL:HDL and average IMT.

Conclusion : From the above study it can be concluded that altered lipid profile is associated with cerebral ischemia by increasing carotid IMT. So, early diagnosis of dyslipidemia and treatment of the high risk group with antihyperlipidemic drugs will help to prevent the incidence as well as reduce the morbidity and mortality of stroke.

Abs.MT.05

Comperative Studies on Respiratory Parameters in Young Adult Obese and Normal Females of Medium Socio-Economic Group

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Objective : To study and compare the effects of obesity on respiratory parameters in normal young adult females belonging to medium socio-economic class.

Method : The study was undertaken at the Department of Physiology, MLN Medical College, Allahabad. The study (obese) group with BMI > 30 kg/m^2 and control group with BMI in the range of 18.5-25 kg/m^2 of 60 adult healthy females belonging to medium socio-economic class as per Prasad's classification in each group with age of 18-25 years were included in the study. The pulmonary function test (PFT) was performed on each subject of both the groups.The parameters recorded were tidal volume (TV), forced vital capacity (FVC), forced expiratory volume in 1 sec. (FEV1), expiratory reserve volume (ERV) and peak expiratory flow rate (PEFR). All data obtained was analyzed by using MS Excel software.

Results : The results of the present study showed that expiratory reserve volume (ERV)

and peak expiratory flow volume (PEFR) of the study group was significantly lower (P<0.001) as compared to control group. The other pulmonary function test parameters like TV, FVC, ERV and FEV1 were not significantly different as compared to non obese controls of the same socio-economic class.

Conclusion : The results of study suggest that the respiratory functions of the young adult obese females seem to be compromised as compared to the comparable non-obese females belonging to the same socio-economic class. It may be concluded that obese adult female are more prone to have risk of respiratory disorders in future.

Abs.MT.06

Abdominal Obesity and Serum Homocysteine Levels Among Selected Ethnic Population-a Comparative Study

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Objective : Earlier studies have shown that people with Indian origin in a number of countries are more susceptible to coronary heart diseases. The ethnic difference in the mortality rates among various communities in Malaysia due to various cardiovascular risk factors. Plasma Homocysteine level is a stronger risk factor and its role has not been elucidated among Malaysian Indians. This study is done to understand the association between abdominal obesity and serum homocysteine level (Hcy), a putative risk factor for cardiovascular morbidity.

Method : A Cross sectional data from adult men (n=126) and women (n=155) in the age group of 23 to 65 years old were used in a representative sample of a semi urban population in Kedah State of Malaysia out of which large percentage were Indians. Standard questionnaires were used to collect detailed medical, personal and family history. Anthropometric measurement were used to classify the population into obese, non obese and centrally obese (CO) and centrally non obese group (CNO). Biochemical data involved plasma homocysteine level (Hcy), Total cholesterol, triglycerides (TG) and fasting plasma glucose. Clinical data involved blood pressure, WHR, BMI and family history of cardiovascular diseases. The subjects evaluated were consistently characterized by well known markers of insulin resistance i.e. High TG, low HDL cholesterol, high BMI and hypertension.

Differences between ethnic groups and between obese and non obese participants were analyzed using students t test and ANOVA using SPSS software version 11.0.

Results : Plasma homocysteine was higher among Indians and Malays (median: 10.2 vs. 12.1 μmol/l, P<0.01, compared to Chinese) and Chinese showed a lower level of Hcy level.HDL cholesterol was significantly different between the three groups (P<0.001). Fasting glucose was found to be higher among Indians. The Chinese population recorded least hypertensive cases (6.6%), and had no apparent risk factors which were significant compared to other communities. Among

Indians and Malays the mean fasting glucose was higher than the Chinese. Higher levels of fasting glucose were characteristics of the Indian group. Important observation was that the centrally obese category, as defined by the WHR values showed clearly higher levels of Hcy, compared to CNO group.

Conclusion : Hyperhomocysteinemia are widely prevalent among Indian and Malay community, particularly in those subjects with abdominal obesity.

Abs.MT.07

Relationship Between Anthropometric Measurement and Serum Lipid in Young Adult Males

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Objective : It has been widely accepted that excess body fat and obesity associated with lipid abnormalities constitute risk factors for Diabetes, Cardiovascular diseases, Hypertension. The relation between anthropometric markers and lipid profile remain controversial. In the study correlation between anthropometric variables with lipid profile were analyzed in randomly selected healthy adult population.

Method : Sixty healthy young adults of age group 20-40 years were taken in the study group. In the study group weight (kg), height (meter) measured and Body Mass Index (BMI) in kg/m^2 was calculated. Waist Circumference (WC), Hip circumference (HC) measured and Waist-Hip Ratio (WHR) was calculated and Body Fat Percentage (BF %) was measured using Durnin and Womersley Method. Serum lipid profile was determined from blood samples collected after subjects had fasted overnight by using colorimetric method.

Results : In the study cholesterol and LDL-C were correlated significantly with BMI ($r=0.1950$, $P=0.001$) and BF% ($r=0.2319$, $P=0.017$). Triglycerides directly correlated with WHR ($r=0.1474$, $P=0.020$) and HDL-C and TC/HDL-C ratio >5 inversely correlated with WHR ($r=–0.2818$, $P=0.041$).

Conclusion : High incident of obesity associated with Lipoprotein abnormality was seen in healthy adult population. Anthropometric variables associated with Lipid profile can better predict Dislipidaemia than any one particular variable.

Abs.MT.08

Correlation of Dynamic Pulmonary Function Tests in Relation to Obesity in Young Adults

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Objective : Obesity is a global health hazard and has been linked to numerous complications including respiratory diseases. Obesity cannot be assessed by body weight alone. So different anthropometric measurements have been used to define obesity levels. BMI is a good index for overall obesity while WC is the marker of abdominal obesity. So the purpose of this study was to compare of

correlation between dynamic pulmonary functions with BMI and WC in young Medical students of Kolkata.

Method : A total of 100 (males-50, females-50) young students (18 to 25 years) with moderately sedentary lifestyle were recruited in this study. Their body mass index (BMI) and waist circumference (WC)were measured. Dynamic pulmonary function tests (FVC, FEV1, PEFR, MVV) were recorded on Medspiror, an electronic spirometer. Student's t-tests were done to analyze the quantitive data and P value determined. Pearson's correlation analysis was performed to assess the relationship between the indices of obesity and the selected respiratory markers.

Results : In this study, in males, BMI is maximally inversely correlated with MVV while FEV1 & MVV show strong inverse correlation with WC. In females, BMI is maximally correrated inversely with FVC, FEV1 & MVV while WC shows strong inverse correlation only with MVV.

Conclusion : MVV, an indurance test, influenced by the respiratory muscles strength and is correlated inversely with both the obesity indices in both sexes. Abdominal fat deposition impedes the descent of diaphragm to reduce the PFTs and hence they show strong inverse correlation with WC in males. But in females stronger correlation of PFTs was found with BMI which could be due to weaker respiratory muscle strength producing lower dynamic compression. Hence WC is a greater predictor of FEV1 & MVV in males and only MVV in females.

Abs.MT.09

Effect of Body Mass Index (BMI) on Heart Rate Variability (HRV)

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Objective : In today's world, obesity is prevalent in both developed and developing countries. Obese people suffer from increased mortality risk due to cardiovascular complications. The goal of our study was to evaluate the relationship between being overweight and sympathovagal tone as measured by variability in heart rate in a cohort of young adults.

Method : A cross-sectional study was carried out among young adults in Maulana Azad Medical College. A total of 15 cases (overweight subjects, BMI > 25, mean age of 24.4±5.4years) and 15 controls (normal weight range, BMI < 25, mean age of 25±5.5years) were recruited for the study. Resting blood pressure and HR of subjects were measured and the body mass index (BMI) was calculated from height and weight measurements. None of the participants were suffering from any disease/drug known to affect autonomic activity. Five-minute recording of ECG was taken and HRV (time-and frequency-domain indices) were analyzed and correlated with BMI.

Results : The mean BMI of our study group was 28.7±5.4 and of the control group was 21.2±1.7. Despite the young age of the study population, increased values for the body mass index were associated with a shift in sympathovagal balance towards sympathetic predominance and parasympathetic withdrawal.

The time domain indices- SDNN, rMSSD, NN50 and pNN50 did not show any statistically significant difference between the two groups. With high BMI, LF domain and LF/ HF ratio was increased.

Conclusions : The present findings therefore strengthen the previously reported usefulness of BMI in predicting cardiovascular risks and add to our understanding of the early development of obesity-related cardiovascular abnormalities in young adults. It advocates the need to prevent obesity early in life to avoid its unfavourable consequences.

Abs.MT.10

Autonomic Functions in Obesity. Associations With Anthropometric Indices, Lipid and Thyroid Profiles

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Objective : To study the state and associations of cardiovascular autonomic indices in obesity with anthropometry, lipid and thyroid profiles.

Materials and Methods : The study was done in the autonomic function testing laboratory of department of physiology, JIPMER. 165 members were included for the screening and 120 subjects were included for the study as others turned out to be hypertensive, hyperglycemic and dysthyroid. The subjects were 30 obese males 30 obese females who were age and gender matched with 30 normal males and 30 normal females. The anthropometry and related indices were calculated according to ISAK recommendations. Classical Ewings cardiovascular autonomic functions were performed. Heart Rate Variability (HRV) measured using lead II ECG recorded through BIOPAC MP100 as per the recommendations of task force on HRV recording. Biochemical parameters were analysed in a fasting blood using standard recommendations. All data analysed using appropriate statistical tests using SPSS version 16.

Results : Obese males and females had lower HRV as compared with the normal controls. The obese males had the highest level of sympathetic activation. The normal females had the lowest sympathetic tone. The powers were inversely correlated with the age, various atherogenic anthropometry and lipid indices in all the groups. The sympathovagal balance index as calculated by LF/HF ratio and found correlated with the other independent parameters. The reactivity tests as calculated by the lying down to standing, forced timed breathing and isometric handgrip varied between groups in the corresponding manner as the HRV varied. Parasympathetic tone was found to be highest in the normal female group who had lowest vasoreactivity to reactivity tests. Blood glucose, Lipid and thyroid profiles varied significantly between groups with corresponding correlations as mentioned above.

Conclusion : Autonomic mileu is different in obesity and gender. The manner of autonomic imbalance or abnormality is well correlated with the existing cardiovascular indices of mortality and morbidity in the biochemical and anthropometric domains in this study.

Further as the manner of autonomic state is different across the groups, obesity and its related risks can be concluded as a result of heterogenous etiology across the different groups aforementioned.

Abs.MT.11

Rate Pressure Product Changes To Submaximal Exercise In Overweight And Obese Young Adults

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Objective : Overweight and obesity are major risk factors for cardiovascular diseases. The Rate Pressure Product (RPP) is used to measure the workload or oxygen demand of the heart, and reflects hemodynamic stress. Thus the objective of the study was to know the RPP changes to steady treadmill exercise in overweight and obese young adults.

Method : The study was conducted on 85 young healthy adults [Normal weight(NW)=30, Overweight(OW)=25 and Obese(OB)=30 depending on their BMI] in the age group of 18-22 yrs. Steady dynamic exercise test equivalent to Grade 2 Bruce protocol was done on treadmill for 5 mins. Blood pressure and heart rate were recorded before, during 3rd min of exercise, immediately after cessation of exercise and after 5mins of recovery. RPP was calculated as product of heart rate and systolic blood pressure. Statistical analysis was done using ANOVA.

Results : The mean resting RPP was significantly higher in overweight and obese groups ($P<0.05$). There was significant increase in RPP to exercise [mean difference in NW-8270.93 (99.61%), OW-10593.12 (118.39%) and OB-10897.33(118.10%), $P<0.05$] and the value did not return to baseline after 5 mins of recovery in study groups when compared to normal weight group ($P<0.05$).

Conclusion : The study shows that over weight and obese young adults have elevated resting RPP and much higher response to exercise indicating increased myocardial oxygen consumption at rest and during exercise suggesting larger hemodynamic stress to the heart which can lead to cardiovascular diseases in adulthood.

Abs.MT.12

Relationship of Obesity Indices With Blood Pressure and Blood Glucose Level in Young Adult Medical Students – A Cross Sectional Study

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Objective : Overweight and obesity are recognized as an "escalating epidemic" affecting both developed and developing countries. The World Health Organization has declared obesity as a disease of pandemic significance. The objectives of the present study was to assess the relationship of obesity indices with blood pressure and blood glucose level among young adult medical students and to study the prevalence of overweight and obesity in young adult age group.

Method : The present study was a cross sectional study conducted in department of Physiology, J N Medical College, Belgaum from January 2009 to December 2009, with a sample size of 427 young adult medical students aged 17–20 years. Obesity indices measured were BMI, WC, WHpR and WHtR using standard protocol. Blood pressure and fasting blood glucose levels were measured using standard techniques. The correlation between the obesity indices and blood pressure and FBS were done. Data analysis was done using unpaired 't' test to compare the mean of two groups. Chi-square test was used to compare the rates of different groups. Differences were considered significant at $P<0.05$ level. 'F' test (ANOVA) was used to compare means of more than two groups followed by Bonferroni multiple comparison test.

Results : The results of the present study revealed a significant correlation of BMI with both systolic and diastolic blood pressure. WC and WHtR were significantly associated with systolic and diastolic blood pressure among male participants, while there was statistically significant correlation between WHpR and systolic blood pressure among female participants. There was statistically significant prevalence rate of overweight and obesity among the study subjects. 19.9% of the study participants were overweight at risk, 17.7% were under obese I category and 6.7% under obese II category. Central obesity was also significantly prevalent in the group as defined by Waist Circumference and waist hip ratio (53.6% and 73.3% respectively). More than half of the participants (51.8%) had blood pressure at prehypertensive stage, while 7% of them already were hypertensive stage I and stage II.

Conclusion : Results of present study reveal the increased risk of development of hypertension in young adult age group at an earlier age. Hence, it's necessary for implementing an effective prevention and health promotion programs targeted towards young adult age group.

Abs.MT.13

Heart Rate Variability During Deep Breathing As An Index of Autonomic Dysfunction in Obese Medical Students – A Cross Sectional Study

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Objective : "Objective was to find the association between heart rate variability and obesity in obese medical students."

Method : A cross sectional study of one hundred twenty eight 1st year medical students was conducted at J N Medical college, Belgaum. They were screened for body mass index (BMI). The obese medical students were divided into three groups according to WHO classification for Asian population as Group I-BMI 18.5-23 (Increased but acceptable risk), Group II – BMI 23-27.5 (Increased risk) and Group III – BMI >27.5 (Higher high risk). An ECG is recorded continuously throughout the period of deep breathing. The result is then expressed as the mean of the difference between maximum and minimum heart rates for the six measured cycles in beats per minute. A difference of ≥15 beats/min (normal), 11-14 beats/min

(borderline), and values of ≥10 beats (abnormal).

Results : Among students with BMI 18.5-23 (n=59), 57 had normal and 2 students had borderline values. Students with BMI 23-27.5 (n=49), 46 students had normal, 2 students had borderline and 1 student had abnormal values. Students with BMI >27.5 (n=20), all had normal values. Majority of male students [98% (n=50)] and female [94.8% (n=73)]showed normal HRV values.

Conclusion : In this study, there was no association between obesity and hear rate variability. The gender did not appear to be related to heart rate variability during deep breathing.

Abs.MT.14

Relation of Body Mass Index with Lipid Profile and Blood Pressure in Healthy Females of Lower Socioeconomic Group, in Kosi region, Bihar

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Objective : To find out whether there is any relationship between Body Mass Index with Lipid profile and Hypertension in healthy females of kosi region.

Method : Fifty two women between 19-32 years of age attending Katihar medical college hospital OPD were used in this study between April and July 2011. Their height, weight and systolic and diastolic blood pressures were recorded. Body Mass Index (BMI) was calculated by using their height (m^2) and weight (kg). On the basis of BMI, all participants were divided into three groups that is under weight whose BMI was less than 19 kg/m^2, normalwho'sBMI was between 19 and 26 kg/m^2 and overweight who's BMI was more than 26 kg/m^2. After twelve hours fast, serum samples were collected and total cholesterol, HDL-C, LDL-C and triglycerides were estimated on semiautoanalyzer microlab 300 supplied by Merk. Statistical analysis was done on Epi-Info-6. The means of the three groups were compared by ANOVA at the significance level of s=0.05. Correlation coefficient was determined for the dependent variables of lipid profile and blood pressure with BMI (in kg/m^2) as the independent variable.

Results : The height, weight, mean systolic and diastolic blood pressure and lipid profile levels were available for all the 52 women included in the study. The mean BMI of the three groups in the 52 participants was 150.1 mg/dl±31.7, mean LDL-C was 91.6 mg/dl±22.6, mean HDL-C was 39.7 mg/dl±9.1 and mean triglycerides were 93.9 mg/dl ±41.6. Mean systolic blood pressure was 114.1 mmHg ±11.8 and mean diastolic blood pressure was 74.1 mmHg ±7.9. Among 52,23 were underweight that is their BMI was less than 19 kg/m^2, 17 were normal that is their BMI was between 19 kg/m^2 and 26 kg/m^2 and 12 were overweight that is their BMI was more than 26 kg/m^2. There were significant differences in mean serum HDL-C, triglycerides, systolic and diastolic blood pressure among three BMI groups ($P<0.05$) but none in mean serum cholesterol and LDL-C. No significant correlation was found between any of the lipid profile variables and blood pressure variables with BMI. In this study, comparison of three BMI groups (underweight, normal and overweight) with regards to serum total

cholesterol, LDL-C, HDL-C, triglycerides, mean systolic and diastolic blood pressure were also examined. Finding of this study shows there is positive and significant association between BMI and triglycerides which is similar to the findings of Donahue et al. (1985) and Prineas et al. (1980), this study also found no significant difference ($P>0.05$) in serum total cholesterol and LDL-C but there is significant difference ($P<0.05$) in mean serum HDL-C, triglycerides, mean systolic and mean diastolic blood pressure in three BMI groups. The percentage of subjects who's BMI was > 30 in this study was 23% which is similar to the findings of Yekeen et al. (2003) who found 33%. Okosun et al. (1999) had suggested that the prevalence of hypertension was closely linked to abdominal adiposity; however since waist-hip ratio was not measured in this study, it is difficult to confirm their observation with the findings of the present study. Ezenwaka et al. (1997) had also reported a higher prevalence of obesity and high blood pressure in women and in urban settings.

Conclusion : The importance of this finding is to enable "caregivers" in hypertension pay more attention to the control of obesity so that several complications associated with it might be prevented. The risk factors of hypertension already seen in several of the obese patients can be lowered by dietary intervention, as well as other medical control of hypertension. It is clear that the population prevalence of obesity, hypertension and hyper-cholesterol if known will be useful in planning interventions. Therefore, strategies designed to limit cardiovascular risk should address weight reduction.

Abs.MT.15

A Study of Autonomic Functions in Underweight and Overweight Young Adult Males

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Objective : The present study investigates the autonomic functions for detection of early autonomic impairment in underweight and overweight young adult males.

Method : Study was performed on 100 apparently healthy males aged 20-30 years. Subjects were classified into 3 groups as underweight BMI < 18.5 kg/m^2 (30), normal weight BMI 18.5–24.9 kg/m^2 (40) and overweight BMI > 25 kg/m^2 (30). Autonomic function tests i.e., 30:15 ratio, Valsalva ratio (VR), blood pressure change on standing and blood pressure response to isometric handgrip exercise were recorded.

Results : Mean values of 30:15 ratio and VR were significantly lower in overweight subjects compared to normal weight subjects indicating reduced parasympathetic function in overweight subjects. The mean change in blood pressure (Systolic BP) on standing and isometric handgrip test (Systolic and Diastolic BP) were higher in overweight subjects compared to normal weight subjects though not significant. Underweight subjects did not show significant difference in 30:15 ratio, VR and BP changes on standing and isometric

handgrip test compared to normal weight subjects.

Conclusion : The results showed reduced parasympathetic nerve function in overweight subjects but no impairment of autonomic functions in underweight subjects. These findings stress the need for the early holistic care of overweight young adults to avoid future complications.

Abs.MT.16

Correlation Between Bmi, Body Fat Percentage And Pulmonary Functions in Underweight, Overweight and Normal Weight Adolescents : A Cross-sectional Study

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Objective : In present cross-sectional study we tried to investigate if there is any correlation between Body Mass Index, Body Fat Percentage and FVC, FEV1 and FEF25-75, in underweight, normal weight and overweight males and females between age group of 18 to 21 years.

Method : 180 students, 90 boys and 90 girls in age group of 18 to 21 years, in three BMI ranges were enrolled and classified in underweight, normal weight and overweight groups according to WHO guidelines. Body fat percentage was measured using biolelectric impedance method and FVC, FEV1 and FEF25-75 were recorded using MIR-SPIROLAB-II according to ATS guidelines.

Results : Mean values of FVC, FEV1 were less in underweight and overweight subjects, the difference was significant across BMI ranges. FEF25-75 was low in overweight than normal weight subjects. FVC, FEV1 and FEF25-75 were having negative correlation with BMI and Body fat Percentage in males. Underweight males had positive significant correlation between BMI, body fat percentage and FVC, FEV1and FEF25-75. In females only FEF25-75 had significant correlation with BMI and Body fat percentage.

Conclusion : Overweight and underweight both groups had lower FVC and FEV1 than normal weight. In overweight group with increasing BMI as well as Body fat percentage FVC, FEV1and FEF25-75 decreases and in underweight it increases with increase in BMI and Body fat percentage only in males. Males are more affected due to increasing body fat percentage and BMI than females.

Abs.MT.17

To Study the Relationship Between Blood Pressure and Body Mass Index in School Going Children of Tea Garden Workers In the Age Group 7-12 Years

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Objective : To investigate the relationship between blood pressure and body mass index in 7-12 years age group as this is of crucial interest in evaluating both public health and

the clinical impact of the so-called obesity epidemic.

Method : In this cross sectional study, data was collected from 100 children in the age group 7-12 years from two garden schools. Three readings of systolic blood pressure and diastolic blood pressure were recorded in both the sexes and the mean was taken for analysis. A bathroom scale was used to measure the weight and the standard height was recorded by standard method of simply making the subject stand against a wall on which a measuring scale was inscribed. Body mass index was calculated by dividing the body weight in kg by the square of height in meters (m^2).

Results : After the conclusion of the study and statistical analysis, the mean SBP, DBP and MBP were found out to be 109.45±7.50, 73.15±7.41 and 85.25±6.90 mm of Hg and mean BMI was 14.71±1.47. All the three parameters of BP show positive correlation with increase in BMI. The difference of SBP is significant between successive age group ($P \geq 0.05$) and DBP is significant between 9, 10 and 11 years age group. MBP is significantly increased from age group 9 to 12 years.

Conclusion : Body mass index is conclusively associated with blood pressure in school age children; therefore, it may be used as a predictor of high blood pressure.

Abs.MT.18

Cardiovascular Response to Exercise in Young, Normal Weight and Overweight Students of M.B.B.S. Course in The Age Group of 18-25 Years

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Objective : The increased prevalence of obesity among adolescents may be due to modern sedentary life style, faulty food habits and lack of physical activity. Most students of M.B.B.S. Course have a sedentary lifestyle. Because of lack of regular physical exercise good proportion of students tend to be overweight.The aim of the study was to compare cardiovascular response to exercise in terms of functional abilities in young normal weight and overweight students of M.B.B.S.

Method : Study was carried out on medical students in the age group of 18-25 years by forming 2 groups. One group was the study group, comprising of 100 students who were overweight as determined by their Body Mass Index (BMI). The other group was control group, comprising of 100 students who were normal weight.Their Physical Fitness Index and Blood Pressure was determined before and after performance of Harvard's Step Test.

Results : It was found that there was a statistically significant ($P<0.00$) difference between normal weight and overweight subjects when the parameters were compared. The study group of overweight subjects showed a significantly higher mean resting blood pressure (systolic as well as diastolic) as compared to their normal weight counterparts. On the other hand, the physical fitness index scores (PFI) were found to be much better in normal weight subjects as compared to overweight subjects.

Conclusion : This study shows that young overweight adults have a poorer cardiovascular response to exercise as compared to normal individuals. The results of this study emphasizes the need for early identification of the risk factors leading to excessive weight gain and initiation of preventive measures in order to prevent the deterioration of cardiovascular performance in susceptible young adults.

Abs.MT.19

Evaluation of QTc Interval in Diabetic Subjects Without Overt Cardiovascular Disease

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Objective : To evaluate QTc interval in diabetic subjects without overt cardiovascular disease.

Method : A hospital based cross sectional study comprising of 30 diabetic patients (type I and type II) in age group 30-70 years admitted in medicine department, Assam Medical College Hospital. Patients with overt cardiovascular disease, using medication which can prolong QT interval, renal failure, pregnant women and with serious co morbid conditions which may alter QT interval were excluded. 30 controls were selected from normal healthy non diabetic adults, age and sex matched. A detailed history and thorough clinical examination of all the subjects was done and subjected to a 12 lead resting ECG using BPL CARDIART 108T-DIGI (paper speed of 25 mm/sec). The QT interval has been calculated using Bazett's formula (QT/ $\sqrt{RR}$). P-values were obtained by using Student's t-test.

Results : Mean QTc of cases is 0.44±0.04 seconds and of controls is 0.41±0.03 seconds ($P<0.01$). Mean QTc of male diabetic is 0.43±0.05 seconds while that of non diabetic males is 0.42±0.02 seconds ($P>0.05$). Mean QTc of female diabetic is 0.46±0.04 seconds while that of non diabetic females is 0.40±0.03 second ($P<0.01$).

Conclusion : Thus it can be concluded that the QTc interval is prolonged in diabetic subjects compared to that of controls, specially females which is significant and this is in accordance with various previous studies. As QTc prolongation is associated with ventricular arrhythmias and sudden cardiac death, so specific measures should be undertaken to prevent it.

Abs.MT.20

Effect of Vitamin C Supplementation on Serum Superoxide Dismutase Levels in the Patients of Type 2 Diabetes Mellitus

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Objective : To estimate and compare the serum Superoxide Dismutase (SOD) levels before and after supplying 1000 mg Vitamin C to type 2 DM patients for 4 weeks.

Method : Open Label Prospective Clinical Trial carried out in the Department of Physiology in collaboration with Department of Biochemistry and Medicine. 30 subjects of the age group 40 to 80 years of both sexes on oral hypoglycemic drugs were selected from diabetic OPD. The patients with complications such as ketoacidosis, ischemic heart disease, hypertension, malignancy, history of renal stones, retinopathy etc were excluded. After written and informed consent, tablet Limcee (500 mg bd) containing Vitamin C was given for four weeks to every patient. Superoxide dismutase was assayed from Venous blood samples in all the patients before & after Vitamin C supplementation by the method of Marklund S, Marklund G modified by Nandi and Chatterjee.

Results : The mean serum SOD value in type 2 diabetes mellitus patients before and after supplementation of Vitamin C for 4 weeks was 2.21±0.38 U/ml and 2.85±0.18 U/ml respectively. When these values were compared, using 'Paired t test', it showed statistically highly significant difference with $P<0.001$. Normal serum SOD level is 2.93–3.71 units/ml.

Conclusion : Supplementation with 1000 mg/day of vitamin C in addition to the normal diet and treatment schedule may help in improving serum SOD level in patients with Type 2 Diabetes.

Thus, oxidative stress is present in Diabetes and after supplying antioxidant, it decreases.

Abs.MT.21

Resistance Exercise Dose Response on Glycemic Control in Type 2 Diabetes Mellitus

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Objective : This review has evaluated the dose response of resistance exercises (RE) in the treatment Type 2 diabetes mellitus (T2D).

Method : The available literature was reviewed through a computerized search (MEDLINE and PEDro, 1980–2010) to classify studies examining the influence of differing dosages of RE on the treatment of T2D. Additional studies were reviewed through ancestral searches from their bibliographies.

Results : It is not possible at the present time to discern from the available literature whether a dose-response relationship exists between resistance exercise volume, intensity, frequency or rest intervals between sets and improvements in glucose control in T2D. Few systematic reviews and a good number of well conducted randomized controlled trials (RCT) indicate that RE is clearly associated with decreased glycemic levels in T2D. Additionally, one RCT conducted in Asian Indian population has pointed out the positive effects of resistance training in T2D. However, no RCTs have been conducted to address the dose-response effect of RE on diabetes treatment, in any ethnic population.

Conclusion : It is uncertain whether there is a dose-response effect of resistance exercise on improved glucose control in T2D. There

does, however, a good amount of evidence suggesting that resistance exercise contribute to better blood glucose control. Clearly, additional studies are needed to determine the influence of varying dosages of resistance exercise on the treatment of Type 2 Diabetes Mellitus.

Key words : resistance exercise, dose response, type 2 diabetes mellitus, blood glucose.

Abs.MT.22

A Pilot Randomised Placebo Controlled Trial on Exercise Therapy Dosage for Dyslipidemia In Type 2 Diabetes

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Objective : To examine the effect of varying dosages of resistance training (RT) on lipid profile in middle aged and older patients with type 2 diabetes.

Method : Sedentary, men and women with type 2 diabetes, aged 40–60 years (n=24), without any exercise contraindications and a baseline glycoselated hemoglobin value between 6.6% and 9.9% were randomized to high-intensity resistance training 3 days a week (3HI group), low intensity resistance training 3 days a week (3LI group) or a control program. Laboratory measurements of blood lipid values were assessed at baseline and 2 months. Data were analyzed via a one way ANOVA. The intragroup differences were analysed with paired t test.

Results : Statistical analysis revealed equivalent improvements in plasma lipid parameters regardless of RT dose. There were no between-group differences for Total cholesterol (TC), HDL Cholesterol (HDLc), LDL cholesterol (LDLc) and triglyceride (TG) levels ($P>0.05$). A paired t test analysis was conducted to show the differences between sessions in all groups. Highly significant differences between baseline and 2 months were found in all lipid parameters in the 3HI group ($P<0.05$).

Conclusion : High intensity RT does not yield improvements in plasma lipid levels more than low intensity RT or control. Clearly, more studies are needed with increased sample size and long term follow up to demonstrate any benefits of RT in improving lipid profile in patients with T2D.

Abs.MT.23

Brainstem Auditory Evoked Potentials in Type 2 Diabetes Mellitus

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Objective : To study brainstem auditory evoked potentials (BAEPs) and pure tone audiometry (PTA) of type 2 diabetes mellitus (T2DM) patients.

Method : The study was conducted on

consenting 30 T2DM patients comparing with 30 age and sex matched healthy controls. The PTA and BAEPs were assessed. Statistical test applied was independent samples t-test.

Results : In PTA, there was significant increase in auditory threshold at 250 Hz [20.25±4.46 vs 15.92±5.08 dB, P=0.001], at 500 Hz [21.25±5.42 vs 17.92±4.72 dB, P=0.001], at 1000 Hz [24±6.94 vs 19.42±5.37 dB, P=0.001], at 2000 Hz [27±9.31 vs 21.92±4.79 dB, P=0.001], at 3000 Hz [34.83±8.63 vs 27.17±5.24 dB, P=0.001], at 4000 Hz [41.67±10.02 vs 31.08±6.38 dB, P=0.001], at 8000 Hz [47.92±10.34 vs 38.33±8.57 dB, P=0.001] in T2DM group as compared to control group. T2DM group showed significant increase in BAEPs wave latencies I [1.85±0.23 vs 1.68±0.21 ms, P=0.001], II [2.99±0.27 vs 2.71±0.26 ms, P=0.001], III [4.21±0.41 vs 3.85±0.32 ms, P=0.001], IV [5.38±0.42 vs 5.06±0.32 ms, P=0.001], V [6.48±0.53 vs 6.01±0.25 ms, P=0.001] and interpeak latencies I-III [2.35±0.4 vs 2.16±0.28 ms, P=0.001], I-V [4.63±0.54 vs 4.33±0.3 ms, P=0.001] as compared to control group at 60 dB intensity.

Conclusion : Acoustically asymptomatic diabetic patients showed significant increase in auditory thresholds, BAEP wave and interpeak latencies suggesting impairment of acoustic nerve function and CNS pathways in them.

Abs.MT.24

Effect of Glutathione in Experimental Diabetic Neuropathy

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Objective : To study the preventive effect of glutathione in Streptozocin induced diabetic neuropathy in rats.

Method : In albino rats (250-300g) diabetic neuropathy (DN) was produced by STZ (50 mg/kg, i.v.). motor nerve conduction velocity (MNCV) was determined in sciatic- posterior tibial conduction system of ether anesthetized rats by EMG Mark II polyrite (RMS, Chandigarh). Blood/ urine sugar and tail flick reaction time to thermal stimulation were recorded initially and after 4, 6, 8 and 10 weeks of STZ. Rats were divided into 4 groups of 10 each. Group I- control, group II- STZ (diabetic control), group III- Glutathione (reduced form, 7.5 mg/100g, i.p. once in 3 days) GSH (glutathione) was given 5 days prior to STZ and continued for 10 weeks + STZ. Group IV- Insulin (4 U/kg, s.c., b.d.) + STZ.

Results : MNCV was significantly reduced in STZ diabetic rats after 10 weeks. However, in GSH pretreated group MNCV was not reduced as compared to STZ diabetic group. Insulin pretreatment also prevented the reduction in MNCV in diabetic rats. Administration of STZ resulted in hyperalgesic response (after 8 weeks onwards) and there was gradual decrease in tail flick reaction time to thermal stimulation in STZ diabetic rats. Hyperalgesia was not observed in GSH and insulin pretreated rats and tail flick reaction time was significantly increased in GSH and

insulin pretreated groups.

Conclusion : Glutathione prevents some neuropathic changes in STZ diabetic rats.

Abs.MT.25

Obesity Indicators and Coronary Artery Disease in Indian Male Type 2 Diabetic Patients

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Objective : The Established indicators of Obesity are Waist circumference (WC), waist-to-hip ratio (WHR), waist-to-height ratio (WHeiR), and BMI. Our study examined the usefulness of these indicators for coronary artery disease (CAD) in Indian male type 2 diabetic patients.

Method : A total of 150 male type 2 diabetic patients aged 55±4.19 years were studied. Coronary Artery Disease {CAD} was defined either by history or documented ECG findings. Patients who have received coronary stents or Coronary Artery Bypass grafting were also included.

Results : Logistic regression models estimating Odd's ratio for CAD, C-Index and Akaiki's information criterion (AIC) were used to evaluate the relative importance of these 4 indices. Results showed that Waist circumference alone was significant for CAD in type 2 diabetic patients.

Conclusion : It can be concluded that Waist Circumference has the superiority of independent association with CAD and the highest magnitude of association than WC, WHR, and BMI in both sexes. The usefulness of Waist circumference should not be neglected in clinical practice

Abs.MT.26

Study of Pulmonary Function in Type 2 Diabetes Mellitus and its Changes With Change in Duration and Glycemic Control

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Objective : To assess the pulmonary function in Type2 diabetes mellitus patients and its variation(if any) with Duration of disease and level of glycemic control.

Method : A comparative epidemiological study was conducted in R.G.Kar Medical college, Kolkata including 60 T2DM patients as cases and 60 age and sex matched controls following inclusion and exclusion criteria. Then subjects were undergone proper history taking, clinical examination and special investigations(HBA1c by IER method, PFT by flow sensitive spirometer-RMS HELIOS-401, DLCO by single breath technique- JAEGER MS–PFT). Grouping of cases were done according to duration of T2DM (GrIa = ≤ 5 yr, GrIb = 6–10 yr, GrIc = >10 yr) and HBA1c level (GrIIa = <6, GrIIb = 6–7, GrIIc = >7). Staistical analysis were done by SPSS (Statistica version 6) software and $P<0.05$ is taken as significant.

Results : There was significant ($P<0.05$) changes in PFT parameters (FVC%, FEV1/ FVC%) and Diffusion capacity (DLCO% and

DL/VA%) in cases compared to controls. There was significant (P=0.0001) decrease in FVC%, DLCO% and DL/VA% & increase in FEV1/FVC% in GrIc compared to GrIa & also in GroupIIc compared to GroupIIa. There was negative correlation of FVC% (r=–0.53, P<0.05), DLCO% (r=–0.66, P<0.05) and DL/VA% (r=–0.68, P<0.05) with duration & also negative correlation of FVC% (r=–0.50, P<0.05), DLCO% (r=–0.65, P<0.05) and DL/VA% (r=–0.62, P<0.05) with HBA1c level where as FEV1/FVC% was positively correlated with duration (r=+0.39, P<0.05) and HBA1c (r=+0.50, P<0.05).

Conclusion : From this study we can say that there is significant changes of pulmonary functions with changes in duration and glycemic control, which may be due to hyperglycaemia induced non enzymatic glycosylation of tissue proteins (collagen, elastin etc.) and chronic diabetic microangiopathy causing basement membrane thickening. So,by routine screening doing PFT, we can prevent mortality and morbidity of patient (type 2DM) due to subclinical or overt pulmonary dysfunction.

Abs.MT.27

The Study of Blink Reflex Alteration in Diabetic Patient With Or Without Polyneuropathy Compared to Normal Individuals

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Objective : Peripheral Neuropathy (PN) is one of the late complications of Diabetes Mellitus. Cranial nerves III, VII and V are among the most commonly affected nerves in diabetic patients. Routine electro-diagnostic studies are useful method for diagnosis of PN and symptomatic cranial neuropathy, and may not be useful for detecting subclinical involvement of cranial nerves. An electrophysiological study such as the blink reflex was shown to be an effective method for revealing subclinical involvement of cranial nerves in generalized neuropathies. The main objective of this study was to evaluate the role of Blink Reflex for early diagnosis of cranial neuropathy in diabetic patients with or without PN.

Method : The study was conducted on 150 subjects in age group of 40-60 years (50 controls, 50 diabetic with polyneuropathy, 50 diabetic without polyneuropathy). The diabetic patients were divided into two groups according to having diabetic neuropathy or not on the basis of peripheral nerve conduction studies. Blink reflex study was performed using RMS EMG EP MARK II.

Results : R1, R2i (ipsilateral R2) and R2c (contra-lateral R2) latencies in all diabetic patients with or without polyneuropathy were prolonged as compared to controls and the differences were statistically significant (P<0.05). R1 latencies in diabetic patients with polyneuropathy were significantly prolonged relative to diabetic patients without polyneuropathy (P<0.05). A positive correlation was also observed between R1, R2i and R2c latencies with duration of diabetes.

Conclusion : The findings reflects that blink reflex testing is a useful non-invasive method for obtaining early diagnosis of cranial nerve compromise in diabetic patients who do not

show any clinical symptoms or signs of CNS involvement.

Abs.MT.28

An Association Between Duration of Type 2 Diabetes and Short Term Memory and Verbal Fluency

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Objective : To find out whether duration of type 2 (non-insulin-dependent) diabetes mellitus was associated with poor short term memory and verbal fluency.

Method : A cross sectional comparative study of thirty participants with uncomplicated Type 2 diabetes with a mean age of 55 and did not have other medical disorders likely to affect cognitive function.The Addenbrooke's cognitive examination-Revised (ACE-R which includes MMSE plus tests for frontal executive function and visuospatial skills) was used to evaluate short term memory and verbal fluency. The performances were based on the scores obtained. Statistical analysis was done using coefficient of correlation. We considered $P<0.05$ to be significant.

Results : "For short term memory mean scores obtained was 6.37±0.76 and for verbal fluency mean scores obtained was 7.37±3.05.

Duration of diabetes, correlated significantly with poorer performance on short term memory ($r=-0.381$) and verbal fluency ($r=-0.827$).

Conclusion : Early diabetics performed well, whereas those who were diabetics for a longer duration performed less well. A negative association between duration of diabetes short term memory and verbal fluency was found.

Abs.MT.29

Impact of Fasting Glucose on Cardiovascular Autonomic Functions and Insulin Resistance in Prediabetes and Diabetes

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Objective : Impaired fasting glucose (IFG) concentration (100–125 mg/dL) called prediabetes is associated with an increase in cardiovascular disease mortality. This study is designed to observe the impact of IFG on cardiovascular autonomic functions and insulin resistance in prediabetic and diabetic subjects.

Method : Patients with diabetes (n=26), prediabetes (n=30) and healthy volunteers (n=28) were recruited through awareness camps conducted by the department of physiology and from the outpatient services of JIPMER. Clinical history was taken followed by measurement of anthropometry, resting blood pressure (BP) & heart rate (HR), cardiovascular autonomic functions and biochemical parameters (glucose, insulin, lipid profile, renal profile). The P value <0.05 was considered statistically significant.

Results : Increased levels of fasting glucose, insulin resistance and triglyceride were observed in prediabetes and diabetes groups when compared to control (healthy volunteer) group. Resting cardio-vagal modulation indices like high frequency power, total power, standard deviation of R-R interval, root of mean squared difference of successive standard deviation were significantly reduced in diabetes and prediabetes groups as compared with control group. No significant differences in total cholesterol and HDL cholesterol were found in the three groups.

Conclusion : Increased alteration in cardiovascular autonomic function, insulin resistance and triglyceride observed in prediabetes and diabetes group increases with an increase in fasting glucose level. Our findings suggest that cardiovascular autonomic dysfunction, insulin resistance and dyslipidemia start in the earlier stage of diabetes i.e., prediabetes. Thus, the good glycemic control education and/or intervention program will detect and prevent the disease.

Abs.MT.30

Sympathetic Skin Response in Early Diagnosis of Diabetic Neuropathy

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Objective : Autonomic small fiber neuropathy is an early complication of diabetes mellitus, and is common among diabetic patients. Conventional nerve conduction studies are useful only for assessing the condition of large, myelinated fibers and not the condition of the sensory small fibers which are involved in the early stages of diabetic neuropathy. Sympathetic Skin Response (SSR) which is frequently used to diagnose the functional impairment of non-myelinated post-ganglionic sudomotor sympathetic fibers in peripheral neuropathies may be used to assess early involvement in such patients and therefore may help in early diagnosis of Diabetic Neuropathy. Thus the objective of this study was to assess the clinical value of SSR in early diagnosis of diabetic neuropathy.

Method : The SSR test was carried out on 96 subjects (48 cases and 48 controls) in age group of 40-80 years in both upper and lower limbs. The latencies of initiation and amplitudes of the N and P waves were determined by SSR using RMS EMG EP MARK II.

Results : The latencies of the initiation of SSR test in both upper and lower extremities were prolonged significantly in the diabetic patients as compared to the controls (all $P<0.05$). While, no significant difference in the amplitudes ($P>0.05$) of P and N wave was observed between diabetic and control subjects.

Conclusion : SSR test can be used to detect the early dysfunction of the small sympathetic fibers in diabetic peripheral neuropathy, with normal nerve conduction studies, and may be a useful electrophysiological tool for early diagnosis of diabetic neuropathy.

Abs.MT.31

Autonomic Function Tests in Type 2 Diabetes Mellitus

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Objective : In the present study, the patients suffering from type 2 diabetes mellitus (T2DM) (n=61) were evaluated for the various autonomic function tests (AFT).

Method : AFT were done for E/I ratio, Valsalva ratio, handgrip tests and the Heart Rate Variability (HRV) parameters. The regression analysis was performed to evaluate the effect of the duration of T2DM on autonomic functions.

Results :

1. There was a significant decline with the duration of T2DM in the values of E/I ratio (P<0.0001), valsalva ratio (P<0.0001) and Handgrip test Diastolic blood pressure changes (P=0.0095).
2. When HRV parameters were analyzed, with duration of T2DM: the frequency domain variable of LF (n.u.) (P=0.0031) increased and H.F. (n.u.) (P=0.0093) decreased. Moreover, The L.F/H.F. ratio in normalized units (n.u.) (P=0.0031) and L.F/H.F. ratio in absolute power (ms2) (P=0.0187) increased. No significant changes were observed in the time domain parameters.

Conclusion : This indicates that with the duration of T2DM, there is reduction of both parasympathetic activity (as shown by the E/I ratio & valsalva ratio) and sympathetic activity (as shown by the handgrip test). However, as shown by the HRV parameters, there is relatively increased sympathetic preponderance as compared to the parasympathetic.

Abs.MT.32

Insulin Resistance and Hyperinsulinemia : Which is Primary ?

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Objective : To determine whether Hyperinsulinemia is primary or insulin resistance is primary.

Method : We examined evidences where insulin itself appears to be a proximate and important quantitative contributor to insulin resistance. Meta-analysis was done on published data.

Results :

1. The primary hyperinsulinemic mice are of normal weight but show insulin resistance, hyperglycemia, and hypertriglyceridemia.
2. Persistently elevated levels of insulin desensitize the target cells through multiple mechanisms.
3. Patients with unusually high doses of insulin and hyperglycemia. Episodes of hypoglycemia with release of glucose-raising hormones, earlier postulated as the culprits, have largely been excluded by studies including continuous glucose monitoring.
4. Continuous (40-h) hyperinsulinemia in humans significantly reduced glucose utilization and overall glucose metabolism at effective plasma insulin concentrations.

5. Rats and humans treated with escalating doses of insulin show both hyperinsulinemia and insulin resistance.
6. The pulsatile administration of insulin results in reduced requirements for insulin and more robust hypoglycemic effect in various types of models.
7. Patients with insulinoma with elevated basal levels of insulin have reduced responsiveness to administered insulin. Suppression of insulin secretion completely restored glucose metabolism and insulin sensitivity after normalization of insulin secretion from beta cells.
8. In normoglycaemic hyperinsu-linemia state if insulin production is suppressed insulin sensitivity increases rapidly maintaining the normoglycaemic state.

Conclusion : A hormone acutely stimulates its target cell and simultaneously resets the responsiveness of the target cell to subsequent doses of hormone. All evidences indicate that hyperinsulinemia precedes insulin resistance supporting the predictions of neurobehavioral origin hypothesis.

Abs.MT.33

A Correlative Study of Body Mass Index And Waist – Hip Ratio in Type 2 Diabetes Mellitus Patients With and Without Hypertension

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Objective : Obesity is a major risk factor for type 2 diabetes mellitus. In obese patients with type 2 diabetes mellitus, the Waist/Hip ratio and BMI are significantly higher. The present study was undertaken to correlate the W/H ratio and BMI in healthy participants and type 2 diabetes mellitus patients.

Method : The study group was divided into control (non diabetic subjects, N=57), Group 1 (diabetic only patients, N=58), Group 2 (diabetic with hypertension patients, N=58). The waist and the hip circumference was measured and ratio was taken (W/H ratio). In males the W/H ratio > 0.95 and in females W/H ratio > 0.80 is considered as abnormal W/H ratio. BMI is calculated by dividing weight in kilograms by the square of the height in meters (kg/m^2). If the BMI is >30 it is considered as obesity.

Results : The mean value of W/H ratio in Controls, Group 1 and Group 2 were 0.90±0.00, 0.94±0.00 and 0.95±0.01 respectively. The mean value of BMI in controls, Group 1 and Group 2 were 24.26±0.41, 25.63±0.50 and 26.03±0.71 respectively. When the inter comparision of controls, Group 1 and Group 2 for W/H ratio and BMI shows a significant increase in the two parameters in Group 1 and Group 2.

Conclusion : Obesity is a major risk factor for type 2 diabetes mellitus, and most of the patients with type 2 diabetes mellitus are obese. The present data indicate the significant increase in W/H ratio and BMI in diabetics and diabetes with hypertension patients.

Abs.MT.34

Auditory Neuropathy and Peripheral

Neuropathy Correlation in Typeii Diabetes Mellitus

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Objective : Diabetes mellitus is metabolic disorder of multiple etiologies characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects of insulin secretion, insulin action or both. Diabetic neuropathy is the damage to the nerves and effects up to 50% of people with diabetes. Electrophysiological techniques make it possible to investigate at initial stages of the disease. The objective was to evaluate the effect of Diabetes mellitus on auditory brainstem response and conduction velocity of median nerve(motor component) and sural nerve (sensory component) and to correlate between auditory neuropathy and peripheral neuropathy due to type II Diabetes mellitus.

Method : It was a cross sectional case control study in which cases of diabetes mellitus were studied and compared with 50 age and sex matched controls. Neurophysiological tests were performed as per prescribed standards on RMS EMG EP MARK II, Recorders And Medicare Systems. Nerve conduction velocity tests were done for motor component in median nerve and sensory component in sural nerve. BERA was performed and following parameters taken into account :

Latency : Waves I-V(msec)and Interpeak latencies : Waves I-III,I-V and III-V(msec)

Results : There is increased absolute latency of wave V and interpeak latency of III-V. The nerve conduction velocity was reduced in both the upper limb and lower limb. Hearing loss in diabetics is bilateral, subclinical, sensorineural and progressive in nature which is first to manifest than the peripheral neuropathy symptoms start to appear.

Conclusion : Auditory brainstem response testing can be used to assess the hearing loss at early stages and its further progression to peripheral neuropathy can be delayed or prevented depending upon the glycemic control and the duration.

Abs.MT.35

Correlation of Peak Expiratory Flow Rate And Glycemic Status in Diabetes Mellitus

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Objective : 1. To evaluate PEFR in patients with diabetes mellitus. 2. To determine correlation of PEFR with glycemic status of patients with diabetes mellitus.

Method : 31 diagnosed cases of diabetic patients aged 30 to 60 yrs with duration more than 6 months who are on treatment and has no history of lower respiratory tract illness and 31 (age and sex matched) control were included in this study. PEFR is measured by medspiror. Glycemic status (FBS & PPBS) of subjects were determined by Glucose oxidase & peroxidase methods. Results were analyzed and Mean, SD, Significance and correlation

were calculated by appropriate statistical methods.

Results : The average PEFR, FBS and PPBS in the case group are 3.97±2.04 L/sec, 201.51±130.80 mg/dl & 265.55±153.63 mg/dl respectively. PEFR in the control group is 6.32±2.35 L/sec. There is very highly significant reduction in PEFR in diabetic patients compared to control ($P<0.001$) & PEFR is found to be negatively correlated with FBS ($r = –0.133$) in patients with diabetes mellitus.

Conclusion : Respiratory function like PEFR found to be significantly reduced in patients with diabetes mellitus. PEFR is also found to be negatively correlated with glycemic status in diabetes mellitus. So simple lung function test like PEFR, will help to assess prognosis of diabetes mellitus in clinical practice.

Abs.MT.36

Heart Rate Variability as a Diagnostic Tool For Early Diagnosis of Cardiac Autonomic Neuropathy in Diabetes Type 2 Patients

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Objective : Cardiac autonomic neuropathy (CAN) in diabetes has been called a “silent killer”, because so few patients realize that they suffer from it. Early subclinical detection of CAN and intervention are of prime importance for risk stratification in preventing sudden death due to silent myocardial infarction. This study presents the usefulness of Heart rate variability (HRV) as screening tool for CAN.

Method : Data was recorded on 20 normal control (NC), and 20 Diabetes type 2 (DM) patients. Digital ECG was recorded for 5 mins interval with deep breathing at the rate of 6 respiratory cycle per min. HRV requires the digital ECG recording. This was done on Advanced RMS Polyrite (Chandigarh) and RR or NN intervals was analyzed to get the different HRV indices.

Results : Frequency domain analysis of extracted normal to normal interval (NN interval) data indicates significant difference in low frequency (LF) power with average value 38.3 for DM patients and 17.5 for NC subjects and high frequency (HF) power with average value 17.5 for DM patients and 29.3 for NC subjects. LF/HF ratio was 2.1 for DM patients and 0.93 for NC subjects.

Conclusion : Our study from the finding of LF/HF ratio demonstrate the potential utility of HRV in identifying asymptomatic CAN.

Abs.MT.37

Evaluation of Therapeutic Benefit of Methylcobalamin in Diabetic Retinopaathy

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Introduction : With an increasing incidence worldwide, Diabetes Mellitus will be a leading

cause of morbidity and mortality in the foreseeable future. This morbidity can be attributed to various complications of DM like Retinopathy, Neuropathy, Nephropathy. Till date, no drug with established role in the treatment of Diabetic Retinopathy is available. Present study was designed to evaluate the effect of mehtylcobalamin in Diabetic patients who developed Retinopathy as complication.

Methodology : This prospective, randomized, parallel group study was conducted on 20 patients with Diabetes mellitus type-2 (age group 35-75 years & disease duration of >10 years) with established varying severity of diabetic retinopathy and macular edema. They were divided in to two groups (n=10 each). The Control group was kept on conventional antidiabetic treatment while Test group was supplemented with Methylcobalamin 1500 mcg OD orally over the conventional anti diabetic treatment. All patients were followed every 3 months by posterior chamber evaluation for retinopathy and macular edema for the next 10 months.

Result : 90% patients in test group (who received methylcobalamin) retained the same grades of retinopathy and grades of only 10% worsened. While in Control group, grades of 60% patients worsened and the remaining 40% retained the same grades at the completion of study. When macular edema was taken into consideration, grades of 80% of the control groups worsened and 20% retained the same grades. In contrast, in test group, 30% patients showed improvements in their edema grades while the remaining retained the same grades.

Discussion & Conclusion : While the retinopathy score of most of the patients in control group worsened with time, methylcobalamin arrested the worsening of retinopathy scores. Macular edema definitely was improved in 30% patients receiving methylcobalamin. While the edema in control group got worse with time. An association between Diabetic Retinopathy and hyperhomocysteinemia is well established. This beneficial effect of methylcobalamin in retinopathy can be explained probably by its homocysteine lowering effects.

Abs.MT.38

Variation in Somatic Nerve Function Test Among Diabetic and Non-diabetic Subjects

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Objective : This study explored variation in somatic nerve function tests among diabetic and non-diabetic individuals.

Method : Proper age and sex-matched 50 diabetic and 50 non-diabetic subjects participated. Nerve conduction velocity, amplitude and latency of median motor and sensory for upper limbs where tibial motor and sural sensory for lower limbs were estimated.

Results : Among 50 diabetic patients 44% had abnormal somatic nerve function test and 5% non-diabetic controls had altered findings. Both NCV and amplitude were significantly reduced in diabetics but latency was not found to be significantly altered.

Conclusion : This study revealed a marked reduction in NCV along with amplitude of three peripheral nerves in diabetics. In

diabetes, an axonal neuropathy, NCV alteration is not usually well-documented. We got this finding which either may be a characteristic finding of this group of population or it warrants exclusion of other causes of neuropathy.

Abs.MT.39

Study of Sub Clinical Neuropathy in Patients With Recently Diagnosed Type 2 Diabetes Mellitus

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Objective : To study the changes in sensory and motor conduction velocities in recently diagnosed asymptomatic type 2 diabetic patients.

Method : This is a comparative study involving 50 patients in the age group of 25-50 years, with recently diagnosed type 2 diabetes referred for electrophysiological assessment. 30 age matched control subjects were selected from healthy volunteers.A detailed history was taken to know the duration of diabetes and presence of subjective symptoms. All patients went through a detailed neurological examination before undergoing nerve conduction studies. Peripheral nerve conduction studies consisting of sensory and motor nerve conduction were performed for median, ulnar, peroneal, tibial and sural nerves. Three main parameters namely distal latency, amplitude and conduction velocities were compared between control group and diabetics. We used RMS EMG EP MARK II machine for electrophysiological assessment.

Results : It was observed that Distal Motor latencies and Distal sensory latencies of all the nerves were increased in diabetics ($P<0.05$). Both sensory and motor nerve conduction velocities of all the nerves were decreased in diabetics ($P<0.05$). Sural nerve was most commonly affected nerve (71%). Most of the patients had more than one nerve involvement.

Conclusion : Nerve conduction studies are useful for detection of early neuropathy even before the onset of clinical symptoms in diabetics. It can also be used to test the progression and the effect of treatment in the diabetic group so that meticulous control of blood sugar can delay the progression of neuropathy.

Abs.MT.40

Antioxidant Potential of Aloe Vera in Experimentally Induced Diabetes Mellitus

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Objective : The objective of the present study was to evaluate antidiabetic and antioxidant potential of aloe vera in alloxan induced diabetes in albino rabbits.

Method : Albino rabbits of either sex weighing around 1.5-2.5 kg were used. They had free access to food and water ad libitum and were maintained under 12:12 hour light and dark cycles.An aqueous suspension was prepared by dissolving suitable amount of ethanol free

extract of Aloe vera leaf gel to get the desired concentration. Experimental Diabetes was induced in rabbits with alloxan (80 mg/kg body weight) dissolved in 0.1M citrate buffer (pH-4.0) and injected intravenously to overnight fasted animals through their marginal ear vein. Animals showing fasting blood glucose levels more than 250 mg/dl were considered as diabetics and included in the study. The rabbits were divided into four groups of six animals (n=6) in each group as follows :

Group I : Normal control rabbits

Group II : Alloxan induced diabetic rabbits

Group III : Diabetic rabbits received Aloe vera leaf gel extract (300 mg/Kg) in aqueous solution for 21 days.

Group IV : Diabetic rabbits given glibenclamide (600 ug/kg) in aqueous solution.

All the drugs were administered orally (using an intra gastric tube) in a single dose in the morning for 21 days. Blood samples were collected from the marginal vein of pinna of overnight fasted rabbits (Blood sugar, glycosylated hemoglobin (HbA1c), Malondialdehyde (MDA), reduced glutathione (GSH), total thiols (PSH) and Superoxide dismutase (SOD).

Results : Oral administration of aloe vera showed potent antihyperglycemic and anti-lipidperoxidative effect in diabetic animals. Simultaneously, the levels of protective antioxidant enzymes (SOD, GSH, PSH) were significantly increased with aloe vera supplementation.

Conclusion : The results suggest potent antidiabetic and antioxidant potential of aloe vera in experimental diabetes, and thus aloe vera can be used as an alternative remedy for treatment of diabetes mellitus and its complications.

Abs.MT.41

Relationship of Baroreflex Sensitivity and Hyperglycemia in Streptozotocin Induced Diabetes in Rats

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Objective : Poor metabolic control is a major determinant of nervous damage in diabetes. Impairment of baroreflex sensitivity is an excellent gauge of autonomic dysfunction. The present study was aimed to analyze the relationship of baroreflex sensitivity (BRS) with uncontrolled hyperglycemia and also after proper metabolic control.

Method : Diabetes was induced in healthy Wistar albino male rats by a single intraperitonial injection of Streptozotocin (65 mg/kg, STZ) dissolved in citrate buffer. The control animals were injected with equal volume of vehicle (Group 1). Experiments were conducted in STZ-diabetic animals eight weeks after induction of diabetes (Group 2). While group 3 constituted of diabetic animals in whom Insulin treatment (30 days) was started after 8 weeks of STZ administration. Femoral artery and vein were cannulated for recording arterial blood pressure and heart rate and for infusion of drugs respectively. BRS was measured by administering phenylephrine (vasoconstrictor) and sodium nitroprusside (vasodilator) through venous catheter. The

resultant changes in heart rate at corresponding rise or fall in systolic blood pressure were measured at different time intervals (every 2 sec). The regression coefficient (slope of regression line), expressed as beats per minute per mm of mercury (beats/min/mmHg) were taken as an index of baroreflex sensitivity.

Results : It was observed that reflex bradycardia and tachycardia response produced by vasopressor and depressor agents were impaired in the diabetic group. Improvement in baroreflex was observed after insulin treatment.

Conclusion : Improvement of baroreflex sensitivity with insulin treatment after 8 weeks of uncontrolled hyperglycemia indicates the beneficial effect of metabolic control even after uncontrolled diabetes.

Abs.MT.42

Serum Uric Acid Level, Body Mass Index & Waist Hip Ratio : Relationships In Population Study

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Objective : To study the relationship (if any) of serum uric acid level with body mass index and waist hip ratio among individuals of 30-50 years, of both sexes.

Method : One hundred adult male and female individuals aged 30-50 years were selected by simple random sampling from our community health clinic near R.G. Kar Medical College & Hospital, Kolkata. The subjects were apparently healthy or had no clinical conditions known to affect carbohydrate, protein, lipid metabolism and other body compositions. Fasting blood samples were collected for serum uric acid estimation (Uricase method) and anthropometric measurements which include weight, height, and waist hip circumference were performed. Body mass index (BMI) was calculated as body weight (kg) divided by height squared (m2). Data interpretation was done by using SPSS version 17. $P<0.05$ was taken as statistically significant.

Results : A significant ($P<0.05$) increase of serum uric acid (SUA) level was observed among individuals of BMI > 25 (SUA = 5.54±.98) & BMI < 25 (SUA = 4.14±.82). Further analysis showed a strong positive correlation (r=>0.5) between SUA and BMI. While considering waist hip ratio (WHR) male individuals having WHR > 1 showed significantly ($P<0.05$) higher level of SUA (SUA = 5.9±0.2) than those with WHR <1 (SUA = 4.28±.98). Similarly in females of WHR>0.85 showed a significantly higher ($P<0.05$) level of SUA than those compared with WHR <0.85. A positive correlation (r=>0.5) also exists between SUA level and WHR.

Conclusion : A graded increase of serum uric acid was observed with increased body mass index and waist hip ratio. Further study will be required to determine the physiological basis of this phenomenon.

Abs.MT.43

Association of Visceral Fat, Subcutaneous Fat, Autonomic Function Tests and Insulin Resistance With Metabolic Syndrome

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Background : We can reduce the burden of diabetes by preventing occurrence of diabetes mellitus or delay its onset by diagnosing insulin resistance. We explored the alteration of cardiac autonomic function and insulin resistance in predisease community with different numbers of metabolic abnormalities.

Objective : To analyze the criteria's of metabolic syndrome, autonomic function, body composition and to diagnose the insulin resistance in normal subjects. And to look for association between autonomic function test, visceral fat, subcutaneous fat & insulin resistance with metabolic syndrome.

Method : A Total of 80 normal subjects of 30–70 year age group, were assessed for criteria's of metabolic syndrome, were divided in three groups according to number of abnormal metabolic criteria. We measured visceral fat, subcutaneous fat, regional fat & muscle mass, BMR, BMI using body composition monitor. We did autonomic function tests (expiratory/inspiratory ratio, 30:15 ratios, Valsalva ratio, Resting SBP, Resting DBP, BP response to standing & hand grip tests) by using CANS-504.

Results : There is positive association of insulin resistance with central obesity, FBG, subcutaneous fat and AFT. There is positive association between insulin resistance, central obesity, FBG, visceral fat and AFT. AFT is more altered group with more than 3 metabolic abnormality compared groups with lower abnormality. Percentages of people with insulin resistance were also highest in this group.

Conclusion : AFT and insulin resistance have association with metabolic syndrome.

Abs.MT.44

A Study on The Association of Serum Uric Acid Level With Type 2 Diabetes Mellitus

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Objective : To find out the association of serum uric acid with type 2 diabetes mellitus and to compare the level of serum uric acid in type 2 diabetes mellitus of duration more than 5 years and less than 5 years.

Method : Fifty type 2 diabetes mellitus patients were included in the study, out of which twenty five were of duration less than 5 yrs and rest were of duration more than 5 years. Fifty non diabetic patients were included as control group. Type 2 diabetes mellitus with complications were excluded from the study. Serum uric acid was estimated by enzymatic (uricase) method.

Results : The average level of serum uric acid

in the patients was 7.387 mg/dl as compared to 6.044 mg/dl in the control group. The difference was significant statistically (P<0.01). The average level of serum uric acid in type 2 diabetics of more than 5 years duration is 7.1652 mg/dl as compared to 7.6088 mg/dl in less than 5 years duration, which was found to be statistically significant (P<0.01).

Conclusion : Hyperuricemia is found to be associated with type 2 diabetes mellitus and it has been found that serum uric acid level decreases with increasing the duration of type 2 diabetes mellitus.

Abs.MT.45

Autonomic Neuropathy in Type 2 Diabetes, Associated With Common Complication: Hypertension

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Objective : Hypertension, diabetes are not isolated finding, but a series of interactive physiological derangement. Autonomic imbalance could be a common root for hypertension and type 2 diabetes. The aim of this study was to evaluate the effects of hypertension on cardiac autonomic function in Type 2 diabetic patients.

Methods : 100 diabetic patients (mean age, 51.6±4.0) and 45 healthy subjects (49.2±5.1) were evaluated for autonomic function using standard cardiovascular reflex tests. Parasympathetic function was assessed by measuring heart rate response to deep and slow breathing (HRDB, beats/min); valsalva manoeuvre (VR) and lying to standing (30:15 ratio). Sympathetic response was assessed by change in blood pressures in hand grip (HGT) and lying to standing tests.

Results : Out of 100 diabetic patients (M:F=80:20), 34 patients were hypertensive (M:F=26:8) and 32 patients showed autonomic neuropathy (DAN) [M:F=21:11; P=0.02]. Parasympathetic reactivity was significantly decreased with DAN when compared to patients without DAN [HRDB = 11.91±4.4 vs 18±3.7 (P<0.05); VR = 1.01±0.12 vs 1.36±0.12 (P<0.05); 30:15 = 1.02±0.07 vs 1.25±0.07 (P<0.05)] where as there was no significant difference in blood pressure responses to HGT and postural challenge. Amongst the 32 DAN patients, the number of hypertensive patients was 19 (59.3%) and normotensive was 13 (40.6%) [P=0.005]. The degree of autonomic involvement (Ewing's Criteria 1992) was of definite type (38.7%) followed by severe (35.5%) and early involvement (25.8%).

Conclusion : Parasympathetic dysfunction predominated in Type 2 diabetes and DAN was more when diabetes mellitus was associated with hypertension. Sympathovagal imbalance was more in female patients and the degree of autonomic involvement was of definite pattern followed by severe and early involvement in DAN patients.

Abs.MT.46

Nerve Conduction Studies of Lower Limb in Type 2 Diabetic Patients

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Objective : To study sensory and motor nerve conduction studies of lower limb in type 2 diabetic male patients.

Method : A total of 200 male subjects in the age range of 45-65 years were selected for study. The study group included 100 type 2 diabetic males patients attending the diabetic clinic in the Dr. DYPMC 100 age, sex and BMI matched male volunteers who served as control. The conduction velocity, amplitude and distal latency of peroneal, tibial and sural nerves were done by using computerized RMS EMG EP MK II and surface electrodes.

Results : The conduction velocity and amplitude of peroneal and tibial nerves was found to be decreased in diabetics ($P<0.0001$) as compared with controls. Latency of tibial nerve was found to be more in diabetics ($P<0.0001$). The amplitude was most affected in the sural nerve in diabetics. When further evaluated for glycemic control, was found to be more in glycemic uncontrolled diabetics ($P<0.05$).

Conclusion : This study thus shows that in both motor and sensory nerves, conduction velocity, latency and amplitude are affected in diabetes. Strict metabolic control might prevent further deterioration of neuropathy in diabetic patients.

Abs.MT.47

Pulmonary Functions in Type II Diabetes Mellitus

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Objectives : The study was undertaken to analyze the pulmonary function parameters in type II Diabetes Mellitus patients and to compare them with age and gender matched healthy subjects. We also correlated FVC and FEV1 in diabetics with duration of the disease and glycosylated Hb (HbA1c).

Method : Pulmonary function tests (PFTs) were recorded in 30 type II diabetic male patients and 30 normal healthy male controls of age 40–70 years by using Helios 702 spirometer. All the tests were conducted according to ATS/ERS guidelines. Parameters recorded were – FVC, FEV1, FEV1/FVC, FEF25, FEF50, FEF75, FEF25-75, FEF0. 2-1.2, FEV3 and PEFR. HbA1c of all the patients was estimated by ion exchange resin method. PFTs of diabetic patients and controls were compared by applying t test. Correlations between FVC and FEV1 and HbA1c and duration of illness in diabetics were analyzed by applying Pearson's Coefficient.

Results : All PFT parameters were significantly decreased in Diabetic patients as compared to controls except FEV1/FVC and FEV3, suggesting restrictive pattern. But there was no correlation found between FVC and FEV1 and duration of illness and HbA1c.

Conclusion : Diabetes mellitus being systemic disease, it also affects lungs causing restrictive type of ventilatory changes. Hence diabetic patients should also be assessed for pulmonary abnormalities which can be easily diagnosed by spirometry. These patients should be addressed regarding the risk of restrictive ventilatory changes and they should be taught

proper breathing exercises to minimize the disability. We found Glycemic levels and duration of disease are probably not the major determinants of lung pathology, which requires further research.

Abs.MT.48

A Study of Serum Lipid Profile in Relation to Body Mass Index and Waist-circumference in First Year MBBS Students of Assam Medical College, Dibrugarh

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Objective : To study the relation of BMI and Waist-circumference(WC) with serum lipid profile according to the new guidelines for obesity for Asian-Indians on the first year MBBS students (2011 batch) of Assam Medical College, Dibrugarh.

Method : A cross-sectional study of 100 healthy first year MBBS students, aged 20±2 years was conducted in Assam Medical College, Dibrugarh. After obtaining proper ethical clearance, BMI (kg/m²) was calculated and Waist-circumference was measured at the mid-point between lower ribs and iliac crest by using non-stretchable measuring tape. Lipid profile of the students was done by enzymatic method. BMI and Waist-circumference were correlated individually with lipid profile each other. Gender variation is also noted.

Results : 100 healthy students were selected for analysis in this study. Mean cholesterol in 100 students was 158.56±15.11 mg/dl, mean Triglycerides were 91.33±9.67 mg/dl, mean LDL-C was 89.1±13.83 mg/dl, and mean HDL-C was 51.1±3.64 mg/dl. The mean BMI of students was 21.8±4.46 Kg/m². Among 100 students, 10 were underweight, 63 were normal, 14 were over weight and 13 were obese. Serum cholesterol had significant correlation with BMI (r=0.884) and WC (r=0.524, P=≤0.01). Similar significant correlations were observed between anthropometric measurements and triglyceride, HDL and LDL, and it is more significant among female students (P≤0.05).

Conclusion : We observed that high numbers of our young adults are overweight and obese with significant correlation with their lipid profile according to the new guidelines for obesity for Asian-Indians. It is influenced by dietary habit. Therefore, strategies should be designed for weight reduction in young adults to prevent cardiovascular disease.

Abs.MT.49

Heart Rate Responses to Exercise in Individuals With Type 2 Diabetes Mellitus

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Objective : The cardiovascular response to exercise depends on the interaction of the parasympathetic and sympathetic limbs of the

autonomic nervous system, while cumulative autonomic function scores of tests involves predominantly parasympathetic pathways. This study was conducted to compare the heart rate responses to exercise in individuals with uncomplicated type 2 diabetes mellitus.

Method : Thirty, male uncomplicated type 2 diabetics of age group 35-50 years leading a sedentary life style were selected as subjects. Thirty non-diabetic age and physical activity matched males were selected as controls.

Smokers, alcoholics, individuals with cardiovascular or respiratory illness diabetic complications and other illness affecting exercise performance were excluded. The study was conducted in KIMS, Hubli. Heart rate was measured at rest; treadmill exercise was done following Bruce protocol and Maximal heart rate measured. Recovery heart rate was measured a minute after cessation of exercise. Heart rate reserve is calculated using the data obtained. Statistical analysis was done using unpaired 't' test.

Results : No significant difference was found in resting heart rate, maximal heart rate and heart rate reserve. Difference between maximum heart rate and recovery heart rate (MHR–ReHR) was significantly lower in type 2 diabetics. Recovery Heart Rate was significantly higher in diabetics when compared with non-diabetics.

Conclusion : The more physiological meaning can be obtained through the differences between maximal and recovery heart rate than Recovery Heart Rate alone. It may be as a result of early progressive parasympathetic damage in diabetic group, which cannot be detected by routine clinical testing.

Abs.MT.50

A Study of Meat Consumption on Cardiometabolic Risk Factors in Premenopausal Type-2 Diabetic Patients

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Objective : Type 2 diabetes and obesity have reached epidemic proportions all over the world. Women will account for the majority of diabetic cases by the year 2050. Diet plays an important role in causation, management and complications of obesity and type 2 diabetes which are inter related. This study was conducted to compare the glycemic control, BMI and blood pressure in different meat consuming pre-menopausal patients of type 2 diabetes.

Methods : The study group consisted of 100 Female diabetic patients on treatment aged less than 40 years. They were divided into two groups based on their food habits with respect to type of meat consumed (viz. red meat consumers, white meat consumers). Their FBS, PPBS, BMI, Blood pressure and diet history were noted.

Statistics : Parameters between red meat & white meat consumers were compared by unpaired *t*-test. All tests were two-tailed and $P<0.05$ was considered as significant.

Results : The data when analysed statistically revealed that red meat consumption was positively associated with poor glycemic control in terms of both FBS and PPBS ($P<0.0005$). There was a significant association

of red meat consumption with BMI and blood pressure (P<0.0005 and P=0.0001 respectively).

Conclusion : Our study indicates that consumption of red meat may aggravate indices of glycemic control, Obesity and blood pressure in premenopausal patients with type 2 diabetes. Hormonal protection provided by estrogen is overridden by the consumption of red meat. Moderation of red meat consumption should be advocated to patients of type 2 diabetes.

Abs.MT.51

Rapamycin Protects Against Diet – Induced Atherosclerosis in C57bl/6j Mice

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Objective : The present study investigated the cardioprotective effects of rapamycin against diet – induced atherosclerosis in C57BL/6J mice.

Method : Male C57BL/6J mice were fed with an atherogenic diet composed of 1.25% cholesterol, 0.5% cholic acid and 15% fat daily for four consecutive months to induce atherosclerosis.

Results : Systolic and diastolic blood pressure was measured every week. Following the intake of 1.25% cholesterol, 0.5% cholic acid and 15% fat (atherogenic diet), there was a significant increase in the levels of lipid peroxidative markers (thiobarbituric acid reactive substances and lipid hydroperoxides), cardiac markers (CK, CK-MB, and LDH), body weight, mean food consumption, lipid profile (TC, TG and HDL-C) and a significant decline in the activities of enzymic antioxidants (superoxide dismutase, catalase and glutathione peroxidase). After supplementation of rapamycin (2 mg/kg) weekly once for four consecutive months to atherogenic mice, there was a significant decline in the levels of blood pressure, lipid peroxidative markers, cardiac markers, lipid profile, body weight, mean food consumption and significantly increased activities of enzymic antioxidants. Histopathological studies also confirmed the cardioprotective effects of rapamycin.

Conclusion : These results suggest that rapamycin affords a significant anti-atherogenic effect against diet-induced atherosclerosis in C57BL/6J mice.

Abs.MT.52

Association of Il-10 Serum Level With Metabolic Syndrome in North India

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Objective : To assess the risk factors of metabolic syndrome in study and control group. To see the IL-10 serum level in subject with and without metabolic syndrome.

Method : This is a case control study conducted in North India. Total 150 subjects were taken for the study in which 75 subjects were in case group, selected on the basis of NCEP-ATP-III 2005 criteria and 75 healthy

subjects were taken as control group. The anthropometrical measurement was done by B.P. instrument and measuring tape. The biochemical parameters like lipid profile and fasting glucose were done with the help of semi-auto analyzer by using commercially available kit. Fasting insulin level was done by IRMA method and serum IL-10 level was done by ELISA method.

Results : Comparison between the subject with and without metabolic syndrome shows that the defining risk factors - waist circumference, BMI, Systolic & Diastolic Blood presser, fasting glucose, total cholesterol, triglycerides, LDL, VLDL, Insulin level and HOMA-IR were significantly higher and HDL was significantly low in subject with metabolic syndrome. The IL-10 Serum level was found significantly low in subject with metabolic syndrome.

Conclusion : In conclusion, our results shows that low production of IL-10 may play a role in development of metabolic Syndrome in the North India.

Abs.MT.53

Study of HDL Cholesterol as a Sensitive Diagnostic Parameter in Malaria Patients Admitted in Gauhati Medical College and Hospital

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Objective : The current study is a hospital based study which attempts to establish the changes in lipid parameters in malaria patients.

Method : 44 patients aged 15-45 yrs presenting with signs and symptoms of malaria and diagnosed by parasite positive peripheral blood smear and positive rapid antigen test admitted in Gauhati Medical College and Hospital from July to September were taken as cases and 20 non-malaria fever patients(upper respiratory tract infections, urinary tract infections) were taken as controls. Exclusion criteria included hepatitis, hypertension, obesity, diabetes mellitus, chronic renal disease, lipid lowering drug intake and pregnancy. The patients on the day of admission were clinically examined and venous blood samples were drawn and collected aseptically in EDTA vials. The plasma was separated by centrifugation and tested for total cholesterol, triglycerides and HDL-cholesterol by enzymatic methods.

Results : Hypocholesterolemia, hypertriglyceridemia and a highly significant decrease in HDL-cholesterol ($P<.001$) was seen in malaria patients compared to controls.

Conclusion : The pronounced decrease in HDL-cholesterol, a reproducible phenomenon may be used a an additional diagnostic tool especially in endemic areas like Assam where parasites may be present in peripheral blood even if the person is not suffering from malaria. Also special attention should be given while interpreting lipid profile for other diseases during malaria disease. Other studies taking larger subjects is required to fully elucidate these finding and also follow up of the patients after complete recovery is required to know whether the changes induced in the lipid parameters undergo any change.

Abs.MT.54

Evaluation of Autonomic Activity in Type 2 Diabetes Mellitus

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Objective : In the present study, patients suffering from type 2 diabetes mellitus (T2DM) (n=61) were compared with the age and BMI matched controls (n=20). The patients and controls were evaluated for autonomic functions and the comparison was done using the unpaired t-test.

Method : The autonomic function tests were done for E/I ratio, Valsalva ratio, handgrip tests and the Heart Rate Variability (HRV) parameters.

Results : There were significantly higher values for the systolic blood pressure (P=0.0045), diastolic blood pressure (P=0.0002), mean blood pressure (P=0.001) and the heart rate (P=0.0053) in T2DM patients. The E/I ratio (P<0.0001) and the valsalva ratio (P<0.0001) of the T2DM patients were also significantly lesser as compared to the controls. In the handgrip test, the increase in the diastolic blood pressure in T2DM patients was significantly lesser as compared to the controls (P=0.0031). When the HRV parameters were analyzed, the time domain variables showed significantly reduced values in the T2DM patients as compared to the control patients for SDNN (P=0.0065), RMSSD (P=0.0006), NN50 (P=0.0029)and pNN50 (P=0.0094). The frequency domain variables in T2DM showed reduced absolute power in the LF (P<0.0001) & HF (P<0.0001) parameters.

Conclusion : This indicates that the T2DM patients show significant dysfunction in both the sympathetic and parasympathetic parameters of the autonomic function tests.

Abs.MT.55

Thymoquinone Ameliorates High Fructose Diet-induced Metabolic Syndrome in Rats

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Objective : The present study evaluates the effect of thymoquinone (TQ) on high fructose diet (FD)-induced metabolic syndrome in male Wistar rats.

Method : Rats (150-200 g) were randomly distributed into three groups. The first (control) group was fed with standard chow diet, the second (FD) group was fed 60% fructose diet, and the third (FD + TQ) group was fed 60% fructose diet along with thymoquinone, 50 mg/kg orally once daily for 6 weeks. Fasting blood samples were taken for the estimation of plasma blood glucose, total cholesterol, triglycerides and high-density lipoprotein cholesterol (HDL-C) levels at 0 and 6 weeks.

Results : High fructose diet caused significant increase in levels of plasma glucose, total cholesterol and triglycerides and a significant decrease in plasma HDL-C level at the end of 6 weeks as compared to the control group.

Administration of thymoquinone prevented the increase in plasma glucose, total cholesterol and triglycerides level and the values were significantly less as compared to FD group. Similarly, thymoquinone administration prevented the decrease in HDL-C level. All the values in the TQ group were not significantly different as compared to the control group at the end of 6 weeks.

Conclusion : This study demonstrates for the first time that concomitant administration of thymoquionone prevents the development of metabolic syndrome in high fructose diet-model in rats.

Abs.MT.56

Cadmium Chloride Induced Liver Damage and Lipid Profile Variation in Rats Model

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Objective : To study the toxic effect of cadmium chloride on alteration of serum lipid profile and rat liver histopathology.

Method : Adult male Wister rats (160 + 10 g) were divided into two groups i.e. control and experimental. Cadmium treated groups were received cadmium chloride (1mg/kg, i.p.) for 21 days. Animals were sacrificed after 21 days of treatment. Blood was removed by the retro-orbital and processed for lipid profile. Liver tissues were dissected out and processed for histopathological evaluation.

Results : The result definitely indicates an alteration of serum lipid profile by significant increase of total cholesterol and triglyceride level in cadmium treated rats. The changes in hepatocellular architecture of cadmium treated rats are also observed.

Conclusion : Our findings clearly reflect cadmium as a potential hepatotoxic agent on experimental animals.

Abs.MT.57

Assessment of Cardiovascular Risk and Associated Metabolic Abnormalities in Type II Diabetics

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Objective : Assessment of cardiovascular risk and associated metabolic abnormalities in type II diabetics.

Method : 62 recent onset type II Diabetic subjects diagnosed clinically and confirmed biochemically (Elisa Method) as per Criteria ADA 2011 were included in study. Age & sex matched normal healthy subjects were taken as control.

Result : The mean values of the parameters measured in the control group were-BMI (kg/m^2) 22.18±3.01, WC(cm) 88.72±4.66, FBG (mg/dl) 82.56±8.02, TC (mg/dl)=135.03±7.77, TG (mg/dl) 101.13±51.55 LDL (mg/dl) 68.38±17.20, HDL (mg/dl) 46.25±8.25 respectively. Based on the criteria updated NCEP ATP-III (2004) existence of metabolic

syndrome was identified in 52% type II Diabetics, remaining 48% were grouped as type II diabetics without metabolic syndrome. Mean values of the parameters measured in these group were BMI (kg/m^2) 27.39±2.91, 23.87±1.56, WC(cm) 95.96±6.17, 92.40±6.06 FBG (mg/dl) 161.91±22.47, 136.50±10.39 TC(mg/dl) 270.91±50.25, 192.72±11.34 TG (mg/dl) 186.48±27.84, 143.36±4.0, LDL (mg/dl) 204.41±45.53, 121.40±12.31, and HDL (mg/dl) 29.59±4.1, 42.22±5.03 respectively. The Statistical comparison revealed significant differences (P value <0.001) in these two groups. 10 years general cardiovascular risk was assessed by Framingham's Heart Scale.In risk category <10%, 81% of the control group, 30% type II diabetics without metabolic syndrome were identified.In the risk category 10-20%, 15% of the control group, 30% of type II diabetics without metabolic syndrome and 18% type II diabetics with metabolic syndrome and in risk category >20%, 3% of control group, 40% type II diabetics without metabolic syndrome and 81% type II diabetics with metabolic syndrome were categorized.

Conclusion : The diagnosis of metabolic syndrome and its association with CV risk factors may point to the right direction for effective prevention of cardiovascular complications.

Abs.MT.58

Nerve Conduction Studies in Type 2 Diabetic Patients

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Objective : Analyse the effect of long standing type 2 Diabetes mellitus on nerve conduction in sensory and motor nerves.

Method : Seventeen patients diagnosed of type 2 diabetes since more than five years; of age group 40–60 yrs were enrolled from diabetic clinic. The nerve conduction studies of these patients were compared with those of 30 healthy participants of same age. Conduction velocity, amplitude, and distal latency of median and ulnar nerves (motor and sensory) of upper limb and tibial (motor) and sural (sensory) nerves of lower limb were done by using the standard RMS EMG EP Mark II.

Results : When compared with non-diabetics, conduction velocity of motor and sensory nerves (upper and lower limbs) were found to be significantly reduced in diabetics (P<0.05), however decline in velocity of motor-right radial nerve and sensory-right ulnar nerve is not statistically significant (P>0.05) Amplitude of motor and sensory nerves (upper and lower limbs) were significantly reduced in diabetic patients (P<0.05), Similarly latencies of motor and sensory nerves were reduced significantly in diabetics (P<0.05), decline in latency of motor-right ulnar nerve does not show statistical significance (P>0.05). Blood glucose in diabetics, compared with non-diabetics is statistically significant (<0.05) and glycated hemoglobin in diabetics is statistically significant (<0.001).

Conclusion : Poor glycemic control in diabetics is responsible for neuropathic changes as a complication.

Abs.MT.59

Insulin Resistance in Prediabetes and its Association With Metabolic Syndrome and Cardiovascular Risk

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Objective : To investigate the existence of Insulin Resistance and its association with Metabolic Syndrome and cardiovascular risk in Prediabetes.

Method : Case control study conducted in Department of Physiology, Gandhi medical College and associated Hamidia Hospital, Bhopal. 274 subjects were subjected to Indian Diabetes Risk Scale (IDRS). Criteria for diagnosis of Prediabetes according to ADA 2011 (Fasting glucose 100-125 mg/dL) were adopted. 61 Prediabetic subjects (31 males, 30 females) aged 30-60 years and 61 age and sex matched normoglycemics served as control. Anthropometric measurements, fasting blood sugar, lipid profile and fasting serum Insulin (by ELISA) were assessed. Insulin Resistance was assessed using HOMA Index. 10 year general cardiovascular risk was assessed by Framingham Score.

Results : Out of 61 prediabetics, 37.7% subjects fell into Moderate risk group(IDRS 30-50) and 57% fell into High risk group (IDRS ≥60). The mean values of BMI and Waist circumference of Prediabetics were significantly higher (P<.05) than control subjects. Both the Systolic and Diastolic Blood Pressure were significantly higher (P<.05) than control group. In Prediabetics the Fasting serum Insulin level (18.25±12 µIU/mL) and HOMA Index were significantly higher than normal signifying Insulin Resistance.

On analysis of lipid profile of Prediabetics, mean values of Total Cholesterol, LDL, TG were significantly higher (P<.05) whereas HDL value was significantly lower (P<.05) than the control group. The mean General Cardiovascular risk was significantly higher (P<.05) in Prediabetics (12.48±10.87%) as compared to control group (6.01±5.97%). On stratification of age into 3 groups the mean cardiovascular risk in all 3 categories (30-40 year, 41-50 year, 51-60 year) was significantly higher (P<.05) than the control group. 58% of male and 80% of female prediabetics had Metabolic syndrome.

Conclusion : As prediabetics are insulin resistant and are exposed to a higher cardiovascular risk, this study has important implications for identification of Prediabetic individuals in whom primary prevention should be encouraged to reduce the burden of Diabetes in India.

Abs.MT.60

Catabolic Stress is Associated With Pancreatic Insufficiency in Chronic Pancreatitis

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Objective : Background: Catabolic stress and nutritional deficiencies may contribute to deterioration of pancreatic function in patients with chronic pancreatitis (CP). Objective: To study the association of protein catabolism with exocrine and endocrine dysfunction in CP.

Method : One hundred and seventy five consecutive CP patients and 113 healthy controls were studied. Plasma-free amino acid levels were estimated using reverse-phase high-performance liquid chromatography. Polyclonal antibody ELISA was used to assess pancreatic fecal elastase-1.

Results : Catabolic state as indicated by Phe/Tyr ratio in CP patients was significantly higher than healthy controls (3.6±0.7 vs 1.27±0.1, P<0.001). Phe/Tyr ratio in CP patients with low elastase-1 was significantly higher than CP patients with normal elastase-1 levels (4.23±1.47 vs 1.35±0.5, P<0.001). Phe/Tyr ratio in CP patients with diabetes mellitus was significantly higher than CP patients without diabetes mellitus (3.94±1.1 vs 3.08±0.6, P<0.05). CP patients with pancreatic atrophy had significantly higher Phe/Tyr ratio than CP patients without pancreatic atrophy (3.8±0.2 vs 1.1±0.3, P<0.001). In addition, Phe/Tyr ratio was positively correlated with TBARS (r = 0.512, P<0.001). Area under the ROC curve (AUC) of the Phe/Tyr ratio values to predict the presence of exocrine insufficiency was 0.761±0.41 and AUC of the Phe/Tyr ratio values to predict the presence of pancreatic atrophy was 0.812±0.63.

Conclusion : Conclusion: Catabolic state is significantly associated with exocrine and endocrine insufficiency in chronic pancreatitis.

Abs.MT.61

Comparative Study of Hepatoprotective Role of α-Tocopherol, β-Carotene and Ascorbic Acid Against Alcohol Induced Oxidative Stress

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Objective : Alcohol is consumed regularly by large number of people as stress reliever. Alcoholic Liver Disease (ALD) is a major disorder of the liver resulting from alcoholic oxidative stress. The study was undertaken to investigate and compare the potency and hepatoprotective action of α-tocopherol, β-carotene and ascorbic acid against alcoholic oxidative stress.

Method : Adult male Wister rats (120-130 g) were divided at random into five groups (n= 6): control, only alcohol treated (40% ethanol; 2 gm/kg/day p.o.), alcohol + α-tocopherol (100 mg/kg/day), alcohol + β-carotene (20 mg/kg/day) and alcohol + ascorbic acid (300 mg/kg/day) respectively for 4 weeks. Assessment of liver injury was studied by estimating levels of alanine and aspartate transaminase (ALT & AST), alkaline phosphatase (ALP) in serum, antioxidant status by measuring levels of reduced glutathione (GSH) and TBARS, and by histopathological study of liver tissue.

Results : Liver damage was evidenced in alcohol treated rats by significant increased levels of liver marker enzymes ALT, AST & ALP in serum. Oxidative stress was depicted

by increased levels of GSH depletion and lipid peroxidation by elevated levels of TBARS in the intoxicated group. However, single dose of α-tocopherol, β-carotene and ascorbic acid administration along with alcohol, significantly lowered the enzyme levels, TBARS level and GSH depletion. Moreover, histopathological study also revealed no fatty infiltration or necrosis in the vitamin treated groups. α-tocopherol was found to be most potent as no significant change in the parameters were observed between the β-carotene and ascorbic acid treated groups in comparison to α-tocopherol treated group.

Conclusion : It is concluded that as lipid peroxidation is the major mechanism in the development of ALD, α-tocopherol, the most abundant membrane bound antioxidant, targets free radicals most efficiently than ascorbic acid and β-carotene which are secondary antioxidant vitamins.

Abs.MT.62

Effect of Antioxidants (Vitamin C) on Tissue Ceruloplasmin Following Renal Ischemia Reperfusion in Wistar Rats

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Objective : To study the effect of vitamin C on tissue ceruloplasmin level following renal reperfusion.

Method : The rats were divided into five groups. The normal control was (Gr. I); experimental control was (Gr. II) & the treated group was (Gr. III). The experimental groups were subjected to ischemia for 60 minutes followed by 24 hrs of reperfusion. Gr. III was pre treated with vitamin C (20 mg/kg.bw) for 30 days followed by 60 minute ischemia & 24 hrs of reperfusion. After the experimental procedure was over; the kidneys were removed and homogenized. The homogenized tissue was used for biochemical estimation of lipid peroxidation & ceruloplasmin.

Results : The results of our study showed that 60 minutes of ischemia followed by 24 hrs reperfusion (Gr. II) increased the levels of tissue lipid peroxidation (MDA) and decreased the levels of ceruloplasmin as compared to Gr. I. However, the pre- treated group (Gr. III) showed an increase in the levels of ceruloplasmin and a decrease in lipid peroxidation in comparison to Gr. II and Gr. II.

Conclusion : The results of the present study suggest that vitamin C decreases the level of ceuloplasmin & protect the renal tissue from the free radical induced reperfusion injury.

Abs.MT.63

Effect of Supplementation of Vitamin C and E on Oxidative Stress in Osteoporosis

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Objective : Osteoporosis encompasses a wide spectrum of conditions associated with

imbalance of osteoclastic and osteoblastic activities. The increased activity of osteoclasts leads to increased free radical formation and hence lipid peroxidation. Present study probes into the role of antioxidants as a palliative treatment for osteoporosis.

Method : It involved 50 healthy controls and 75 clinically diagnosed osteoporosis patients. Both the groups underwent baseline assessment of biochemical markers viz. osteoblastic markers: serum Alkaline phosphatase, Free or ionic calcium and Inorganic phosphorus, osteoclastic markers: serum Tartarate resistant acid phosphatase and Malondialdehyde and the antioxidant status: serum Superoxide dismutase and Erythrocyte reduced glutathione. The osteoporotic group was then divided into groups A (Vitamin E-Evinal 400 mg), B (Vitamin C-Celin 500 mg), C (Vitamin E+C-Evinal + Celin) for antioxidant supplementation for a period of 90 days.

Results : The results reveal that there is significant fall in concentration of serum MDA (P<0.001), TrACP (P<0.01). Improvement in antioxidant status is reflected by significant rise in concentration of serum SOD (P< and erythrocyte GSH (P<0.001) after 90 days of antioxidant supplementation in osteoporosis.

Conclusion : The findings indicate that on the whole bone status improved with prolonged antioxidant vitamin supplementation, which can be used as a palliative treatment for osteoporosis. The efficacy is not affected whether the vitamins are administered singly or conjointly.

Abs.MT.64

Effect of Duration of Diabetes on Ventilatory Function

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Objective : To study the pulmonary function parameters in type 2 diabetes and also observe the effect of duration of diabetes on ventilatory function.

Method : The study was conducted on 40 known type 2 diabetic non-smoker male subjects in the age group of 30-50 years. Another 20 normal subjects were matched in terms of age, BMI for control. Based on the duration of diabetes patient were divided into group^{2} (5-10 years) & group^{22} (10-20 years). FVC, FEV_1 & PEFR of all subjects were measured by MEDSPIROR expirograph. Data were analysed by student t-test and pearson's correlation coefficient test.

Results : Age and BMI were matched & there was no statistical difference between diabetic subjects and normal subjects. But all the three pulmonary function parameters (FVC, FEV_1 & PEFR) were significantly reduced in both groups compared to control group (P<0.05). Again FVC, FEV_1 & PEFR were lower in the subjects with longer duration of diabetes than shorter duration but were not significant. There was a positive correlation of FVC, FEV_1 & PEFR with shorter duration of diabetes and FEV_1 & PEFR are negatively correlated with longer duration of diabetes but relationship were not significant in both groups.

Conclusion : Reduced lung volume & airflow limitation in both groups as compared to control denotes reduced force generating capacity of expiratory muscle & higher airway resistance which are likely to be the chronic complication of type 2 diabetes mellitus

which further detoriates with increasing duration of the disease.

Abs.MT.65

A Study of Relationship Between Leptin Level and Total Body Fat in Normal Subjects and in Patients on Hemodialysis

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Background : Leptin is a protein hormone produced by adipocytes regulating fat mass by controlling food intake and energy expenditure. Leptin is cleared from circulation by the kidney. Its level is likely to be altered in patients with renal failure with or without dialysis. In this study an attempt is made to establish correlation between leptin levels, BMI and total body fat in normal subjects and patients on hemodialysis.

Method : Twenty five patients on regular hemodialysis, age and anthropometrically matched 25 normal subjects in the age group of 25 to 50 years undergoing master health checkup in MSR hospitals participated in the study. Height and weight were measured by stadiometer and sensitive electronic balance, BMI was calculated. Body fat composition was measured by Omron Body composition analyzer by the technique of bio electric impedance. Leptin levels were estimated by ELISA method. The blood samples were drawn before the commencement of dialysis after an over night fast.

Results : Serum leptin levels in patients and controls were 16.38±31.59 ng/ml & 3.91±4.15 ng/ml. The mean BMI were 21.55±2.51 & 20.98±4.41. Total body fat percentages were 25.76±7.22 & 19.42±6.07 in patients & controls respectively. There was a positive correlation between leptin levels and body fat in patients (r=0.443, P=0.03) and in controls (r=0.572, P=0.003).

Conclusion :

1. Patients on hemodialysis had a higher leptin levels when compared to normal subjects.
2. There was a positive correlation between leptin levels & BMI in both controls and patients.
3. There was a positive correlation between leptin levels & total body fat percentage.

Abs.MT.66

Relation of Obesity to Blood Pressure Trends in Urban School Children in Jodhpur

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Objective : Purpose of this study was to measure blood pressure in relation with age and body mass index (BMI) in school children of 12-16 years.

Method : Study was carried out in children of 12-16 years age group in Jodhpur city. Total sample data were 1021, out of which 499 (48.8%) were boys and 522 (51.13%) were girls. Subjects were divided into four groups according to their BMI. Group 1, 2, 3 and 4 were with BMI (in kg/m^2) ≥18.5, 18.5 to 23,

23 to 25 and ≤25 respectively in age of 12-16 years. Parameters taken were age, height, weight and blood pressure.

Result : Blood pressure rises linearly as age and BMI increases in both boys and girls. Mean SBP/DBP in group 1, 2, 3 and 4 were-112.71/75.52, 119.81/81.81, 124.83/88.88 respectively. In relation to age SBP/DBP in age of 12, 13, 14, 15 and 16 years were - 113.01/77.65, 117.44/79.70, 121.19/83.67, 122.74/84.9, 124.95/87.7 respectively. Result shows a positive correlation of blood pressure with age and obesity.

Conclusion : Rise in blood pressure with age may be regarded as a physiological phenomenon but rise in blood pressure with obesity is certainly a dangerous pathological situation which may lead to Cardiovascular diseases.

Abs.MT.67

Correlation of Auditory & Visual Reaction Time With Glycemic Control (HbA1C) in Chronic Type II Diabetes Mellitus

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Objectives : To study the correlation between the glycosylated Hb & Reaction time in chronic diabetes of >10 years duration in two groups (n-100) with normal age matched (40-50) controls.

Methods : Auditory &visual reaction time (ART, VRT) were measured after five trials by PC 1000 Reaction timer in two groups of type II diabetic people, ie. DM for >10 years with HbA1c < 7.0, aged 40-50 years & DM for >10 years with HbA1c > 7.0 (n-100 in each group, age matched). Mean age of study & control group was 48. Exclusion criteria-subjects without auditory &visual disturbances, alcoholism & smoking.

Statistical Analysis – by Pearson correlation.

Result : Group – I (HbA1C <7) had increased Auditory & Visual Reaction time (statistically not significant) than control r value for ART, VRT=0.006, 0.09. Group-II (HbA1C >7) had increased Auditory & Visual Reaction time than control r value for ART, VRT 0.86, 0.55 positive correlation which is statistically significant. Diabetics showed increased value VRT than ART Diabetes of 10 years duration with HbA1c <7.0 are having increased Auditory & Visual reaction times but not statistically significant. Diabetes of 10 years duration with HbA1c >7.0 are having statistically significant increase in Auditory & visual reaction times.

Conclusions : Impairment of Sensory motor association in chronic diabetic with normal HbA1C was less than with less glycemic control that is chronic diabetes with HbA1C >7 which can be measured by reaction time (ART & VRT). peripheral neuropathy was worse in DM type II Diabetics of longer duration with elevated HbA1c than with normal HbA1c of chronic diabetes.

Abs.MT.68

A Comparative Study of Anthropometric Parameters in Breast Cancer Patients and Normal Subjects

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Objective : To compare height, weight and BMI in breast cancer patients and normal subjects.

Method : The study included 20 female breast cancer patients from MS Ramaiah hospitals and 20 age matched female controls in the age group of 30-70 yrs. They had no other co morbid condition. Their height (mts) and weight (kgs) were measured. BMI was calculated by Quetelet index (kg/m^2) by dividing the weight (kg) with height (m^2). Student's t-test (independent, 2-tailed) was carried out to compare the mean differences of height, weight and BMI between cases and controls.

Results : In the present study, both groups were similar in baseline characteristics. There was no significant difference in the mean height. It was observed that mean weight and BMI of cases were 63.9 kgs (SD±11.58) and 26.86 kg/m^2 (SD±4.23) respectively and mean weight and BMI of controls were 42.45 kgs (SD±7.43) and 17.88 kg/m^2 (SD±3.18) respectively. This difference was found to be statistically significant ($P<0.001$).

Conclusion : There was a significant increase in weight and therefore BMI in breast cancer patients as compared to controls. This suggests that higher BMI may be a risk factor for breast cancer and it merits further investigation in population with relatively high body mass index. Although the result of this study with a small sample size could not be generalized, it recommends a healthy life style, regular physical activities and a healthy diet to counter the growing incidence of breast cancer.

Abs.MT.69

Chronic Hyperglycemia and Inhomogenous Ventricular Repolarisation – An Electro-physiological Approach

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Objective : The QT interval on the resting electrocardiogram (ECG) expresses the myocardial depolarization and repolarisation time. QTd is the difference between the greatest and smallest values of the QT interval on any of the twelve leads of the resting ECG, is an index of myocardial electrical activity. The aim of this study was to investigate the differences in QTd between non-diabetics, well controlled and poorly controlled diabetics.

Method : The study group comprised of 60 type 2 diabetes patients within the age group of 40-60 years coming to diabetic O.P.D. and those hospitalized in medicine wards, They were further classified in to two sub-groups (n=30 in each group), Type 2 diabetes patients with good glycemic control (HbA1c < 7). And Type 2 Diabetes patients with poor glycemic control (HbA1c > 7). Glycosylated hemoglobin level was detected by calorimetric method (spectronic-2). The control group consisted

of 30 age matched healthy subjects (volunteers). After thorough examination of the subjects as per the proforma, 12 lead ECG was taken with (Montara instrument ELI 250), QT interval was measured on the 12 lead resting ECG. QTd was calculated manually.

Result : The value of QT dispersion was significantly high (P<0.01) in Type 2 Diabetes mellitus patients with poor glycemic control compared to well controlled diabetics and healthy subjects.

Conclusion : Chronic hyperglycemia is associated with high QT dispersion which suggests that such patients have a greater inhomogeneity of repolarization and therefore they are more prone for adverse cardiovascular events.

Abs.MT.70

Evaluation of Autonomic Activity in Type 2 Diabetes Mellitus

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Objective : In the present study, patients suffering from type 2 diabetes mellitus (T2DM) (n=61) were compared with the age and BMI matched controls (n=20). The patients and controls were evaluated for autonomic functions and the comparison was done using the unpaired t-test.

Method : The autonomic function tests were done for E/I ratio, Valsalva ratio, handgrip tests and the Heart Rate Variability (HRV) parameters.

Results : There were significantly higher values for the systolic blood pressure (P=0.0045), diastolic blood pressure (P=0.0002), mean blood pressure (P=0.001) and the heart rate (P=0.0053) in T2DM patients. The E/I ratio (P<0.0001) and the valsalva ratio (P<0.0001) of the T2DM patients were also significantly lesser as compared to the controls. In the handgrip test, the increase in the diastolic blood pressure in T2DM patients was significantly lesser as compared to the controls (P =0.0031). When the HRV parameters were analyzed, the time domain variables showed significantly reduced values in the T2DM patients as compared to the control patients for SDNN (P=0.0065), RMSSD (P=0.0006), NN50 (P=0.0029) and pNN50 (P=0.0094). The frequency domain variables in T2DM showed reduced absolute power in the LF (P<0.0001) & HF (P<0.0001) parameters.

Conclusion : This indicates that the T2DM patients show significant dysfunction in both the sympathetic and parasympathetic parameters of the autonomic function tests.

Abs.MT.71

Estimation of Salivary pH : A Highly Sensitive Screening Tool for Identifying Diabetic Neuropathy

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Objective : To study the change in pH of salivary secretion in diabetic individuals with an oral acid challenge (vitamin-c) and to

compare it with controls. To assess whether the duration of diabetes influences the change in pH. To find any correlation between blood glucose and salivary pH.

Materials : 80 diabetic individuals and 54 age matched controls were tested for salivary ph before and after oral challenge of vitamin-C using a standard ph strip. Their fasting blood glucose level, the type of diabetes and the duration of diabetes along with their clinical manifestation were recorded. The data were evaluated and analyzed and their significance determined using the appropriate 'T' test.

Results : The resting salivary ph of the diabetic and the control were almost same. The magnitude of change in salivary ph following an acid challenge in diabetic were significantly less ($P<0.001$) compared to that of the controls. Longer the duration of diabetes lesser is the salivary ph change.

Conclusion : There is a significant decrease in salivary ph change following an oral vitamin-C challenge in diabetics indicating an autonomic blunting. Estimation of salivary ph is a simple, effective, non-invasive method in identifying early neuronal impairment in diabetes mellitus.

Abs.NS.01

Eustress in Education : Analysis of Perceived Stress Score (PSS) & Blood Pressure Before and After Examination in Medical Students

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Objective : Stress is widely perceived as a detrimental phenomenon causing bad effects on the individuals. Students are subjected to periodical examinations which often lead to stress responses. Overwhelming evidence in the literature suggest that the examination stress is bad. However, Hans Selye had suggested that there were two types of stress responses, namely, Distress and eustress. In this study we analyze the results of Perceived Stress Score (PSS) and the Blood Pressure variations among First year medical students were evaluated.

Method : One hundred (50 male & 50 female) first year Medical Students, one month before and immediately after the examination were given the PSS sheets. Their Blood pressure also was recorded on both occasions. The results were analysed by applying Student's 't' test.

Results : We report the increased PSS score in all students during post-examination period ($P<0.01$). The number of students in low stress group was highest (77) before the examination and in moderately stressed group it was 20. But post examination period, the low stress group had only 24 students, while moderately stressed group showed an increase to 65. There was an increase in BP also.

Conclusion : From the results, it is evident that there was some stress during the examinations, which is in agreement with the previous reports. But we in this study suggest that the examinations causing mild to moderate stress will condition the students and the efficacy of General adaptation Syndrome will be improved in such subjects. Therefore we suggest that the examination stress (within limits) may be considered as eustress.