

## **Abstract: Basic Sciences**

### **Effect of Integrated Approach of Yoga Therapy on Carotid Intima Media Thickness and Biochemical Parameters among Prediabetes**

**Neha Saboo, Sudhanshu Kacker**

*Department of Physiology, RUHS College of Medical Sciences and Associated Hospital, Jaipur, Rajasthan, India*

#### **INTRODUCTION**

Diabetes is the most common endocrine disorder. Moreover, the disease manifestations start in the early stages of diabetes and before it gets established as a full-blown condition in the pre-stage called prediabetes. The aim of this study was to highlight the importance of the integrated approach of yoga therapy on metabolic profile and carotid intima-media thickness (CIMT) in pre-diabetic subjects and implement it as a therapy for the primary prevention of diabetes.

#### **METHODS**

The quasi prospective comparative study was conducted on a total of 250 prediabetic adults aged 31-50 years. These were divided into two groups, study group (Group A, n=125) were engaged in yoga session and control group (Group B, n=125) did not perform any yoga session. Statistical analysis was done by student's paired t-test for intragroup comparison before applying this test the Smirnov-Kolmogorov test was conducted to confirm the normality of each parameter.

#### **RESULTS**

Yoga intervention resulted in a significant decline in blood glucose ( $p < 0.0001$ ), glycated haemoglobin ( $p < 0.01$ ), lipid profile cholesterol ( $p < 0.01$ ), triglyceride ( $p < 0.01$ ), low density lipoprotein (LDL) ( $p < 0.01$ ), high density lipoprotein (HDL) ( $p$ -value  $> 0.05$ ) and very low density lipoprotein (VLDL) ( $p$ -value  $> 0.05$ ), CIMT ( $p$ -value  $< 0.05$ ) relative to the control group.

#### **CONCLUSION**

This preliminary study indicates that a yoga intervention would be a possible risk reduction option for adults at high risk for type 2 diabetes. In addition, yoga holds promise as an approach to reducing cardiometabolic risk factors, atherosclerosis, and cardiovascular (CV) events.

### **Influence of Physical Activity on Inflammatory Markers in Patients with Hypertension with Various Gene Risk Scores**

**Barkha Gupta, Sonali Sharma**

*Department of Biochemistry, RUHS College of Medical Sciences and Associated Hospital, Jaipur, Rajasthan, India*

#### **INTRODUCTION**

Hypertension (HT) is a multifactorial disorder with an unpretentious contribution of genetic factors and environmental factors. The aim of this study was to study the influence of moderate and regular physical activity on inflammatory markers and to study genetic markers of the variability of response to physical activity using the hypertension gene risk score in patients with uncomplicated hypertension.

#### **METHODS**

A total of 192 patients of either gender, age 40-69 years, of stage 2 essential hypertension were included in this interventional study. Patients were on 3 months of physical activity intervention (10,000 footsteps per day). Anthropometric parameters were noted and biochemical analysis was performed. 23 SNPs specific for HT, identified with SARGAM genotyping assay were used to analyse gene risk score.

#### **RESULTS**

Serum glucose, glycated hemoglobin, and lipid profile were significantly improved in all study participants after 3 months of physical activity when compared to baseline. A significant reduction was observed in inflammatory markers (TNF- $\alpha$  and hsCRP). When compared to gene risk scores, the study did not show any statistically significant results in anthropometric, biochemical parameters.

#### **CONCLUSION**

Moderate-intensity physical activity intervention targets elevated blood pressure, glycemic level, lipid parameters, and inflammation and aids in the correction of dyslipidemia, inflammation, and CVD risk in a person with HT having a sedentary lifestyle. This shows that environmental factors are more important than genetic factors in reducing CV risk.

## **A Study of Anatomical Variations in Patterns of Fissures and Lobes in Human Lungs**

**Shobhit Shrivastava**

*Department of Anatomy, RNT Medical College and Associated Group of Hospitals, Udaipur, Rajasthan, India*

### **INTRODUCTION**

The left lung has superior and inferior lobes separated by an oblique fissure, while the right lung has oblique and horizontal fissures dividing it into superior, middle, and inferior lobes. An accessory fissure is a cleft of varying depth lined by visceral pleura. The commonly found accessory fissures are superior accessory fissure (SAF), inferior accessory fissure (IAF), and left minor fissure (LMF). The aim of this study was to assess the anatomical variations of lobes and fissures of the lung, which is important for identifying the precise location, extent, and morphology of broncho pulmonary segments.

### **METHODS**

A total of 80 (40 on each side, left and right) cadaveric lungs from the dissection room were examined and studied. The anatomical classification proposed by Craig and Walker was followed to determine the completeness of fissures. Morphological variations in hilar structures were also analyzed.

### **RESULTS**

Out of 40 right lungs, SAF was present in 4 lungs (10%) and IAF was present in 6 lungs (15%). Out of 40 left lungs, SAF was present in 2 lungs (5%) and IAF was present in 2 lungs (5%). LMF was present in 8 lungs (20%). Usual structures of the right hilum were observed in 8 lungs (20%). Usual structures of the left hilum were observed in 26 lungs (65%).

### **CONCLUSION**

The knowledge of variations in the morphology of fissures is very helpful for cardiothoracic surgeons while performing segmental resection. It is also helpful for the radiologists and clinicians to make the correct diagnosis and to plan and modify the surgical procedures.

## **Serum Insulin and Vaspin levels in Non-insulin Dependent Diabetes Mellitus Patients with and without Obesity: A Cross-sectional Analytical Study**

**Sapna Sihag**

*Department of Biochemistry, Dr SN Medical College and Associated Group of Hospitals, Jodhpur, Rajasthan, India*

### **INTRODUCTION**

Diabetes mellitus (T2DM) is a combination of heterogeneous disorders commonly presenting with episodes of hyperglycemia and glucose intolerance, as a result of lack of Insulin, defective insulin action, or both. Vaspin (Visceral adipose tissue-derived serpin A12) is an adipokine that has been identified as a member of the serine protease inhibitor family. The purpose of the study was to evaluate the status of serum Insulin and serum Vaspin levels in non-obese and obese non-insulin dependent diabetes mellitus patients.

### **METHODS**

The present study was conducted on 125 male and female subjects of different age groups, comprising of 25 healthy controls, 50 non-obese and 50 obese non-insulin dependent diabetes mellitus patients. Serum Insulin and Vaspin samples were analyzed by commercially available reagents and kits.

### **RESULTS**

Serum Insulin and Vaspin levels were high in obese non-insulin-dependent patients as compared to healthy and non-obese non-insulin-dependent diabetes patients. Findings of the study showed a significant correlation between serum Insulin and Vaspin levels with diabetes and obesity. Vaspin improves glucose tolerance and Insulin sensitivity thus preventing complications of diabetes and has beneficial effect on insulin resistance, obesity, and T2 DM.

### **CONCLUSION**

Vaspin is a new biomarker for early diagnosis, better management, and prevention of complications to improve outcomes.

## **eGFR and Albuminuria for Association of Cardiovascular Disease Risk in Patients of Type 2 Diabetes Mellitus without Cardiac Comorbidities**

**Rakesh Manglani, Jitendra Ahuja, Sonali Sharma, Sunil Gupta**

*Department of Biochemistry, RUHS College of Medical Sciences and Associated Hospital, Jaipur, Rajasthan, India*

### **INTRODUCTION**

The onset of nephropathy in type 2 diabetes mellitus (T2DM) patients increases the CVD risk. India is facing an enormous healthcare burden in managing patients with different acute and chronic complications of T2DM. The present study was planned to assess the role of eGFR and albuminuria as risk parameters to evaluate cardiovascular disease risk in patients with type 2 diabetes mellitus.

### **METHODS**

This is a cross-sectional study on 100 T2DM patients. Demographic and biochemical data were collected. Urine albumin excretion over 30 mg/L was considered as having albuminuria and eGFR was calculated using the MDRD formula. Patients were divided into three eGFR categories:  $\geq 90$ , 60-89,  $< 60$  ml/min/1.73 m<sup>2</sup>. Ten-year coronary heart disease risk (CHDR) was calculated using the UKPDS risk engine.

### **RESULTS**

Out of a total of 100 patients, 63% were males and 37% females, and 45% were more than 60 years of age. The duration of diabetes was  $5.8 \pm 4.6$  years. Patients with eGFR  $< 60$  ml/min/1.73 m<sup>2</sup> were older in age with longer diabetes duration compared to those who had eGFR  $> 60$  ml/min/1.73 m<sup>2</sup>. A significant association between CHDR and eGFR ( $p = 0.014$ ) and CHDR and albuminuria ( $p < 0.001$ ) was observed.

### **CONCLUSION**

CHDR score based on the UKPDS risk engine shows a significant association with eGFR and albuminuria in patients with T2DM without symptomatic CVD. These findings would be useful for physicians to make the therapeutic decision and earlier interventions for T2DM patients.

## **A Study of Cardiac Autonomic Function in Normal, Overweight, Obese Pre hypertensive and Hypertensive Adults**

**Nitish Ishran, DK Devra, BK Binawara, Pramod Kumar Narnolia**

*Department of Physiology, SP Medical College and Associated Group of Hospitals, Bikaner, Rajasthan, India*

### **INTRODUCTION**

Hypertension is a non-communicable disease of major concern. Autonomic nervous system (ANS) dysfunction is an important factor in the development and progression of hypertension. Thus, the present study was done to assess the sympathovagal balance in normal, overweight, and obese pre-hypertensive, and hypertensive adults.

### **METHODS**

A total of 180 subjects were divided into four groups that were group-1 normotensives having normal BMI, group-2 prehypertensives having normal BMI, group-3 prehypertensives having higher BMI, and group-4 hypertensives. Parasympathetic reactivity tests (expiration/inspiration ratio, 30/15 and valsalva ratio) and heart rate variability (HRV) were done using a single-channel cardiac autonomic analyser machine. Sympathetic reactivity was tested by the cold pressor test (CPT) and handgrip dynamometry test.

### **RESULTS**

Parasympathetic tests and SBP and DBP differences in CPT were significantly reduced in high BP and BMI subjects. In HRV analysis mean LFnu and LF: HF ratio was increased and mean TP, HF, HFnu, RR, RMSSD, SDNN, NN50 and pNN50 were significantly reduced in over weight and obese, prehypertensive, and hypertensive subjects.

### **CONCLUSION**

Autonomic imbalance in the form of increased sympathetic activity and vagal inhibition is present in over weight and obese, pre hypertensive, and hypertensive adults. Lifestyle modifications such as yoga, weight reduction, and exercise would enable achieve the sympathovagal balance and may delay or prevent the onset of hypertension.

## **Study of Various Inflammatory Markers and Biochemical Parameters in Hypothyroid Patients**

**GG Kaushik, Peeyush Yadav**

*Department of Biochemistry, JLN Medical College and Associated Group of Hospitals, Ajmer, Rajasthan, India*

### **INTRODUCTION**

Hypothyroidism is a common endocrinological problem that plays a significant role in metabolic and development processes world wide as well as in India. The study aimed to evaluate the association of adipokines and inflammatory markers in previously diagnosed hypothyroid (PDH) patients and newly diagnosed hypothyroid (NDH) patients.

### **METHODS**

The study was conducted on 100 PDH patients and 100 NDH patients and 100 healthy control. Estimation of various biochemical parameters such as serum ghrelin, leptin, resistin, hs-CRP, lipid profile, thyroid profile, and plasma fibrinogen were done. Differences in the parameters among the groups were analyzed by the ANOVA test followed by its Tukey HSD post hoc analysis.

### **RESULTS**

A significant negative correlation of hs-CRP with  $fT_3$  was found. A significant negative correlation of resistin with  $fT_4$  was found in the NDH group in comparison to a non-significant correlation in the PDH group. A highly significant positive correlation of Resistin with TSH was found in the NDH group in comparison to a non significant correlation in the PDH group. As far as lipid profile is concerned, a strong positive correlation of Resistin with total cholesterol, triglycerides, VLDL, and LDL was found in the NDH group in comparison to a non significant correlation in the PDH group.

### **CONCLUSION**

hs-CRP and ghrelin show weak correlation with thyroid hormones and lipid profile. Resistin shows a significant correlation with thyroid hormones and lipid profile which indicates that serum Resistin might be considered as a confirmatory extra test for the early detection of atherosclerosis and atherosclerosis induced conditions in hypothyroid patients.

## **Sexual Dimorphism and Morphometric Study of Human Hip Bone**

**Prashant Giri Goswami**

*Department of Anatomy, RNT Medical College and Associated Group of Hospitals, Udaipur, Rajasthan, India*

### **INTRODUCTION**

Techniques requiring the measurements of diameters, circumferences, or cross-sectional areas of tubular bones may provide the needed means for sexing fragmentary remains. The hip bone is considered one of the ideal bones for sex determination as it not only reflects the general differences between the two sexes but also shows the special adaptation of the female hip bone for childbearing. The aim of this study was to assess metric differences in the male and female hip bones and identify the sex.

### **METHODS**

A total 50 dry human hip bones (25 known and 25 unknown sex) were collected to analyze and evaluate the Chilotic line index, height, width, Coxal index, distance between anterior superior iliac spine to the pubic tubercle, acetabulopubic index, and ischiopubic index. All the hip bones selected were dry and without any deformity. All the data thus obtained was compiled, tabulated, and statistically analyzed.

### **RESULTS**

All the parameters showed statistically significant sex differences. Chilotic index and height was found more in males, Coxal index among female hip bone was found significantly higher than that of the male hip bone, distance between anterior superior iliac spine was found more in males, acetabulopubic index among male hip bone was found higher. Ischium was longer in males, pubis in females and Ischiopubic index was also more in females.

### **CONCLUSION**

Identification of human skeleton, the determination of sex, is most reliably established from an examination of the pelvis. Even fragments of the pelvis may be useful in this respect.