Abstracts

Serum Angiotensin-converting Enzyme (ACE) Activity and Electrolyte Level in Primary Hypertension of South Coastal, Odisha

[1]Sanjeev Kumar, [2]Pramila K Mishra, [3]Nirupama Devi, [4]Rasmita K Padhy, [5]Sarmistha Swain

[1-5]Department of Biochemistry, M.K.C.G. Medical College, Berhampur, Odisha, India

INTRODUCTION

Primary hypertension accounts for more than 90% cases of hypertension. Angiotensin-converting enzyme (ACE) is central component of the renin-angiotensin-aldosterone system, which controls blood pressure by regulating the fluid and electrolyte level in the body. It converts the hormone angiotensin I to the active vasoconstrictor angiotensin II, which plays an important role in pathophysiology of essential hypertension. Very less study has been done on serum electrolyte and ACE activity in relation to primary hypertension.

AIMS AND OBJECTIVES

To measure serum ACE level and serum Na and K level in primary hypertension and to correlate their level with severity and duration of hypertension.

MATERIALS AND METHODS

This study was carried out in the Department of Biochemistry, M.K.C.G. Medical College, Berhampur, Odisha, India, in collaboration with Medicine Department. Hundred hypertensive patients and 100 age- and sex-matched healthy controls were included in the study. Serum ACE enzyme level was estimated by semi autoanalyzer procuring commercial kit from FAR srl via vermin, 12-37026 pescantina – Verona, Italy. Serum Na/K level was estimated by ion selective electrode. Statistical analysis was done by Statistical Package for the Social Sciences version 20.

RESULTS

Mean serum ACE level was 130 ± 32 U/L in hypertensive cases in comparison to 60 ± 34 U/L in controls. The differences of ACE enzyme level were significantly increased in cases ($p < 0.01$). There was positive correlation between ACE enzyme level with serum electrolytes ($r = 0.985$ and $p \leq 0.001$). Serum ACE and electrolyte level were also well correlating with severity of hypertension ($r = 0.872$ and $p \leq 0.001$) but not with duration of disease.

CONCLUSION

Cardiovascular event can be minimized in patients with high ACE enzyme level by specifically treating with ACE inhibitor and low salt.

Relationship between Gestational Age and Heme Oxygenase-1 Levels in Maternal and Cord Blood of Preeclamptics

[1]A Ghosh, [2]R Tiwari, [3]S Nanda, [4]S Kharb

[1,2,4]Department of Biochemistry, Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India
[3]Department of Obstetrics and Gynecology, Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India

OBJECTIVE

To study the maternal and fetal aspects of preeclampsia by comparing the concentrations of heme oxygenase-1 in maternal and cord blood venous sample and exploring the effect of gestational age at delivery on the differences in their levels.

MATERIALS AND METHODS

Fifty pregnant women were selected and grouped as group 1 (control) comprising 25 normotensive women immediately after delivery and group II (study group) comprising age- and sex-matched 25 preeclamptic women. Study samples were drawn (maternal venous blood and umbilical cord blood) and heme oxygenase-1 was analyzed by competitive enzyme-linked immunosorbent assay.

RESULTS

There was significant rise in serum heme oxygenase-1 levels in preeclamptic women as compared with normotensive pregnant women ($p < 0.001$). Cord blood heme oxygenase-1 levels in preeclamptic women were significantly higher than those of

normotensive women ($p < 0.001$). The cord blood heme oxygenase-1 levels in both the groups were comparable with their maternal levels. Negative correlation was observed between cord blood heme oxygenase-1 with gestational age in group I ($r = -0.209$, $p > 0.05$). A significant negative correlation was observed between cord blood heme oxygenase-1 and gestational age in group II ($r = -0.414$, $p < 0.05$).

CONCLUSION

Adult cardiovascular disease is programmed during the period of rapid growth in fetal life. Risk factors for cardiovascular disease exist with babies born small for gestational age rather than those born prematurely. The findings of the present study confirm the association of heme oxygenase-1 with preeclampsia and adverse outcomes as well as the complex interplay and relationship between the dynamic processes that occur in the maternal vasculature.

The Micro Ribonucleic Acid 19b Functions as an Oncomir in Chronic Myeloid Leukemia

[1]Amit Samadhiya, [2]Sameer A Guru, [3]Prasant Yadav, [4]Pooja Singh, [5]Prakash C Ray, [6]Alpana Saxena

[1-6]Department of Biochemistry, Maulana Azad Medical College, New Delhi, India

INTRODUCTION

Imatinib, a tyrosine kinase inhibitor, is the first-line treatment for chronic myeloid leukemia (CML). However, Imatinib has been unable to completely eliminate leukemic stem cells, which escape Imatinib-induced apoptosis. Oncomir-1 is a polycistronic micro-ribonucleic acid (RNA) complex, which encodes six micro-RNAs: miR-17, miR-18a, miR-19a, miR-20a, miR-19b-1, and miR-92-1. Increased oncomir-1 expression which regulates mitogen-activated protein kinase pathway at various levels, and directly regulates preapoptotic proteins containing BH domain, has been suggested as a reason for disease persistence and relapse of CML.

AIMS AND OBJECTIVES

This study evaluated the pathogenetic role of miR-19b component of miR-17-92 polycistron in CML.

MATERIALS AND METHODS

We studied the expression of miR-19b in peripheral blood mononuclear cells (PBMCs) of 35 CML cases in chronic phase, recruited from Maulana Azad Medical College and associated hospitals, New Delhi, India, in comparison with 35 age- and sex-matched healthy control subjects. Ribonucleic acid was extracted from PBMCs of both CML patients and controls using Trizol reagent. Expression studies were performed by SYBR green-based quantitative real-time polymerase chain reaction, and results were expressed as mean fold change. Expression of miR-19b was measured on two occasions, i.e., in newly diagnosed untreated CML patients, and after 6 months of therapy with imatinib.

RESULTS

The expression of miR-19b in PBMCs of untreated CML patients was upregulated with respect to healthy control subjects at statistically significant levels ($p < 0.001$). There was also no significant association of miR-19b expression with presence or absence of optimal hematological and molecular responses of CML patients to imatinib therapy ($p = 1.00$ and 0.18 respectively). However, importantly, a reevaluation of miR-19b levels after 6 months treatment with imatinib revealed statistically significant downregulation of expression, compared with the pretherapy status ($p < 0.001$).

CONCLUSION

The miR-19b functions as an oncomir in the pathogenesis of CML.

Requirement of Vitamin B12 Supplementation in Pregnant Anemic Women

[1]Roopali Goyal, [2]Amita Yadav, [3]Shailja Shukla, [4]Manju Puri, [5]Abha Singh

[1,3,4,5]Lady Hardinge Medical College, New Delhi, India
[2]Vardhaman Mahavir Medical College, New Delhi, India

INTRODUCTION

Anemia affects almost two-thirds of pregnant women in developing countries and contributes to maternal morbidity and mortality and low birth weight. Iron and folic acid supplementation is routinely advocated in pregnancy; however, vitamin B12

supplementation is not a part of routine antenatal care. Vitamin B12 deficiency during pregnancy may negatively affect fetal growth, brain development, and breast milk vitamin B12 content.

AIMS AND OBJECTIVES

To study vitamin B12 levels in mild and moderate macrocytic anemia in pregnant women and biochemical response in serum vitamin B12 levels after treatment with single dose of vitamin B12.

MATERIALS AND METHODS

Observational study was conducted in Lady Hardinge Medical College and Smt Sucheta Kriplani Hospital, New Delhi.

RESULTS

Mean fasting levels of serum vitamin B12 in the study was 189.83 ± 10.85 pg/mL ranging from 162 to 199 pg/mL. We administered a single dose of 1,000 µg vitamin B12 intramuscularly. The difference in the means of pre- and posttreatment values of serum vitamin B12 was found to be statistically highly significant using paired t-test (p-value < 0.001). There was statistically significant (p-value < 0.001) increase in reticulocyte count after treatment with vitamin B12.

CONCLUSION

A single dose of 1,000 µg of vitamin B12 administered intramuscularly appears to be effective in treatment of vitamin B12 deficiency anemia in pregnancy. However, adequately powered robust randomized controlled trials are required to reach a consensus on the treatment of pregnant women with vitamin B12 deficiency anemia as regards the dose, duration, and mode of administration of vitamin B12.

Electrolyte Imbalance and Anion Gap in Type II Diabetes Mellitus

[1]Anindita Paul, [2]Dinesh Agarwal, [3]Atul Agarwal

INTRODUCTION

Diabetes mellitus is a group of metabolic disorder characterized by hyperglycemia resulting from defects in insulin secretion, action, or both. The high concentration of glucose in extracellular fluid due to its osmotic effect will cause derangement of electrolyte balance and thus affects the buffering system of body.

AIMS AND OBJECTIVES

To evaluate electrolyte variability and true pattern of anion gap among diabetics.

MATERIALS AND METHODS

This study was conducted among 30 outpatient diabetic subjects who served as cases and 15 age- and sex-matched healthy subjects served as control. Serum glucose was estimated using glucose oxidase method, and serum electrolytes were measured using direct ion selective electrode method. Anion gap was calculated by subtracting the concentrations of chloride and bicarbonate (anions) from the concentrations of sodium and potassium (cations).

RESULTS

The mean age of study group was found to be 54.95 ± 13.15 years as against control group of 52.6 ± 8.68 years. Mean serum glucose concentration among diabetic subjects was found to be 184.15 ± 76.77 mg/dL as compared with 93.46 ± 10.52 mg/dL in control subjects and the difference was found to be statistically significant. A statistical significant difference of $p < 0.01$ was observed among the anions (chloride and bicarbonate) between cases and control group but no such difference was observed among the cations (sodium and potassium) in both the groups. Mean anion gap among diabetic subjects was 22.04 ± 3.44 as compared with 18.36 ± 3.19, and the difference was statistically significant.

CONCLUSION

Abnormal anion gap observed in diabetic subjects was due to decreased bicarbonate levels, which was used up for buffering electrolyte abnormality as a result of deranged glucose metabolism. Diabetic subjects are more prone to develop metabolic acidosis. Monitoring of serum bicarbonate and anion gap on routine basis may help clinicians to identify metabolic acidosis at an early stage and thus may prevent development of ketoacidosis.

Association of Hypoxia Responsiveness and Cell Turnover in Oral Squamous Cell Carcinoma

[1]Jitender Prasad, [2]Anisha Sharma, [3]Binita Goswami, [4]Kiran Agarwal, [5]Pravesh Mehra

[1-5]Lady Hardinge Medical College, New Delhi, India

INTRODUCTION

Oral cancer is one of the major health problems in India and in Indian subcontinent countries. During the past few years, the association between cancer and raised uric acid has drawn a lot of attention. High cell turnover can lead to hyperuricemia and tumorigenesis implicating an underlying link between purine metabolism disorders and cancer.

OBJECTIVE

To evaluate serum levels of uric acid and hypoxia induced factor 1 alpha in oral cancer patients and compare them with those of healthy controls.

MATERIALS AND METHODS

Fifty confirmed oral squamous cell cancer cases and controls had serum uric acid levels measured using timed end point method given by Fossati and Berti (1980) on spectrophotometer and hypoxia inducible factor (HIF)-1 alpha was measured by performing Sandwich enzyme linked immunosorbent assay. The data obtained was analyzed using the Statistical Package for the Social Sciences, version 20.0. Statistical significance was determined at $p < 0.05$.

RESULTS

Significant variation was observed in the mean value of HIF-1 alpha in cases and control with normal (p-value < 0.05) as well as high (p-value < 0.001) uric acid levels.

CONCLUSION

As hypoxia is a common feature of many cancers, HIF-1 alpha is an essential component in changing the transcriptional response of tumors under hypoxia. Elevated uric acid may be a true risk factor for cancer incidence and mortality and mechanisms by which uric acid may contribute to cancer pathogenesis by increasing the expression of gene coding for HIF-1 alpha.

Thyroid Dysfunction among Transfusion-dependent Beta Thalassemia Major Patients

[1]Ankush Singhal, [2]Ranjana Mathur, [3]Niranjan Rajpurohit, [4]Neha Jaiswal

[1-4]Department of Biochemistry, Dr SN Medical College, Jodhpur, Rajasthan, India

INTRODUCTION

Endocrinopathies are among the common complications affecting patients with transfusion-dependent beta thalassemia major. Hypothyroidism is one of these complications.

AIMS AND OBJECTIVES

The aim of our study was to evaluate the prevalence of thyroid dysfunction and to determine the relationship between thyroid hormone levels and serum ferritin level in beta thalassemia major patients.

MATERIALS AND METHODS

A cross-sectional study was done on 137 beta thalassemia major patients who were registered at the Thalassemia Day Care Centre of Ummaid Hospital attached with Dr SN Medical College, Jodhpur, India. The age group of the patients was between 6 and 18 years. The levels of triiodothyronine (T3), thyroxine (T4), and thyroid-stimulating hormone (TSH) and serum ferritin level were assessed in all the patients.

RESULTS

Elevated TSH levels of > 5.0 µIU/mL were found in 36 patients (26.3%). Out of these 36, 11 patients (8.05%) had overt hypothyroidism (T4 < 60.0 nmol/L and TSH > 5.0 µIU/mL) and 25 patients (18.25%) had subclinical hypothyroidism (normal T3 and T4 and

TSH > 5.0 µIU/mL). Serum ferritin level was considerably elevated in all the 36 patients compared with the remaining thalassemia major patients.

CONCLUSION

Impaired thyroid function is frequent among thalassemia major patients and this necessitates regular follow-up and early commencement of chelation therapy to prevent such complication. Overt hypothyroidism patients once diagnosed can be started with T4 replacement therapy.

Significance of Serum Free Light Chain Assay as an Adjuvant to Serum Protein Electrophoresis in Detection of Multiple Myeloma

[1]Anuj Parkash, [2]Anurag Mehta

[1,2]Rajiv Gandhi Cancer Institute and Research Centre, New Delhi, India

INTRODUCTION

Multiple myeloma (MM) is a neoplastic disease of the plasma cells. Serum free light chain (SFLC) is an important advancement in diagnosis and monitoring of monoclonal light chain disease along with serum protein electrophoresis (SPEP). Presence of high SFLC ratio in clinically suspected myeloma disorders depict clonal evaluation and disproportionate synthesis of globulin chains.

AIM AND OBJECTIVES

The study is planned to find usefulness of SFLC with SPEP in serum samples of patients for diagnosis and monitoring of suspected cases of multiple myeloma. Also, to test the hypothesis that an abnormal SFLC ratio at baseline is a risk factor for the progression of monoclonal gammopathy of undetermined significance to malignancy.

MATERIALS AND METHODS

The 50 clinically proven and/or suspected multiple myeloma cases whose SFLC has been advised along with SPEP has been enrolled in the study after taking informed consent. Serum free light chain is done using Freelite® assay on AU 400 and ratio was calculated for all cases and SPEP is done using Genio Cellulose acetate electrophoresis machine.

INCLUSION CRITERIA

Patients suspected or diagnosed with MM or a monoclonal gammopathy overseen at RGCI & RC

RESULTS

In our study of 50 patient sera, high level of SFLC is seen in 64% cases (32 cases) and additionally identified 8 cases of MM, which were missed by SPEP alone.

CONCLUSION

The SFLC Freelite assay can be considered reliable for the diagnosis, monitoring, and prognosis of MM. The presence of a monoclonal SFLC may be a marker of tumor burden in MM. Its prognostic role can be further evaluated with larger sample size.

A Study of Serum Amylase in Patients with Chronic Kidney Disease

[1]Arju Saikia, [2]SM Rohman

[1,2]Department of Biochemistry, Gauhati Medical College and Hospital, Guwahati, Assam, India

INTRODUCTION

Chronic kidney disease results from progressive loss of renal function over months to years. There is decline in nephron function and number, generally quantitated as reduction in glomerular filtration rate (GFR). As the GFR declines, there is accumulation of metabolic end products excreted by kidney. Amylase is one of the enzymes, i.e., rapidly excreted by kidney. Thus, patients with chronic kidney disease have elevated serum pancreatic enzymes.

AIMS AND OBJECTIVES

To determine changes in serum amylase levels in patients with end-stage renal disease on hemodialysis and nondialyzed chronic kidney disease patients.

MATERIALS AND METHODS

Fifty patients with end-stage renal disease coming for hemodialysis and 50 nondialyzed chronic kidney diseases on outpatient follow-up were included in this study. Fifty age- and gender-matched healthy individuals were included as control group. Blood samples were collected from patients as well as controls and were analyzed for amylase, urea, and creatinine using autoanalyzer. The results were analyzed statistically using GraphPad InStat version 3.00.

RESULTS

The present study has shown that serum total amylase levels were significantly higher in end-stage renal disease and chronic kidney disease patients as compared with healthy controls (p-value < 0.05). Serum amylase levels was above the upper limit in 60% of patient and more than twice of upper limit in 10% of patients.

CONCLUSION

From our study it was concluded that in end-stage renal disease and chronic kidney disease patients, serum amylase levels was found to be elevated. Serum amylase alone as diagnostic tool in recognizing acute pancreatitis can lead to false-positive results. Hence, interpretation of elevated amylase in chronic kidney patients has to be supported by other laboratory and clinical evidences.

Heart Rate Variability Progress: A Novel Marker of Type II Diabetes Mellitus and Cardiovascular Disease

[1]Arun Nagtilak, [2]Ravi P Singh, [3]Gautam Sarkar

[1-3]Netaji Subhash Chandra Bose Subharti Medical College, Meerut, Uttar Pradesh, India

INTRODUCTION

Cardiovascular disease (CVD) is the leading cause of death and disability worldwide. The understanding of risk factor for CVD may yield important insights into the prevention and etiology and course and treatment of this major public health concern. Apart from this, metabolic syndrome (MetS) is endemic in study population. Metabolic syndrome with pathogenesis of insulin resistance results in risk of development of diabetes and CVD in future. Autonomic imbalance characterized by a hyperactive sympathetic system and a hypoactive parasympathetic system is associated with various pathological conditions, i.e., stress, anxiety, which can lead to premature aging and ultimately diseased state. An autonomic imbalance may be a final common pathway to increased morbidity and mortality from a host condition including CVD and diabetes mellitus (DM).

AIM AND OBJECTIVES

Correlating heart rate variability (HRV) with individual components of MetS.

MATERIALS AND METHODS

A cross-sectional population-based study in a tertiary care hospital, Meerut, Uttar Pradesh, India, including 40 individuals (25 subjects, 15 control) with mean age 41 ± 11 years. After an overnight fasting, blood glucose, lipid profile, and HRV levels are calculated. Heart rate variability was done using HRV analysis software RMS Polyrite D version 3.0.7 (Chandigarh, India).

RESULTS

Heart rate variability is directly related to waist circumference, low-density lipoprotein cholesterol, and diastolic blood pressure, the three factors that are included in the list of diagnostic criteria of MetS.

CONCLUSION

We close with a suggestion that a model of autonomic imbalance may provide a unifying framework within which we can investigate the impact of risk factors, including psychosocial factors and work stress on development of CVD and DM.

To Study the Potential Role of Endogenous Cortisol and Testosterone in the Pathogenesis of Central Serous Chorioretinopathy

[1]Ashuma Sachdeva, [2]Himanshu D Kumar, [3]Manisha Nada, [4]Sumeet Khanduja, [5]Sumit Sachdeva, [6]Richa Goel, [7]Veena S Ghalaut

[1,2,6,7]Department of Biochemistry, Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India
[3-5]Department of Ophthalmology, Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India

INTRODUCTION

Central serous chorioretinopathy (CSCR) is characterized by an exudative neurosensory layer detachment of retina. Male, gender, type-A personality, emotional stress, pregnancy, infections, hormonal regulatory factors, and several immunological reactions have all been implicated in causing CSCR. Although several hypotheses have tried to establish a link between endocrinal abnormalities and CSCR, still none is able to explain the true etiopathogenesis of CSCR.

AIMS AND OBJECTIVES

This study was designed to estimate serum cortisol and testosterone levels in patients of CSCR and study their potential role in etiopathogenesis of the disease.

MATERIALS AND METHODS

In this study, 25 patients of CSCR satisfying the inclusion and exclusion criteria were enrolled as cases and 25 age- and sex-matched patients with an acute unilateral rhegmatogenous retinal detachment were enrolled as controls. Levels of serum cortisol and testosterone were estimated by chemiluminescence in both groups. Serum cortisol measurement was done twice, due to diurnal variation in its levels.

RESULTS

Data analysis was done by Pearson's correlation analysis and independent Student's t-test. The 8:00 AM mean serum cortisol value in the cases (20.21 ± 4.86 µg/dL) was significantly ($p = 0.046$) higher than controls (17.74 ± 3.53 µg/dL). Although the 11:00 PM mean serum cortisol value of cases (8.13 ± 3.52 µg/dL) was more than controls (6.97 ± 2.50 µg/dL) but difference was not statistically significant ($p = 0.187$). No statistically significant difference ($p > 0.05$) was observed while comparing the mean level of testosterone in both groups.

CONCLUSION

Elevated cortisol level in CSCR patients strengthens the belief of its potential role in pathogenesis of disease. Also, regular posterior segment examination can reduce the ocular morbidity in patients with exo- or endogenous hypercortisolism. It is suggested that monitoring of cortisol levels could be beneficial in deciding the outcome of CSCR.

Serum Uric Acid Levels in Type II Diabetes Mellitus with Hypertension: A Study in a Tertiary Care Hospital of North-East India

[1]Avinanda Mahanta, [2]Syeda M Rohman

[1,2]Gauhati Medical College and Hospital, Guwahati, Assam, India

INTRODUCTION

Type II diabetes mellitus is the predominant form of diabetes worldwide, accounting for 90% of cases globally. Diabetes mellitus and hypertension are interrelated diseases that strongly predispose an individual to atherosclerotic cardiovascular disease. In few studies there found to be some association between the blood glucose and the serum uric acid levels. Hyperuricemia is also found to be associated with hypertension.

OBJECTIVE

This study was done to evaluate the relationship of serum uric acid levels in patients with type II diabetes mellitus and hypertension compared with healthy controls in a tertiary care hospital of North-East India.

MATERIALS AND METHODS

A total of 200 individuals were used for this study. Fifty individuals were established as hypertensive diabetics, 50 were nonhypertensive diabetics, 50 individuals were hypertensive nondiabetics, and 50 were normal healthy individuals (nonhypertensive and nondiabetics). Demographic data (age, sex, weight, and height) were determined by appropriate method, medical records, and proper history taking. Clinical examination was done. Blood samples were collected by proper methods. Plasma glucose and serum uric acid levels were determined by using auto-analyzer.

RESULTS

The results showed that the mean level of uric acid was significantly higher ($p < 0.05$) in established hypertensive diabetes compared with nonhypertensive diabetes. It was observed that uric acid was also higher ($p > 0.05$) in hypertensive nondiabetes individuals compared with normal healthy individuals studied.

CONCLUSION

It was concluded from the study that there occurs a significant increase in the serum uric acid levels in hypertensive diabetics in comparison with the nonhypertensive diabetics.

Multiplex Ligation-dependent Probe Amplification Assay: Tool in the Molecular Diagnosis of Gene Copy Number Variation in Human Genetic Disease

[1]Avinash Pagdhune, [2]R Angalena, [3]Ashwin Dalal

[1-3]Center for DNA Fingerprinting and Diagnostics, Hyderabad, Telangana, India

INTRODUCTION

Genetic diseases occur due to various types of mutations in the human genome. The molecular assays to diagnose these diseases are developed based on the type of mutation commonly seen in each disease. Sequencing of genes is used in diseases caused due to point mutations. However, some diseases occur due to large deletions or duplications, which cannot be detected by sequencing. These diseases include Duchenne muscular dystrophy (DMD), spinal muscular atrophy (SMA), etc. Traditionally, these diseases have been studied using polymerase chain reaction (PCR)-based approaches like multiplex PCR or restriction enzyme digestion.

Multiplex ligation-dependent probe amplification (MLPA) assay is a recently developed technique able to evidence variations in the copy number of several human genes. Due to this ability, MLPA can be used in the molecular diagnosis of several genetic diseases whose pathogenesis is related to the presence of deletions or duplications of specific genes. Moreover, MLPA assay can also be used in the molecular diagnosis of genetic diseases characterized by the presence of abnormal deoxyribonucleic acid (DNA) methylation. Although the majority of human hereditary diseases are due to abnormalities in the DNA sequence of specific genes (point mutations), gene deletions or duplications represent a relevant portion (about 5%) of all disease-causing mutations, and in some cases are the most frequent cause of a genetic disease, such as in the cases of DMD or SMA. Neither conventional cytogenetic analysis nor DNA sequencing is able to detect gene deletions/duplications and copy number variations. At the beginning, the detection of gene deletions/duplications was mainly based on the use of Southern blot and fluorescence *in situ* hybridization techniques. However, both approaches are time-consuming, with low throughput analysis, and are not able to detect small intragenic rearrangements. Multiplex ligation-dependent probe amplification technique employs a single primer pair to amplify multiple exons of a gene. Two probes that contain sequences complementary to the target site are used to recognize exons of the gene and its adjacent target sites. Once both probes are hybridized to their respective targets, they can be ligated into a complete probe and, then PCR yields a single amplified product which is subjected to capillary electrophoresis. The electrophoresis shows characteristic pattern of peaks, and deletion of particular exon can be detected by absence of a particular peak. Thus MLPA can be used to detect deletions/duplications in patients with DMD, SMA, etc., as well as to detect heterozygous carriers for these diseases. Moreover, MLPA has been used to detect deletions/duplications in large number of other single gene disorders as well as for detection of subtelomeric deletions and microdeletions in cases of mental retardation. It can also be used for prenatal diagnosis of aneuploidy for different chromosomes and investigation of certain cancers.

Effect of Resveratrol on Hepatic Nitric Oxide Bioavailability in Nonalcoholic Fatty Liver Disease

[1]V Balasubramaniyan, [2]M Sundhar, [3]K Ashwini, [4]V Vigneshwaran

[1-4]Department of Biochemistry, Jawaharlal Institute of Postgraduate Medical Education & Research, Puducherry, India

INTRODUCTION

Endothelial nitric oxide synthase (eNOS) deficient mice have shown to increase early stage of nonalcoholic steatohepatitis pathogenesis. Resveratrol treatment has been suggested to bear protective effects on liver injury of various etiologies. Indeed, the role of resveratrol in modulating hepatic nitric oxide (NO) synthesis and related molecular mechanism involved in nonalcoholic fatty liver disease (NAFLD) remains unidentified.

OBJECTIVE

The purpose of this study was to evaluate the effect of resveratrol on high-fat diet (HFD) induced endothelial dysfunction and associated fatty liver disease in mice.

MATERIALS AND METHODS

CD-1 mice (n = 10/group) were studied for 90 days. Three groups were studied: (1) control, (2) HFD (Dyets Inc. USA), and (3) HFD + resveratrol (Sigma, USA; 10 mg/kg b.w. daily by gastric lavage, for 7 days).

RESULTS

Compared with naive mice, HFD supplementation significantly ($p < 0.001$) increased serum alanine aminotransferase, aspartate aminotransferase, interleukin 1β, and asymmetric dimethylarginine. Resveratrol treatment to HFD-treated mice shows significantly ($p < 0.05$) reduced levels of the above parameters. Furthermore, HFD-fed mice show significantly ($p < 0.05$) increased hepatic protein expression of eNOS and inducible NOS (iNOS) when compared with control. Resveratrol treatment to HFD-fed mice significantly decreased the expression of eNOS and iNOS. Resveratrol treatment significantly ($p < 0.05$) increased hepatic NO levels in HFD-fed mice.

CONCLUSION

Our study is the first indication of evidence that the significant improvement of NO and decreased NOS inhibitor by resveratrol in NAFLD, and provides a future therapeutic approach for NAFLD patients with endothelial dysfunction.

Low Alkaline Phosphatase in Adult Population: An Indicator of Zinc and Magnesium Deficiency

[1]Bratati Singh, [2]Abhijit Senapati, [3]Subhashree Ray

[1-3]Institute of Medical Sciences and SUM Hospital, Bhubaneswar, Odisha, India

INTRODUCTION

Alkaline phosphatase (ALP) enzyme acts in alkaline pH (pH ≥ 10) and is inactive in the blood. Serum ALP activity is usually measured to detect increases in its activity. Very less attention has been focused on clinical conditions associated with low or decrease in ALP activity in humans. One of the important causes which may attribute to low ALP activity is mineral deficiency like zinc and magnesium. The correct ratio of Mg^{2+}/Zn^{2+} ions is necessary to avoid displacement of Mg^{2+} and to obtain optimal activity of ALP.

AIMS AND OBJECTIVES

The objective of this study is to assess the minerals like Zn and Mg deficiency in population with low ALP activity.

MATERIALS AND METHODS

The study includes outpatients and inpatients of IMS and SUM hospital, Bhubaneswar, Odisha, India, within the age group of 20 to 50 years. The subjects are selected from the patients who give blood for estimation of liver function test (LFT) for any reason.

Approximately 50 subjects with low ALP activity (<45 U/L) are included in the study group. Zn and Mg levels were estimated in 50 cases and 50 healthy controls. The percentage and prevalence of mineral deficiency in persons with low ALP activity are analyzed using relevant statistical methodologies.

RESULTS

A significant fall in Zn and Mg level was observed in cases in comparison to control; 12% and 20% of cases suffer from Zn and Mg deficiency respectively.

CONCLUSION

This research establishes the prevalence of mineral deficiency in people with low ALP activity. During routine checkup for LFT estimation, the extent of mineral deficiency in various social groups can be obtained. Since Zn and Mg are essential for bone growth, remodeling and various other metabolism in the body, their replacement in the diet can be initiated.

Hypothyroidism in Patients with Type II Diabetes Mellitus attending Jorhat Medical College Hospital: A Hospital-based Study

[1]Chandan K Kashyap, [2]Saurabh Borkotoki

[1,2]Department of Biochemistry, Jorhat Medical College, Jorhat, Assam, India

INTRODUCTION

Type II diabetes mellitus (T2DM) is a widely accepted growing problem in India. It is observed that many of these patients get associated with thyroid dysfunction later in their life, which affects the prognosis and their management. The coexistence of diabetes mellitus and thyroid dysfunction is becoming widely recognized among T2DM patients.

AIMS AND OBJECTIVES

To evaluate hypothyroidism in patients with T2DM attending Jorhat Medical College, Jorhat, Assam, India.

MATERIALS AND METHODS

It was a hospital-based case–control study, conducted on 50 known cases with T2DM attending Jorhat Medical College during the 6 months of study period (September 1, 2015, to March 31, 2016). Serum total triiodothyronine, total thyroxine, and thyroid stimulating hormone were evaluated in Access Immunoassay Systems (Backman Coulter). Criteria of inclusion were confirmed cases of T2DM. Known cases of thyroid disorder and those on drugs affecting thyroid hormone level were excluded from the study. Sample size included 50 cases and 50 age- and sex-matched nondiabetic healthy controls without any apparent thyroid disorder.

RESULTS

In our study, overall 36 (72%) cases were euthyroid and 14 (28%) cases had thyroid disorders. Among the cases with thyroid disorders, 8 (57.143%) had subclinical hypothyroidism, 5 (35.714%) had hypothyroidism, and 1 (7.142%) had subclinical hyperthyroidism. Occurrence of thyroid disorders was significantly higher among cases in comparison with controls ($p = 0.0456$). In sexwise distribution of hypothyroidism among cases, 10 were female and 3 male ($p = 0.0265$).

CONCLUSION

From the above study we can conclude that statistically significant number of cases with T2DM had thyroid disorder. Hypothyroidism was more common in the age group 45 to 65 years. Elderly females were mostly affected.

Is Short-term Anticholinesterase Insecticide Poisoning a Risk Factor for Early Onset of Diabetes Mellitus?

[1]G Chandana, [2]Kavita Rasalkar, [3]HR Suma

[1-3]Department of Biochemistry, PES Institute of Medical Sciences and Research, Kuppam, Andhra Pradesh, India

INTRODUCTION

Short-term anticholinesterase insecticide poisoning is one of the common medical emergencies that have led to increase in morbidity in recovered patients and is one of the leading causes of mortality in developing countries like India.

Numerous studies provide the propensity of Organophosphate (OP) compound to disrupt oxidative balance leading to oxidative stress. Oxidative stress in turn leads to pancreatic damage and glucose intolerance. Taking this into consideration, previous studies have shown the evidence of correlation of glycemia status with severity of OP poisoning. Very few studies have focused on anticholinesterase insecticide poisoning which includes carbamates and follow-up of these patients to determine if they were at risk for diabetes mellitus.

AIMS AND OBJECTIVES

To find out the prevalence of any glycemic change in acute anticholinesterase insecticide poisoning and to establish their correlation with the severity of poisoning and to follow up these patients if they were at risk for diabetes mellitus in future.

MATERIALS AND METHODS

Retrospectively, 100 patients admitted to emergency medicine department with acute anti cholinesterase insecticide poisoning were taken into the study. We graded the severity of poisoning according to the Bardin's classification. Known diabetic patients and patients with hemoglobin A1c value >5.7% were excluded from the study. The RBS values were compared from the time

of admission to the time of discharge by analysis of variance. A correlation was done between these mean RBS values and the severity of poisoning. Finally, these patients were followed up; fasting blood sugar and postprandial blood sugar values were evaluated for impaired glucose tolerance or diabetes mellitus according to American Diabetic Association criteria.

RESULTS

Awaited

CONCLUSION

The project is still in process, so we are yet to get our results and will conclude thereafter.

Study of KRAS (Codon 12) Gene Mutation and p53 Autoantibodies in Epithelial Ovarian Cancer

[1]Lamba Chandni, [2]S Kaushik, [3]PC Ray, [4]R Tripathi, [5]N Khurana

[1-3,5]Maulana Azad Medical College, New Delhi, India
[4]Lok Nayak Jai Prakash Narayan Hospital, New Delhi, India

INTRODUCTION

Ovarian cancer has the highest mortality of all gynecological cancers. Even a single-point mutation has been found to cause aberrant Ras function, codon 12 mutations being most prevalent. Tumor antigen-specific autoantibodies have been identified in sera of patients with solid tumors and their levels correlate with tumor burden. These markers can distinguish malignant cases from benign disease as well as healthy population. Our aim was to evaluate KRAS codon 12 gene mutation status in cell-free deoxyribonucleic acid (cfDNA) and paired tissue DNA from ovarian cancer patients and its correlation with various clinicopathological parameters. Serum p53 autoantibody levels were also estimated in all subjects.

MATERIALS AND METHODS

Thirty histopathologically confirmed ovarian cancer cases, 30 benign ovarian tumor cases, and 30 healthy controls were enrolled. Plasma cfDNA and tissue DNA were extracted and subjected to polymerase chain reaction restriction fragment length polymorphism. Serum p53 autoantibody levels were estimated by enzyme-linked immunosorbent assay. Statistical analysis performed using Statistical Package for the Social Sciences version 22.0.

RESULTS

In ovarian cancer patients, KRAS codon 12 gene mutation frequency was significantly higher as compared with benign tumors as well as controls in both plasma and tissue DNA ($p < 0.05$). No significant association was found with staging or histological grading.

Significantly higher p53 autoantibody levels were seen in epithelial ovarian cancer patients as compared with benign ovarian tumor and control group (p-value < 0.0001). p53 autoantibody levels were significantly higher in cancer patients in advanced stages, i.e., International Federation of Gynecology and Obstetrics stage III and IV than early stages, i.e., stage I and II. p53 autoantibody levels were significantly higher in KRAS mutation positive cases.

CONCLUSION

The KRAS codon 12 mutations are found in plasma cfDNA of ovarian cancer patients in higher frequency, hence, could serve as a part of blood-based biomarker panel for early diagnosis of ovarian cancer. p53 autoantibody levels are raised in cancer cases and correlate with cancer stage, thus can serve as screening/prognostic biomarker.

Ischemia-modified Albumin(IMA) and IMA:Albumin Ratio in Serum and Saliva of Preeclampsia Patients: A Preliminary Study in a Tertiary Care Hospital of Assam

[1]Chayanika Talukdar, [2]Bipul Talukdar

[1,2]Fakhruddin Ali Ahmed Medical College & Hospital, Barpeta, Assam, India

INTRODUCTION

Preeclampsia, a pregnancy-specific disorder, is the major cause of fetal and maternal morbidity as well as mortality. Hypoxia-driven oxidative stress of placenta could play a significant role in the pathogenesis of preeclampsia. Ischemia-modified albumin (IMA) is a recently used oxidative stress marker.

AIMS AND OBJECTIVES

To evaluate the levels of serum and salivary IMA and IMA:albumin ratio (IMAR) in preeclampsia and correlate with its severity.

MATERIALS AND METHODS

This study was conducted in 60 preeclamptic (44 mild and 16 severe cases) and 60 normal pregnant controls. Blood and salivary albumin (by bromocresol green method), and IMA (by albumin cobalt binding test) were measured and IMAR was calculated.

RESULTS

Serum and salivary IMA and IMAR were significantly increased in preeclampsia (p-value < 0.05). This increase in serum was in accordance with severity, but it was not so in saliva. Though, salivary IMAR showed significant difference between controls and mild cases (p-value < 0.05). Also, there was a negative correlation between IMA and albumin in both serum and saliva.

CONCLUSION

This study gives evidence of oxidative stress involvement in pathogenesis of preeclampsia which is reflected in serum and saliva. Salivary IMAR could be a better marker for early prediction of preeclampsia.

Serum N-acetyl-beta-glucosaminidase Activity in Diabetes Mellitus

[1]Sonam Tashi, [2]Davina Hijam, [3]Th Ibetombi

[1-3]Regional Institute of Medical Sciences, Imphal, Manipur, India

INTRODUCTION

Lysosomal enzymes beta-N-acetyl-glucosaminidase (NAG) show increase in diabetes mellitus, which is closely related to diabetic metabolic alterations.

AIMS AND OBJECTIVES

To estimate serum NAG in diabetic patients with and without complications.

MATERIALS AND METHODS

A cross-sectional study was conducted on 50 diabetic subjects (25 patients without complications and 25 patients with complications) in Regional Institute of Medical Sciences, Imphal, Manipur, India, hospital during the period from September 2011 to August 2014. Twenty-five age- and sex-matched healthy individual were taken as controls. Glycosylated hemoglobin (HbA1c) was estimated by fast ion exchange resin method. Serum NAG was estimated by Sandwich Enzyme Immunoassay.

RESULTS

The difference in the level of fasting blood sugar (FBS), postprandial blood sugar (PPBS), and HbA1c between control and diabetic groups without and with complication groups was significant statistically ($p < 0.001$). There was a significant difference in the level of NAG level in control, diabetic group without and with complication (11 ± 2.9 U/L, 26.36 ± 5.41 U/L, and 74.87 ± 24.55 U/L respectively). The comparison of serum NAG levels in male and female subjects was insignificant. Statistically significant increase in serum NAG was observed in the diabetes with complication compared with those without the complication ($p < 0.001$). There was a significant positive correlation of serum NAG with FBS, PPBS, and HbA1c. Increased activity of serum NAG was a consequence of poor metabolic control and increased exocytosis resulting from hyperglycemia leading to the release of these enzyme in the serum. The NAG is capable of degrading mucopolysaccharide and glycoproteins that accumulate in the walls of blood vessels in diabetes.

CONCLUSION

It can be used as an index for the development and progress of diabetic complications. And with HbA1c, a sensitive indication of the success achieved by the patient in controlling their diabetic complications.

Sigma Metrics used for Assessing Analytical Quality of Clinical Chemistry Assays: Importance of the Total Allowable Error Target

[1]Deepa Haldar, [2]Seema Patel, [3]Rajani Kumawat, [4]Charanjeet Kaur

BACKGROUND

Six sigma is a process of quality measurement and improvement program. Sigma methodology can be applied wherever an outcome of a process is to be measured. A poor outcome is counted as an error or defect. This is quantified as defects per million. Ensuring quality of laboratory services is the need of the hour in the field of health care. Keeping in mind the revolution ushered by Six Sigma concept in corporate world, health care sector may reap the benefits of the same. We aimed to gauge the quality of the analytical performance of our laboratory parameters by Sigma metrics.

MATERIALS AND METHODS

In this study, Sigma metrics were calculated for six clinical chemistry assays for serum on Siemens Advia 2400 chemistry analyzers. Controls at two analyte concentrations were tested and Sigma metrics were calculated using three different total allowable error (TEa) targets (Ricos biological variability, CLIA, and RiliBÄK).

RESULTS

Sigma metrics varied with analyte concentration and the TEa target. Sigma values identified those assays that are analytically robust and require minimal quality control rules and those that exhibit more variability and require more complex rules.

CONCLUSION

Six sigma is a more efficient way to control quality, but the lack of TEa targets for many analytes and the sometimes inconsistent TEa targets from different sources are important variables for the interpretation and the application of Sigma metrics in a routine clinical laboratory. Sigma metrics are a valuable means of comparing the analytical quality of two or more analyzers to ensure the comparability of patient test results.

Effect of Blood Collection Tubes on Serum Lithium and Calcium Assays

[1]GK Saharia, [2]M Mangaraj

[1,2]Department of Biochemistry, All India Institute of Medical Sciences, Bhubaneswar, Odisha, India

INTRODUCTION

Blood collection tubes represent much more complex devices than is commonly understood by laboratory workers. There are multiple components in today's collection tubes that may influence clot formation, cause interaction with the tube and stopper surface, and may add unwanted materials into the samples or adsorb components from the sample, influencing test results.

AIMS AND OBJECTIVES

To assess the magnitude of any false elevation or depletion in serum lithium and ionized calcium concentration in various types of collection tubes.

MATERIALS AND METHODS

The study is being performed in Clinical Biochemistry Laboratory of the Department of Biochemistry, All India Institute of Medical Sciences, Bhubaneswar, Odisha, India. The study was started in the month of July 2016. Blood was collected from every patient in three types of test tubes, viz., Borosil glass tubes, BD vacutainer, and Xinle clot activator tubes. Serum concentrations of lithium and ionized calcium were measured by using Eschweiler Combiline ISE analyzer and the results were statistically analyzed.

RESULTS

In this study, it was observed that mean serum lithium concentration was 0.66 mmol/L in the Borosil glass tubes, 0.68 mmol/L in BD vacutainers, and was 19.94 mmol/L in Xinle clot activator tubes respectively. For serum ionized calcium the values obtained were 1.16, 1.21, and 1.22 mmol/L respectively. The serum lithium concentration in Xinle clot activator tubes was showing factitiously very high value compared with the other two variants of collection tubes. However, serum ionized calcium revealed minor noticeable difference amongst the three different types of collection tubes.

CONCLUSION

Although our study is at a very initial stage, it clearly points toward effect of clot activators and other substances present in various collection tubes that interfere with serum lithium and ionized calcium concentration. So, selection of proper blood collection tubes is a critical preanalytical step required for the integrity of laboratory results.

Study of Serum Zinc and Copper Concentration in Patients with Age-related Macular Degeneration attending Assam Medical College and Hospital

[1]Harshajit Pathak, [2]Kailash Bhattacharyya, [3]Jawahar J Kuli

[1,2]Department of Biochemistry, Assam Medical College, Dibrugarh, Assam, India
[3]Department of Ophthalmology, Assam Medical College, Dibrugarh, Assam, India

INTRODUCTION

Age-related macular degeneration (ARMD) is the 3rd cause of blindness worldwide and the 1st in industrialized countries. The exact cause of the condition is still not known and at present there is no proven treatment of this ocular morbidity. Oxidative stress has long been thought to play a role in its pathogenesis. Preliminary evidence supports a protective role of nutritional supplements containing zinc, copper, and antioxidant vitamins in people at high risk of zinc deficiency. Hence, there might be an association of serum zinc and copper concentration with ARMD.

AIMS AND OBJECTIVES

To determine and compare serum zinc and copper concentration in patients with and without ARMD.

MATERIALS AND METHODS

This case – control study was carried out in the Department of Biochemistry, Assam Medical College, Dibrugarh, Assam, India. Thirty patients of age 50 years or older diagnosed as having ARMD by optical coherence tomography in the Department of Ophthalmology were taken as cases and 30 numbers of age- and sex-matched patients without the evidence of ARMD were taken as control. Serum zinc and copper were estimated by colorimetric method in semi-autoanalyzer.

RESULTS

In patients with ARMD, the mean concentration of serum zinc and copper was found to be 53.07 ± 12.19 and 108.58 ± 21.71 respectively, whereas in patients without ARMD, it was 65.56 ± 11.36 and 120.11 ± 22.01 respectively. The difference was found to be highly significant for zinc (p-value <0.001) and significant for copper (p-value <0.05).

CONCLUSION

The findings showed that low zinc and copper concentration are associated with ARMD. Hence, estimation of these two parameters and supplementation if required may be a useful adjunct to current management of ARMD. However, further study with a large sample size may be suggested.

Heart Rate Variability: A Marker for Impending Pregnancy-induced Hypertension?

[1]Inder P Kaur, [2]Kiran Singh, [3]Gautam Sarkar

[1-3]Netaji Subhash Chandra Bose Subharti Medical College, Meerut, Uttar Pradesh, India

INTRODUCTION

Pregnancy-induced hypertension (PIH) (preeclampsia, eclampsia) affects about 8 to 10% of pregnancies. Pregnancy-induced hypertension can lead to eclampsia, hemolysis, elevated liver enzyme levels, and low platelet levels syndrome, preterm delivery, intrauterine growth rate, or placental abruption. Hence, it becomes imperative for us to diagnose this condition well before it actually appears. At present, screening mode revolves around measurement of blood pressure and detection of albuminuria. Microalbuminuria appears far before frank albuminuria. Thus, progression of microalbuminuria is a very significant indicator of forthcoming frank albuminuria. Heart rate variability (HRV) is an indicator of the sympathetic/parasympathetic activity ratio. Higher sympathetic activity is likely to lead to an elevation of blood pressure and vice versa. In the present study, we explore the correlation between HRV and urinary albumin creatinine ratio (ACR).

AIMS AND OBJECTIVES

To measure the HRV and ACR in the study population (2nd trimester pregnancy).

MATERIALS AND METHODS

A total of 51 consecutive pregnant woman attending the antenatal clinic at Netaji Subhash Chandra Bose Subharti Medical College, Meerut, Uttar Pradesh, India, were subjected to the study. All these patients were subjected to the HRV test at the Physiology Department of Subharti Medical College along with an estimation of the urinary ACR. The data obtained were used to generate scattered plot.

RESULTS

A distinct positive corelation was obtained between HRV and ACR.

CONCLUSION

The routine measurement of HRV during the 2nd trimester of pregnancy would clearly point out the patients who are at high risk of PIH well before its onset, thus facilitating intense therapeutic-prophylactic measures.

A corelative Study of Alteration of Serum Uric Acid, Magnesium, and Ferritin Levels in Autoimmune Diseases affecting Skin

[1]Isha Malik, [2]Kiran Dahiya, [3]Ashuma Sachdeva, [4]Veena S Ghalaut

[1-4]Department of Biochemistry, Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India

INTRODUCTION

Autoimmune diseases are due to abnormal immune response of the body against tissues and cells normally present. They develop when our immune system which defends our body against diseases misinterprets our healthy cells as foreign and eventually starts attacking them. In autoimmune skin diseases, the immune system mistakes the skin cell as a pathogen and sends out faulty signal that speeds up the T-lymphocyte activation.

AIMS AND OBJECTIVES

This study was planned with an objective to determine the levels of serum uric acid, magnesium, and ferritin in patients with autoimmune diseases affecting skin and to correlate with the duration and severity of disease.

MATERIALS AND METHODS

Thirty patients having newly diagnosed autoimmune skin disorders were enrolled in the study. Their serum was subjected to estimation of uric acid and magnesium on Randox autoanalyzer. Serum ferritin was measured by chemiluminescence. These results were compared with 30 age- and sex-matched healthy controls. Independent t test was applied for analyzing data.

RESULTS

The result showed significantly increased levels of uric acid and ferritin ($p < 0.05$) in cases as compared with controls. The level of magnesium was not significantly changed. As these disorders are associated with rapid epidermal cell turnover, they consequently increase uric acid levels. Serum ferritin is an acute phase reactant and can be identified as a marker of disease severity co-related with duration of disease.

CONCLUSION

Serum levels of uric acid, magnesium, and ferritin estimation may be helpful in understanding the pathophysiology and may be monitored during antigen-specific immunotherapy. However, since sample sizes in this study were small, larger numbers need to be studied before definitive conclusions can be drawn.

Association of Plasma Hydrogen Sulfide (H_2S) and Fasting Insulin in Type II Diabetes Mellitus

[1]Ishita Mondal, [2]Sayantan Dasgupta, [3]Utpal K Biswas

[1-3]Nil Ratan Sircar Medical College & Hospital, Kolkata, West Bengal, India

INTRODUCTION

Hydrogen sulfide (H_2S) is a gaseous messenger molecule that has been implicated in various physiological and pathological processes in mammals, including vascular relaxation, angiogenesis, the function of ion channels, ischemia/reperfusion (I/R), and cardiac injury. A number of recent studies suggest the potential role of H_2S in the pathophysiology of type II diabetes mellitus (DM).

AIMS AND OBJECTIVES

The current study was aimed to evaluate the plasma H_2S levels in patients with type II DM compared with healthy controls, and to find out if there is any relationship between plasma concentrations of H_2S and fasting insulin levels.

MATERIALS AND METHODS

Plasma H_2S concentrations were measured in 40 type II DM patients and in similar number of healthy control subjects by method standardized in our laboratory. Plasma insulin was measured by enzyme-linked immunosorbent assay using standardized reagent kits in the same individuals.

RESULTS

The mean plasma H_2S concentration (μmol/L) is significantly higher ($p < 0.001$) in patients [69.12 ± standard deviation (SD) 7.09] compared with the controls (42.03 ± SD 7.19). Serum insulin level (μIU/mL) is also significantly higher ($p < 0.001$) in patients (20.99 ± 7.26) in comparison with controls (7.27 ± 3.10). Plasma H_2S levels have significant correlation with the insulin (μIU/mL) levels ($r = 0.655$ and $p < 0.002$) among the above patients.

CONCLUSION

The present study has elucidated that type II DM is associated with elevated levels of H_2S that are well correlated with fasting insulin levels. It establishes that H_2S has significant role in DM, though the mechanism is still under research.

Correlation of Serum Prolidase with Other Noninvasive Markers for the Diagnosis of Fibrosis in Nonalcoholic Fatty Liver Disease

[1]Jugnu Kishore, [2]Anuva Mishra, [3]Upendra K Das, [4]Srikrushna Mahapatra

INTRODUCTION

Nonalcoholic fatty liver disease (NAFLD) represents a spectrum of diseases ranging from steatosis, i.e., fat accumulation in liver tissue without inflammation to steatohepatitis, characterized by steatosis plus hepatocellular injury and inflammation either with or without fibrosis, and finally cirrhosis.

The gold standard for diagnosing and staging liver fibrosis is liver biopsy, which has limitations like wrong sampling, cost, pain, increased morbidity, and mortality. Noninvasive biochemical tests, such as AST to Platelet Ratio Index score, Forns Index, and physical tests, such as Fibroscan, have been used with limited success. Thus new investigations based on pathogenesis of NAFLD are necessary to develop useful biomarkers.

Prolidase is an enzyme that degrades dipeptides in which a proline or hydroxyproline residue is located at the C-terminus. As prolidase activity increases in collagen turnover associated with fibrosis, monitoring prolidase activity could indicate an earlier and more definitive diagnosis. A decrease is seen in advanced fibrosis indicating the progression and staging.

AIMS AND OBJECTIVES

The present work aims at correlating noninvasive biochemical marker like serum prolidase and liver function test with degree of fibrosis diagnosed by Fibroscan in diagnosed cases of NAFLD.

MATERIALS AND METHODS

The ongoing study includes 100 diagnosed cases of NAFLD in the age group of 20 to 50 years and an equal number of age- and sex-matched controls.

RESULT

A significantly higher level of serum prolidase was observed in patients with NAFLD, particularly those with high Fibroscan score than in controls. A high triglyceride and low high-density lipoprotein level were found to be positively correlated with serum prolidase level, whereas no correlation was seen between serum prolidase and liver function test.

CONCLUSION

The early diagnosis and staging of fibrosis in NAFLD can be accomplished using simple noninvasive biomarkers like serum prolidase activity.

Study of Serum Zinc in Clinically Diagnosed Cases of Alcoholic Cirrhosis

[1]Jyoti M Deori, [2]Moni G Das

[1,2]Assam Medical College, Dibrugarh, Assam, India

INTRODUCTION

Zinc is the 2nd most prevalent trace element in the body. It is integrally involved in the normal lifecycle and has many important regulatory, catalytic, and defensive functions. Alcoholic cirrhosis is the leading cause of preventable morbidity and mortality in the world. It is associated with hypozincemia. The role of zinc in the pathogenesis of liver cirrhosis and its complications is still clearly not understood. If a relationship exist between serum zinc and different stages of alcoholic cirrhosis than the correction of zinc level at an early stage can prevent the complications, such as hepatic encephalopathy, gastrointestinal bleeding, severe jaundice, and ascites. Taking this into account, a study was undertaken at Assam Medical College, Dibrugarh, to estimate serum level zinc in alcoholic cirrhosis and to assess its severity of disease progression.

AIMS AND OBJECTIVES

To determine serum zinc in the clinically diagnosed cases of alcoholic cirrhosis; to compare serum zinc in patient with relation to severity of disease progression of alcoholic cirrhosis.

MATERIALS AND METHODS

The study group included 60 clinically diagnosed cases of alcoholic cirrhosis falling in the age group ≥30 and ≤60 years. The patients were further divided into two groups, compensated and decompensated according to Child–Pugh criteria. Out of these, (n = 28) compensated and (n = 32) decompensated patients were found. Serum zinc was estimated calorimetrically.

RESULTS

The result showed serum zinc was significantly decreased in the decompensated group than in the compensated group, p-value < 0.001.

CONCLUSION

It can be concluded that serum zinc may indicate the pathophysiological stage of alcoholic cirrhosis. Therefore, the role of zinc as therapeutic and as a nutritional supplement may improve the symptoms of liver cirrhosis.

Gender-specific Biological Variation of Creatine Kinase-MB Mass in Chronic Kidney Disease with Maintenance Hemodialysis

[1]Kavita Rasalkar, [2]G Chandana, [3]HR Suma

[1-3]Department of Biochemistry, PES Institute of Medical Sciences and Research, Kuppam, Andhra Pradesh, India

INTRODUCTION

A triad of clinical evaluation, echocardiography, and biomarkers of acute cardio necrosis are basis for diagnosing acute coronary syndrome (ACS). Inaccuracies in any one of the parameter may lead to delay in diagnosis posing a prognostic risk to the patient. However, patients of chronic kidney disease (CKD) on maintenance hemodialysis have been observed to have enhanced cardiovascular risk and have difficulty in diagnosing it. Evaluation of ACS by echocardiography can be inconclusive, thereby making hs-Troponin I and creatine kinase-MB (CKMB) better indicators. Hemodialysis is known to alter troponin I values but not the values of CKMB.[1] Manufacturer guidelines give a single cutoff values for males and females, whereas some studies suggest a slightly higher values of CKMB for males.[2]

AIMS AND OBJECTIVES

To establish a gender-specific biological variation of CKMB in our rural setup for CKD with hemodialysis patients.

MATERIALS AND METHODS

Total of 60 noncardiac CKD on maintenance hemodialysis patients (30 males and 30 females) on twice-weekly regimen were selected. Serum samples were collected on mid-week dialysis schedule just before the initiation of dialysis. Samples were analyzed for CKMB-mass in VIDAS autoanalyzer. All patients with previous history of ASC were excluded from the study. Data were analyzed using appropriate statistical methods.

RESULTS

Awaited

CONCLUSION

The results are awaited. If gender-specific significant differences in CKMB among hemodialysis patients are observed in the study, a biological reference interval can be established for males and females if the study is conducted in a larger population.

REFERENCES

1. Ingec M, Oguz EG, Yildirim T, Ulas T, Horoz M. The effect of hemodialysis on cardiac enzyme levels and echocardiographic parameters. Int J Artif Organs 2014 Jul31;37(7):513-520.
2. Strunz CM, Araki LM, Nogueira AA, Mansur AP. Gender differences in serum CK-MB mass levels in healthy Brazilian subjects. Braz J Med Biol Res 2011 Mar;44(3):236-239.

To Compare the Results of Common Biochemical Parameters in Blood Samples Collected in Fluoride and Plain Vacutainer

[1]Khushal Shah, [2]Shilpa Jain

[1,2]Medical College Baroda, Baroda, Gujarat, India

INTRODUCTION

In clinical chemistry laboratory, blood samples for glucose estimation are collected in fluoride vacutainer, whereas other parameters like urea, creatinine, bilirubin, etc. are collected in plain vacutainer. In laboratory many times we come across insufficient amount of sample in one of the vacutainer of patient. We need to find out whether in such circumstances, the sample from fluoride vacutainer can be used for biochemical parameters other than glucose or vice versa.

AIMS AND OBJECTIVES

To test various biochemical parameters in blood samples collected in fluoride and plain vacutainer and compare the results.

MATERIALS AND METHODS

It is a cross-sectional study, in which 30 patients' samples were collected in both plain and fluoride vacutainer. Both the vacutainer samples were analyzed for glucose, urea, creatinine, total and direct bilirubin, alanine transaminase (ALT), alkaline phosphatase (ALP), total protein, and albumin. The results were compared by Student's paired t-test.

OBSERVATION

	In plain vacutainer		*In fluoride vacutainer*				*In plain vacutainer*		*In fluoride vacutainer*		
Parameter	*Mean*	*SD*	*Mean*	*SD*	*p-value*	*Parameter*	*Mean*	*SD*	*Mean*	*SD*	*p-value*
Glucose (mg/dL)	63	17.7	90.2	13.1	< 0.0001	Direct bilirubin (mg/dL)	0.75	0.25	0.72	0.22	0.77
Urea (mg/dL)	41.1	17.3	39.7	17.9	0.024	ALT (U/L)	39.2	14.4	30.7	10.4	0.01
Creatinine (mg/dL)	1.27	0.46	1.23	0.46	0.003	ALP (U/L)	84.3	17.1	35.3	15.5	< 0.0001
Total bilirubin (mg/dL)	s2	0.69	1.91	0.64	0.004	Total protein (gm/dL)	7.03	0.5	6.51	0.66	0.001
						Albumin (gm/dL)	3.65	0.42	3.3	0.39	0.002

RESULTS

For glucose and ALP parameters, p-value is highly significant; moderately significant for urea, creatinine, total bilirubin, ALT, total protein and albumin; and not significant for direct bilirubin.

CONCLUSION

The study shows that two vacutainers cannot be used as a replacement for each other. In emergency conditions if sample volume is insufficient in plain vacutainer, then urea, creatinine, total bilirubin, direct bilirubin can be done from fluoride vacutainer to provide presumptive results for tests to guide clinician till the fresh new sample is taken in plain vacutainer and analyzed. Ideal approach is to perform glucose from fluoride vacutainer and other biochemical parameters from plain vacutainer.

Screening for Bone Health in Patients with Epilepsy

[1]Kiran Dahiya, [2]Aastha Bansal, [3]Surekha Dabla, [4]Rakesh Dhankhar

Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India

INTRODUCTION

Epilepsy may have an impact on bone health of the patients even before drug therapy is initiated, particularly in the developing countries. This is in view of long delay in diagnosis and lifestyle changes associated with the disease.

AIMS AND OBJECTIVES

To assess the bone health of patients with epilepsy, bone health markers like bone mineral density (BMD), vitamin D, and urinary hydroxyproline were assessed in newly diagnosed epilepsy patients before initiating treatment.

MATERIALS AND METHODS

The BMD was assessed by dual energy X-ray absorptiometry scan, vitamin D by enzyme linked immunosorbent assay, and 24-hour urine hydroxyproline was estimated calorimetrically in 25 newly diagnosed epilepsy patients. Other bone markers like calcium and phosphorus in both serum and urine samples while alkaline phosphatase in serum samples were also estimated. Results were compared with 25 age- and sex-matched healthy controls and were analyzed statistically.

RESULTS

The BMD and vitamin D were found to be significantly decreased ($p < 0.05$), while serum alkaline phosphatase levels were observed to be significantly increased ($p < 0.05$) in epilepsy patients as compared with healthy controls. The difference in urinary hydroxyproline and calcium/phosphorus as well as serum calcium/phosphorus in the two groups was not found to be statistically significant ($p > 0.05$).

CONCLUSION

Bone health is found to be compromised in epilepsy patients even before initiating anti-epileptic treatment. The BMD and urinary hydroxyproline may act as simple, noninvasive, convenient, and inexpensive markers to assess bone health in these patients.

Correlation of Serum Glycosylated Hemoglobin and Triglycerides in Hypertensive Patients with Type II Diabetes Mellitus

[1]Laljem Haokip, [2]Th Ibetombi

[1,2]Department of Biochemistry, Regional Institute of Medical Sciences, Imphal, Manipur, India

INTRODUCTION

Hypertension is a leading cause of mortality and morbidity worldwide. Dyslipidemia associated with hypertension and diabetes mellitus (DM) have the highest prevalence of coronary heart disease and stroke.

AIMS AND OBJECTIVES

To assess the correlation of serum glycosylated hemoglobin (HbA1c) and triglycerides (TGs) in hypertensive patients with type II DM and to detect metabolic syndrome.

MATERIALS AND METHODS

A total of 50 patients already diagnosed as hypertension with type II DM, attending outpatient department as well as admitted in Medicine ward, Regional Institute of Medical Sciences, Imphal, Manipur, India, were studied for a year from June 1, 2015, to June 3, 2016. Another 30 healthy age- and sex-matched subjects who were free from any systemic diseases were taken as control. Fasting blood glucose, serum glycosylated hemoglobin, and serum TGs were measured in these patients.

RESULTS

Thirty four percent (34%) of hypertensive diabetic cases were in the age group of 51 to 60 years, followed by 30% in the age group of 41 to 50 years, 18% in 61 to 70 years, and 8% above 70 years. The mean ± standard deviation concentration of fasting serum TG was significantly higher ($p < 0.001$) in study group (169.87 ± 57.73 mg/dL) as compared with control cases (73.96 ± 12.67 mg/dL). Maximum number of cases (33) was having serum TG level more than 170 mg/dL. There was a positive correlation between serum TG and HbA1c among the study group. As percentage of HbA1c increased, the value of serum TG also increased. Significant increase ($p < 0.001$) of HbA1c was observed among DM cases compared with controls.

CONCLUSION

This study shows that serum TG increases in hypertensive patients with type II DM, and is positively correlated with HbA1c levels.

Electrolyte Disturbances in Patients Admitted in Intensive Care Unit in Tertiary Care Hospital

[1]Mallika Barman, [2]Syeda M Rahman

[1,2]Government Medical College and Hospital, Chandigarh, India

INTRODUCTION

Disturbances in sodium concentration are common in the critically ill patient. Recent studies have reported that electrolyte imbalances are associated with increased morbidity and mortality among critically ill patients. To provide optimal care, health care providers should be familiar with the principles and practice of fluid and electrolyte physiology and pathophysiology.

AIM

To study electrolyte imbalance in patients admitted in intensive care unit (ICU) in Gauhati Medical College and Hospital, Guwahati, Assam, India.

MATERIALS AND METHODS

A retrospective study was conducted in 35 patients admitted in ICU in Gauhati Medical College and Hospital. Serum samples were collected and the levels of sodium and potassium were estimated in semi-automated analyzer.

RESULTS

Out of 35 patients, 12 (34.2%) were hypokalemic, 6 (17%) were hyperkalemic, and 17 (50%) had normal levels, whereas 20 (57.1%) patients were hyponatremic, 8 (22%) were hypernatremic, and 7 (20%) had normal levels.

CONCLUSION

Electrolyte abnormalities in critically ill patients can lead to fatal consequences. Caution to electrolyte disturbances should be exercised in ICU. To provide optimal management, clinicians should be aware of the warning signs and underlying pathophysiology. In addition, intensivists should pay attention to the administered fluid and medications that pose a threat to the electrolyte disorders, thereby leading to fatal outcome.

The Pilot Study of Serum Uric Acid and Hypertension in Diabetics in a North Indian Tertiary Care Hospital

[1]Ananya Sharma, [2]Manisha Naithani

[1,2]All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

INTRODUCTION

Uric acid role has been established in the progression of prediabetes to diabetes. However, conflicting data exist as regards the serum uric acid levels in type II diabetes mellitus and accompanying comorbidities. This pilot study has tried to fill the knowledge gap and enhance understanding of uric acid in diabetes mellitus, and with coexisting hypertension.

MATERIALS AND METHODS

Thirty patients with type II diabetes mellitus and 30 healthy controls were included in the present pilot study. The enrollees were further divided into groups, based on the presence or absence of hypertension as a complication.

RESULTS

The circulatory levels of glucose and uric acid were found to be elevated in the diabetics of either sex as compared with those in the controls. There was no significant difference in the serum uric acid levels between the diabetics and the nondiabetics. We found that the hypertensive diabetics were found to have significantly decreased serum uric acid levels ($p < 0.05$) as compared with the equivalent nonhypertensive diabetics.

CONCLUSION

It was concluded from the present pilot study that a significant decrease in the serum uric acid levels occurs in hypertensive diabetics in comparison with those who were nonhypertensive diabetics. The lowering of the serum uric acid levels in diabetes complicated with hypertension, as was observed, may be of pathogenic significance as probable causes may vary from raised plasma glucose levels/increased glycosuria, hyper filtration, and a decreased antioxidant status. Further studies would be required to know the exact mechanism of uric acid lowering.

Does Hypothyroidism Predispose Premenopausal Females to Increased Risk of Atherosclerosis? A Pilot Study in North Indian Population

[1]Megha Arora, [2]Vandana Saini, [3]Amita Yadav, [4]Surabhi Yadav, [5]Anju Jain

[1-4]Vardhaman Mahavir Medical College, New Delhi, India
[5]Lady Hardinge Medical College, New Delhi, India

INTRODUCTION

Atherosclerosis is the most common cause of cardiovascular disease. Thyroid hormone regulates cardiac performance by acting on the heart and vascular system. The relationship between hypothyroidism and the cardiovascular system has been extensively demonstrated in numerous experimental and clinical studies, but the relationship between thyroid hormone and atherogenesis is still not conclusive.

Many studies are available suggesting that premenopausal females are at low risk of atherosclerosis because of protective effect of estrogen. Whether thyroid dysfunction subjugates the protective effect of estrogen in these females is not known.

AIMS AND OBJECTIVES

We planned to evaluate whether hypothyroidism makes premenopausal females more prone to cardiovascular diseases because of atherosclerosis by estimating lipid profile, high sensitivity C-reactive protein (hs-CRP), nitric oxide (NO), plasminogen activator inhibitor 1 (PAI-1), activated protein C (APC) levels in cases and controls.

MATERIALS AND METHODS

The study was conducted on 228 premenopausal females. Thyroid function test was performed and females were further subdivided into three groups: Group A – 114 premenopausal females with hypothyroidism, group B – 114 age-matched healthy premenopausal females with hyperthyroidism. Lipid profile, hs-CRP, NO, PAI-1, APC levels were measured and compared between these groups.

RESULTS

Lipid profile was significantly ($p < 0.05$) deranged in cases. Serum NO and hs-CRP levels were very significantly increased ($p < 0.001$); PAI-1 levels were significantly increased ($p < 0.05$); and APC levels were very significantly decreased ($p < 0.001$) in cases.

CONCLUSION

The assessment of the mechanisms that may lead to atherosclerosis in premenopausal females with hypothyroidism confirms the link between hypothyroidism and cardiovascular dysfunction. This, in turn, reinforces the importance of early detection and effective treatment of cardiac abnormalities in premenopausal females affected by hypothyroidism. Thyroid dysfunction represents a potential hypercoagulable and inflammatory state, which might augment the process of atherosclerosis and its complications.

This was a pilot study, so further long-term prospective studies are required to conclude this observation.

A Study of Mid-gestational Serum Total Calcium and Uric Acid Levels as Early Markers of Preeclampsia

[1]Namrata Raul, [2]Minal Pore, [3]Pramod Ingale

[1-3]Lokmanya Tilak Municipal General Hospital and Lokmanya Tilak Municipal Medical College, Sion, Mumbai

INTRODUCTION

Hypertension is one of the common complications seen in pregnancy and contributes significantly to the cause of maternal and perinatal morbidity. There are evidences suggesting that there is an association between calcium intake and preeclampsia. The calcium levels contribute significantly in the functioning of the vascular smooth muscles. Hyperuricemia is also considered a risk factor for hypertension in pregnancy. The present study concentrates to get significant association of mid-gestational serum uric acid and serum calcium levels with preeclampsia.

MATERIALS AND METHODS

In our study, 433 primigravida females with gestation age 15 to 20 weeks were enrolled and were followed-up until delivery. After obtaining consent, blood samples were collected under aseptic conditions for serum uric acid and serum total calcium estimations. Of these, 43 subjects developed preeclampsia. Mid-gestational serum calcium and uric acid levels of subjects developing preeclampsia (n = 43) were compared with patients who had normal delivery (n = 86). Uric acid was estimated by uricase peroxidase method and total calcium was estimated by O-cresophthalein complexone on fully automated biochemistry analyzer Beckman Coulter 680. Unpaired t-test was applied.

RESULTS

The observed mean serum calcium level in preeclampsia patients was significantly decreased (8.5 0.88 mg/dL) as compared with controls (9.24 ± 1.3 mg/dL, p-value <0.01). The observed mean serum uric acid levels in preeclampsia was significantly increased (4.5 ± 1.9 mg/dL) as compared with controls (3.7 ± 0.84 mg/dL, p-value <0.01).

CONCLUSION

Low serum calcium and high serum uric acid levels in mid-gestational period can be used as early predictors of preeclampsia. However, further studies with large sample size is recommended.

A Study of Serum Calcium, Magnesium, and Urine Microalbumin Levels in Normal and Preeclamptic Gestation and to Compare with Nongestational Value in a Tertiary Health Care Center in North-East India

[1]Moumita Saha, [2]Syeda M Rohman

[1,2]Gauhati Medical College and Hospital, Guwahati, Assam, India

INTRODUCTION

Preeclampsia (PE) is a multisystem disorder of unknown etiology, unique to pregnancy, which complicates 3 to 5% of pregnancies in the Western world.

AIMS AND OBJECTIVES

The present study is done with an aim to study the levels of minerals (calcium, magnesium), microalbuminuria levels in normal and preeclamptic gestation and to compare with nongestational reference values.

MATERIALS AND METHODS

A total of 150 women were studied for various parameters like serum calcium, magnesium, and urine microalbumin. Women are distributed in three groups as follows: Group A (n = 50) consists of nonpregnant normotensive women. The age group is 18 to 30 years (mean age 24 years). Group B (n = 50) consists of women having normal uncomplicated pregnancy without hypertension. The age group is 20 to 30 years (mean age 22 years). Group C (n = 50) consists of women with preeclampsia.

RESULTS

The age group is 20 to 32 years (mean age 24 years). The mean ± standard deviation (SD) calcium values in groups A, B, and C are 9.6 ± 1.0, 8.94 ± 0.32, and 7.9 ± 0.56 (mg/dL) respectively. Statistically significant decrease ($p < 0.05$) is seen in group C.

The mean ± SD magnesium values in groups A, B, and C are 2.4 ± 0.6, 2.1 ± 0.3, and 1.96 ± 0.4 (mg/dL) respectively. There is a statistically significant decrease in serum magnesium values in both groups B and C as compared with group A.

The mean ± SD microalbumin values in groups A, B, and C are 26 ± 6, 29 ± 5, and 95 ± 34 (mg/dL) respectively. There is a statistically significant increase in microalbumin values in group C as compared with group A.

CONCLUSION

Hence, it can be concluded from the present study that a reduction in serum levels of calcium and magnesium, during pregnancy might be possible contributors in etiology of preeclampsia, and supplementation of these elements to diet may be of value to prevent preeclampsia. Early pregnancy levels of microalbuminuria can be used as predictors of PE with high negative predictive value.

Evaluation of Cardiovascular Risk in Chronic Kidney Disease

[1]NN Sreedevi, [2]Priscilla A Chandran, [3]M Noorjahan

[1-3]Nizam's Institute of Medical Sciences, Hyderabad, Telangana, India

INTRODUCTION

National Kidney Foundation guidelines define chronic kidney disease (CKD) as persistent kidney damage (confirmed by renal biopsy or markers of kidney damage) and/or glomerular filtration rate 60 mL/min/1.73 m^2 for greater than 3 months. The incidence of cardiovascular (CV) disease is tenfold greater in CKD than in non-CKD patients. Individuals with renal impairment usually have multiple comorbidities, and several studies have documented an increasing prevalence of traditional coronary risk factors with reduced renal function. Conventional coronary risk factors alone cannot explain the significantly elevated CV risk and predisposition for adverse CV outcome.

AIMS AND OBJECTIVES

In the present study, both conventional and nonconventional parameters are evaluated for assessing CV risk in CKD patients.

MATERIALS AND METHODS

A total of 60 subjects that included 25 healthy controls and 35 cases were clinically diagnosed as CKD. Biochemical parameters analyzed were blood urea, serum creatinine, lipid profile, high sensitivity C-reactive protein (hs-CRP), and lipoprotein (Lp)a.

RESULTS

Among the CKD group (M = 23, F = 12), the mean age was 48 ± 6.7 years; in the control group (M = 16, F = 9), the mean age was 45 ± 5.5 years. The mean total cholesterol (TC) (mg/dL) [(122.25 ± 41.6) *vs* (154.75 ± 37.08)], high-density lipoprotein cholesterol (HDL-c) (mg/dL) [(31.65 ± 12.25) *vs* (50.36 ± 7.40)], low-density lipoprotein cholesterol (LDL-c) (mg/dL) [(64 ± 31.21) *vs* (82.5 ± 27.1)] were lower in CKD group when compared with control group. Triglyceride (TG) (mg/dL) [(133 ± 75.37) *vs* (107.7 ± 75.31)], TC/HDL ratio [(4.62 ± 2.69) *vs* (2.96 ± 0.88)], hs-CRP (mg/L) [(47.55 ± 45.03) *vs* (1.45 ± 1.41)], and Lpa (mg/dL) [(108 ± 68.92) *vs* (11.5 ± 5.5)] were significantly increased in CKD group as compared with control group. Dyslipidemia is a common finding among CKD patients. Low HDL levels, increased oxidation of LDL, with progressive lowering of TC have been observed and is attributed to chronic malnutrition and inflammation. Raised hs-CRP is a marker of systemic inflammation and it promotes atherosclerosis.

CONCLUSION

Chronic kidney disease is a potent risk factor for adverse CV outcomes; hence, both conventional and nonconventional parameters should be evaluated for assessing CV risk factors. Despite the higher risk of major CV events and death, the proportion of individuals with CKD receiving appropriate risk factor modification and/or interventional strategies is lower than the general population. So greater effort is required to direct these risk factor modification strategies for reducing the CV risk in CKD patients.

Regulatory Role of HDL on Systemic Inflammatory Response in Adult Bacterial Sepsis

[1]M Naga Mrudula, [2]P Akila, [3]KT Rajesh, [4]MN Suma, [5]V Prashant, [6]NK Swetha, [7]D Parveen

[1-7]Department of Biochemistry, JSS Medical College, Jagadguru Sri Shivarathreeswara University, Mysuru, Karnataka, India

INTRODUCTION

In spite of the recent advances available in the intensive care units, there is still an increasing incidence of sepsis and sepsis-related deaths. Recent studies suggest that high density lipoprotein (HDL) neutralizes and helps in clearance of lipopolysaccharide or lipoteichoic acid from circulation by the liver.

AIMS AND OBJECTIVES

To conduct a prospective case – control study to determine whether circulating HDL is a critical predictor of risk and severity of bacterial sepsis.

MATERIALS AND METHODS

During the study period, 234 adult patients were clinically diagnosed to have sepsis. Out of these, 35 patients were reported to have positive blood culture (confirmed sepsis group or group I). Thirty five age- and sex-matched patients were randomly

selected from the suspected sepsis patients as group II. Thirty-five normal healthy age- and sex-matched adults were taken as group III (controls). Venous blood samples were collected from all these patients before the administration of antibiotics. The collected blood sample was used for complete blood count, HDL, and C-reactive protein (CRP) estimations. The gold standard for the diagnosis of sepsis was positive blood culture.

RESULTS

The CRP levels were significantly increased and HDL levels were significantly low in confirmed sepsis ($p < 0.0001$) and suspected sepsis ($p < 0.0001$) when compared to that of control subjects. The HDL levels < 32.25 mg/dL showed 91.18% sensitivity and 75.0% specificity to differentiate between confirmed sepsis and healthy subjects. There was a significant negative correlation between HDL and CRP. The overall correlation coefficient r is –0.54 and p-value is <0.0001.

CONCLUSION

From this study, it is clear that HDL levels are significantly decreased in response to bacterial infection or inflammation. The decrease in HDL is well correlated with increased levels of CRP. The HDL levels in bacterial sepsis may have a value in identifying patients with infection.

Genotype Distribution of Genes in Renin – Angiotensin – Aldosterone System Pathway and Risk Factor Analysis in Cases of Premature Acute Coronary Syndrome

[1]Nirupama Devi, [2]V Lakshmi, [3]Karunakara Padhy, [4]P Veerraju

[1]MKCG Medical College, Berhampur, Odisha, India
[2,4]Department of Human Genetics, Andhra University, Visakhapatnam, Andhra Pradesh, India
[3]Care Hospital, Visakhapatnam, Andhra Pradesh, India

INTRODUCTION

Patients suffering from acute coronary syndrome (ACS), below 45 years of age, are known as premature ACS. Genetics and environmental interaction plays a role in the development of disease in young. Most important genes responsible for ACS are ACE, AGT, and AT1R in renin–angiotensin–aldosterone system pathway.

AIMS AND OBJECTIVES

To analyze conventional risk factors and to study distribution of genotypes and allele frequencies of ACE, AGT, and AT1R gene in premature ACS.

MATERIALS AND METHODS

This study has been carried out in Human Genetics Department of Andhra University in collaboration with Care Hospital Visakhapatnam. Totally 150 ACS patients were taken, out of which 54 were having premature disease. Conventional and genetic risk factors were analyzed. Polymerase chain reaction, restriction fragment length polymorphism, and gel electrophoresis were done to know different genotypes of ACE, AGT, and AT1R genes. Genotype distribution and allele frequency analysis was done by chi-square test. A p-value <0.05 was taken as significant.

RESULTS

More than one-third of total cases were having premature ACS. Their M:F ratio was 5:1. Smoking (27.8%) and family history of coronary artery disease (CAD) (22.2%) were most common risk factors for premature ACS. Triple vessel disease (50%) and extensive disease like myocardial infarction (MI) (85%) were associated with young ACS. ACE DD genotype and D allele ($2 = 6.09$ and $p = 0.013$), AGT TT genotype and T allele ($2 = 10.92$ and $p = 0.009$) were significantly associated with premature disease.

CONCLUSION

Premature ACS is significantly associated with ACE DD genotype and AGT TT genotype. Severity and prevalence of MI are also high in those cases. Smoking and family history of CAD are most common risk factor for young MI.

Serum Magnesium Level in Patients with Acute Exacerbation of Chronic Obstructive Pulmonary Disease

[1]Nithi Mahanta, [2]Deepika Lahon

[1,2]Department of Biochemistry, Gauhati Medical College and Hospital, Guwahati, Assam, India

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is one of the leading causes of morbidity and mortality in today's world. A recent study conducted to determine the global burden of COPD using recent diagnostic criteria estimated that the prevalence of moderate to severe COPD is 10.1%. Acute exacerbations are common in patients with moderate to severe diseases. Chronic obstructive pulmonary disease represents an overlap of chronic bronchitis and emphysema and small airway disease. Magnesium is an intercellular cation. Although the precise mechanism of this action is unknown, it has been suggested that Mg^{+2} plays a role in the maintenance of airway patency via relaxation of bronchial smooth muscle.

AIMS AND OBJECTIVES

The aim of this study is to find the association of level of serum magnesium level with acute exacerbation of COPD.

MATERIALS AND METHODS

The study includes 50 patients who were admitted with acute exacerbation of COPD in Gauhati Medical College and Hospital, Guwahati, Assam, India. Serum magnesium level of these patients was compared with 50 healthy age- and sex-matched controls. Serum magnesium level was measured in an autoanalyzer after calibration.

RESULTS

Serum magnesium levels were found to be low as compared with the control group. In our study, the probability of occurrence (p-value) is less than 0.05 which is statistically significant. Hence, prevalence of low magnesium levels in acute exacerbation of COPD is high, which may predict an exacerbation.

CONCLUSION

We conclude that COPD exacerbation is associated with hypomagnesemia. We recommend monitoring of serum magnesium levels in COPD patients with acute exacerbation.

Study of Cellular Enzymatic Antioxidant Status in Type II Diabetic Patients

[1]S Rajen Singh, [2]O Prabita Devi, [3]Th Premchand Singh, [4]W Gyaneshwar Singh

[1-4]Department of Biochemistry and Medicine, Regional Institute of Medical Sciences, Imphal, Manipur, India

INTRODUCTION

Diabetes mellitus (DM) has taken the center stage as one of the ultimate medical challenges. Diabetes is usually accompanied by increased production of free radicals or impaired antioxidant defenses.

AIMS AND OBJECTIVES

(1) To estimate erythrocyte superoxide dismutase (SOD) and glutathione peroxidase (GPx) in the blood of type II DM patients with and without microvascular complications and to compare the results with that of healthy individuals. (2) To assess the correlation between oxidative stress and diabetes in relation to metabolic control.

MATERIALS AND METHODS

A cross-sectional study was conducted on 80 type II DM patients (40 with microvascular complications and another 40 without complications) attending the Diabetic Clinic and Medicine ward, Regional Institute of Medical Sciences, Imphal, India, from October 2013 to September 2015. Another 40 age- and sex-matched healthy volunteers were taken as controls. Erythrocyte GPx and SOD levels were estimated spectrophotometrically (Beckman DU 640 Spectrophotometer) by using commercially available kit from Randox Lab Ltd, UK.

RESULTS

The GPx and SOD were significantly lower in type II DM patients with microvascular complications as compared with those without complications and controls (19.12 ± 0.95, 24.17 ± 0.89, 28.18 ± 0.93 U/gHb respectively, for GPx and 568.98 ± 26.18, 798.34 ± 55.33, and 1145.48 ± 60.05 U/gHb respectively, for SOD). The GPx was negatively correlated with hemoglobin A1c ($p < 0.01$).

CONCLUSION

These findings supported that there is increased susceptibility of diabetic patients to oxidative injury. As a result, patients with hyperglycemia and oxidative stress present a high risk for development of diabetic complications and need early intervention.

Thrombin-induced Platelet Activation regulates the Association of Yes-associated Protein with Actin Cytoskeleton

[1]CM Pavalaveelzi, [2]Debabrata Dash

[1-2]Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India

INTRODUCTION

Platelets are enucleate cells with a life span of 10 to 12 days, which play central roles in hemostasis and pathological thrombus formation associated with ischemic heart diseases and stroke. Recently, the Wnt–β-catenin signaling pathway and sonic hedgehog signaling have been shown to function in human platelets. These being developmental signals have prompted us for the study of another developmental signaling: "Hippo" in human platelets. Lats1, a kinase, is one of the core components and Yes associated protein (YAP) is a downstream transcription coactivator of many genes. The YAP is active in dephosphorylated and inactive in phosphorylated form.

AIMS AND OBJECTIVES

(1) To identify the presence of Hippo signaling in platelets. (2) To study the regulation of YAP in platelets.

MATERIALS AND METHODS

Human blood samples were collected from healthy donors after taking proper consent. Washed platelets were prepared. Thrombin was used as agonist for platelet activation. Messenger ribonucleic acid (mRNA) presence was detected by complementary DNA preparation and reverse transcription polymerase chain reaction (RT-PCR). Aggregation, electrophoresis and Western blotting, clot retraction study, and confocal microscopy were done to find the expression and regulation of YAP by Hippo signaling and actin cytoskeleton.

RESULTS

Quantitative RT-PCR confirmed the presence of mRNA for YAP in human platelets. Western blot analysis of various platelet samples established the presence of YAP protein. Aggregation and fibrin clot retraction of platelets with thrombin reduced phospho-YAP levels. Confocal microscopy revealed the association of YAP with actin cytoskeleton. LATS1, an upstream regulator of YAP in the canonical pathway, was also found to be present in platelets by Western blotting.

CONCLUSION

Hippo signaling pathway is present in platelets and is affected by the resting and activated state of platelets. Both canonical and noncanonical regulation of YAP are present.

A Comparative Study of Serum Uric Acid and Serum Magnesium Level in Diagnosed Cases of various Renal Diseases

Polina Boruah

North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences, Shillong, India

INTRODUCTION

Estimations of serum uric acid and magnesium along with other sensitive markers of renal function (serum creatinine and urea) are very effective to determine the extent of renal impairment.

AIMS AND OBJECTIVES

The aim of this study was to compare the serum uric acid and magnesium level between normal controls and patients with various renal diseases and also to evaluate if there was any correlation of these two parameters with severity of impairment of other parameters of renal functions (i.e., creatinine and urea) among these cases.

MATERIALS AND METHODS

Serum uric acid and magnesium estimation in 20 normal controls and 50 cases (28 males and 22 females, age 14–64 years) with various renal diseases (5 cases of acute glomerulonephritis, 10 cases of acute renal failure, 8 cases of acute pyelonephritis, and 27 cases of chronic renal failure) was done during a period of 1 year in North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences, Shillong, India.

RESULTS

The serum magnesium and uric acid in control group were found within normal range with no significant variations observed in different age and sex for both the parameters. Both the parameters were found to be raised above their standard normal value in all patients with various renal diseases under the study, and also the parameters in the study showed positive correlation with serum creatinine and urea. Result of this study was significant (p-value <0.001) after performing t test with serum uric acid and magnesium levels in control group and each different groups of cases separately.

CONCLUSION

Estimation of serum uric acid and magnesium is easy, cost-effective, sensitive, less time consuming, and may help in diagnostic and prognostic aspects in various renal diseases.

Fasting Blood Sample not routinely required for Lipid Profile Assessment: Is the Debate Over?

Poonam Agarwal

Army College of Medical Sciences, Delhi Cantt, Delhi, India

INTRODUCTION

In routine life, the postprandial state predominates a human life due to frequent meals and snack intake at variable times. Under these circumstances, assessment of fasting lipid profile may not truly reflect the lipid status and associated cardiovascular risk in an individual.

It has been a matter of debate since long whether fasting or nonfasting blood sample should be used for assessment of lipid profile.

Nonfasting lipid measurement is not only more convenient for the patients, it also avoids delay in formulating the treatment plan. Moreover, as the sampling can be done randomly irrespective of last meal, compliance improves.

Though many countries like Denmark and UK already have adopted nonfasting blood sample for assessment of lipid profile for primary prevention setting, it has not been universally adopted by all the countries, thus creating confusion as to use fasting or nonfasting blood for assessment of lipid profile.

Recently, the European Atherosclerosis Society and the European Federation of Clinical Chemistry and Lab Medicine have proposed a joint consensus, based on evidence from large-scale population studies and registries. Their recommendations are as follows:

- Fasting is not required routinely for assessing the plasma lipid profile, but when nonfasting plasma triglyceride concentration is >5 mmol/L (440 mg/dL), consideration should be given to repeating the lipid profile in the fasting state.
- Laboratory reports should flag abnormal values based on desirable concentration cut-points:
  For fasting and nonfasting samples, laboratory reports should flag abnormal concentrations as per following table:

Abnormal concentration	*Nonfasting (mg/dL)*	*Fasting (mg/dL)*
Triglycerides	≥175	≥150
Total cholesterol	≥190	≥190
LDL cholesterol	≥115	≥115
Remnant cholesterol	≥35	≥30
Non-HDL cholesterol	≥150	≥145
Lipoprotein (a)	≥50	≥50
Apolipoprotein B	≥100	≥100
HDL cholesterol	≤40	≤40
Apolipoprotein A1	≤125	≤125

LDL: Low-density lipoprotein; HDL: High-density lipoprotein

- Life-threatening or extremely high concentrations should trigger an immediate referral to a lipid clinic or to a physician with special interest in lipids

Following life-threatening concentrations require separate referral:
- When triglycerides >10 mmol/L (880 mg/dL) for the risk of pancreatitis
- Low-density lipoprotein (LDL) cholesterol >13 mmol/L (500 mg/dL) for homozygous familial hypercholesterolemia
- LDL cholesterol >5 mmol/L (190 mg/dL) for heterozygous familial hypercholesterolemia
- Lipoprotein (a) >150 mg/dL (99th percentile) for very high cardiovascular risk

- They have also recommended various conditions as to when to use nonfasting and fasting blood sampling to assess the plasma lipid profile.

A Study of Thyroid Profile in Type II Diabetes Mellitus Patients

[1]Portia Dewan, [2]Sujata Maitra, [3]HL Vishwanath

[1-3]Department of Biochemistry, Bangalore Medical College & Research Institute, Bengaluru, Karnataka, India

INTRODUCTION

Diabetes mellitus is a group of metabolic disorder characterised by hyperglycemia resulting from defect in insulin secretion and/or insulin action or both. It affects at least 20 million people throughout the world. Diabetic patients have a higher prevalence of thyroid disorders when compared with the normal population, where hypothyroidism is the most common type of dysfunction.

AIMS AND OBJECTIVES

(1) To study the prevalence of thyroid disorders in type II diabetes mellitus; (2) to study the effects of thyroid disease in patients with type II diabetes mellitus.

MATERIALS AND METHODS

A case–control study was conducted on 50 cases of diabetes mellitus having no other complications. A total of 50 age-, sex-, and body mass index-matched healthy individuals were taken as controls. All samples were analyzed for fasting blood sugar and thyroid profile (free triiodothyronine, thyroxine, and thyroid-stimulating hormone). Data analysis was done by unpaired Student's t-test.

RESULTS

Patients diagnosed with diabetes mellitus in this study had a prevalence of thyroid disorders, with subclinical hypothyroidism being the most common thyroid disorder.

CONCLUSION

The present study shows that type II diabetes mellitus patients had a 10% prevalence of thyroid disorders, with hypothyroidism being the most common thyroid disorder. Of the 50 cases, 5 patients were detected having hypothyroidism. Out of these five patients, one patient had clinical hypothyroidism, whereas other four patients had subclinical hypothyroidism.

Feedback Assessment of Teaching Learning Methodology in Biochemistry in an Institute of National Importance: A Student's Perspective

[1]Prakruti Dash, [2]Ipsita Dash

[1,2]Department of Biochemistry, All India Institute of Medical Sciences, Bhubaneswar, Odisha, India

INTRODUCTION

Assessment by feedback is a healthy trend for improvising any ongoing strategy. Medical education is a continuing process with a scope for improvement with new advancement. Feedback assessment from students regarding the teaching learning methodologies is definitely a need of time as students are the recipients and it is meant for them. Time to time evaluation by taking feedback from students will definitely help in modification, reconstruction, and upgrading of existing curriculum.

AIMS AND OBJECTIVES

To find the students' views regarding existing teaching learning methodologies in biochemistry by a questionnaire-based feedback assessment.

MATERIALS AND METHODS

A total of 90 out of 100 first-year Bachelor of Medicine, Bachelor of Surgery students participated in the study after written consent. Questions covered teaching learning methods, aids used, importance of the subject, most appealing quality of teacher, and further scope of improvement of the existing methods from the students' perspective.

RESULTS

About 76.6% opined biochemistry will be very useful in clinical years; 86% agreed that the time allotted to biochemistry is sufficient; 63% preferred both chalkboard and PowerPoint presentation for a good understanding. Case studies were more stimulating (53%) followed by reasoning (32%) in theory, whereas case studies (41%) followed by spotters (31%) were most difficult in the practical examination. A total of 68% students strongly suggested for a part completion test after each topic. The attention time span was on an average 40 minutes in a theory class, while majority of the students found practical class to be immensely useful. The most appealing quality of a teacher was presentation skills followed by knowledge and doubt clarification.

CONCLUSION

The feedback assessment clearly indicated that students preferred more clinical orientation of the subject to make it more enjoyable and interesting along with part completion tests as a part of continuous assessment process.

Study of Serum Sclerostin Levels and Coronary Artery Calcium Score in Coronary Artery Disease

[1]Pratima Verma, [2]SK Gupta, [3]TK Mishra, [4]MP Girish, [5]AK Sharma

[1-3]Department of Biochemistry, Maulana Azad Medical College, New Delhi, India
[4,5]Department of Biochemistry, Govind Ballabh Pant Institute of Postgraduate Medical Education & Research, New Delhi, India

INTRODUCTION

Coronary artery calcification is an emerging marker being used to evaluate the risk of coronary artery disease (CAD). Vascular calcification is an active and regulated process. Wnt signaling, required for osteoblast function, is also involved in smooth muscle cell trans-differentiation in both vascular and bone calcification. Sclerostin is an endogenous antagonist of Wnt/B-catenin signaling pathway. Computed tomography coronary angiography (CTCA) is a noninvasive, though expensive and high radiation exposure tool to detect coronary calcification, which is expressed as coronary artery calcium scores (CACS) and is widely used. Hence, there is a need to find innocuous marker, such as sclerostin to evaluate CACS.

AIMS AND OBJECTIVES

(1) To estimate the serum levels of sclerostin, high-sensitivity C-reactive protein (hs-CRP), and lipid profile parameters in patients with CAD. (2) To correlate sclerostin level with CACS and other markers of atherosclerosis, i.e., hs-CRP, ApoA1, ApoB100, lipid profile, and carotid intima–media thickness (CIMT) in CAD.

MATERIALS AND METHODS

A hospital-based cross-sectional study recruiting 80 subjects was conducted. For comparison, subjects were divided into two groups: CACS = 0 (n = 50) and CACS > 0 (n = 30). Serum sclerostin levels were estimated by using commercially available enzyme-linked immunosorbent assay kit. hs-CRP, ApoA1, ApoB100, and lipid profile parameters were measured by immunoturbidimetry; CACS and CIMT were measured by CTCA and color Doppler.

RESULTS

Sclerostin levels were higher in males than in females (p-value < 0.01) as well as higher in the elderly. Sclerostin was significantly higher in subjects with CACS > 0 as compared with those with CACS = 0 ($p < 0.01$); significant positive correlation was seen between hs-CRP, CIMT, and sclerostin levels ($r = 0.262$, $p = 0.019$; $r = 0.275$, $p = 0.014$ respectively).

CONCLUSION

In our study, subjects with CACS > 0 showed a significantly higher serum sclerostin levels; serum sclerostin levels also significantly correlated with hs-CRP, ApoA1, ApoB100, and CIMT. Hence, we conclude that serum sclerostin levels can act as a marker of coronary artery calcification in CAD.

Establishment of Primary Cultures of Ovarian Cancer Cells from Ascites and Tumor Tissue and Determination of IC50 of Carboplatin and Paclitaxel

[1]Rajarshi Kar, [2]Diwesh Chawla, [3]Bindya Gupta, [4]Mohit Mehndiratta

[1,4]Department of Biochemistry, University College of Medical Sciences, New Delhi, India
[2]Department of Central Research Lab, University College of Medical Sciences, New Delhi, India
[3]Department of Gynecology and Obstetrics, University College of Medical Sciences, New Delhi, India

INTRODUCTION

Ovarian cancer is one of the most lethal gynecological malignancies with very poor 5-year survival rate. All patients are empirically treated with platinum compounds and taxol as first-line chemotherapy. However, most patients are either resistant to these drugs or come back with relapse. They are then subjected to second-line drugs that increase morbidity and mortality. We can reduce this morbidity if we are able to choose the best chemotherapeutic agent for individual patients based on the sensitivity of the ovarian cancer cells to an array of chemotherapeutic agents.

AIMS AND OBJECTIVES

To establish ovarian cancer cell lines from ascites and tumor tissue and to evaluate response to chemotherapeutic agents *in vitro*.

MATERIALS AND METHODS

Ascitic fluid along with corresponding primary tumor tissue was collected from 11 untreated epithelial ovarian cancer patients. Ten primary cultures were established from ascites obtained from untreated ovarian cancer patients in Dulbecco's modified Eagle medium (DMEM) (ratio 1:1). Sensitivity to carboplatin and paclitaxel was evaluated by MTT assay.

RESULTS

We were able to establish ten primary cultures from 11 samples. The success rate was much higher than that reported in literature. Most previous reports used MCDB and M199 media for primary culture, but we were able to establish cultures in DMEM with insulin. There was a wide variation in IC50 of carboplatin and paclitaxel for each sample, and some primary cultures were resistant to both.

CONCLUSION

There is scope for developing patient-tailored therapy using primary cultures of ovarian cancer cells and thus reduce the problem of drug resistance in ovarian cancer patients.

Hyperthyoidism in Gestational Trophoblastic Disease

[1]Rajni Dawar, [2]Manushri Sharma, [3]Meenakshi Sharma, [4]Preeti Chauhan, [5]Smita Tripathi, [6]Anju Jain

[1-6]Department of Biochemistry, Lady Hardinge Medical College & Associated Smt. Sucheta Kriplani Hospital, New Delhi, India

INTRODUCTION

Hyperthyroidism is less common than hypothyroidism in pregnancy, with an approximate incidence during pregnancy of 0.2 to 1%. A rare cause of thyrotoxicosis during pregnancy is trophoblastic disease. Molar pregnancies, which include complete and partial hydatidiform moles, result from abnormal genomic duplication associated with monospermic or dispermic fertilization and subsequent loss of the maternal nuclear genome. The effect on the thyroid is postulated to be due to molecular mimicry between human chorionic gonadotropin (hCG) subunits and thyroid-stimulating hormone (TSH); however, potency of hCG for TSH receptors is some 4,000 times less than TSH and, hence, extremely high levels of hCG are usually required for an effect on thyroid function to be seen.

AIMS AND OBJECTIVES

To perform thyroid function testing in two suspected cases of gestational trophoblastic disease (GTD) and its follow-up.

MATERIALS AND METHODS

Two patients with GTD presented for β-hCG and thyroid function test (TFT) measurement, which were estimated by chemiluminescent immunoassay, and cases were followed up.

RESULTS

First case had β-hCG levels as 234,000 and TFT (TSH = 0.06 µIU/mL, free thyroxine [FT4] = 1.97 ng/dL, free triiodothyronine [FT3] = 5.16 pg/mL). Second case had β-hCG as 276,000 with TFT (TSH – 0.07 µIU/mL; FT4 = 2.14 ng/dL; FT3 = 4.34 pg/mL). First patient presented at 9 weeks of gestation with hyperemesis gravidarum, and second patient presented for first antenatal care visit at 10 weeks with tremors, weight loss, and anxiety; TFT and β-hCG were repeated after suction evacuation on same day, it remained elevated and 5 days later TFT normalized to reference range. Treatment for hydatidiform mole was continued with follow-up for β-hCG. Diagnosis was confirmed by snowstorm appearance on ultrasound and histology of evacuated tissue.

CONCLUSION

The development of hyperthyroidism is largely influenced by the level of hCG and usually resolves with treatment of GTD. The consideration of this cause of hyperthyroidism in pregnancy should be diagnosed early and managed efficaciously before suction evacuation for definitive management of the hydatidiform mole.

Determination of Thyroid Function Tests in Cord Blood and Young Healthy Adults

[1]Ramanjit Kaur, [2]Veena Singh, [3]Simmi Kharb, [4]Krishna Sangwan

[1-3]Department of Biochemistry, Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India
[4]Department of Obstetrics and Gynaecology, Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India

INTRODUCTION

Thyroid hormones are essential for adaptation to extrauterine life. In cord blood fetal serum throxine (T_4), triiodothyronine (T_3), and thyroid-binding globulin levels increase with gestation until term; thyroid-stimulating hormone (TSH), free T_4, T_4 sulfate, and reverse T_3 levels increase in late second/early third trimester and then decline to term. Mild thyroid failure has been extensively evaluated as cardiovascular risk factor.

AIMS AND OBJECTIVES

To determine thyroid function tests in cord blood and young healthy adults.

MATERIALS AND METHODS

The present study was conducted in the Department of Biochemistry and Department of Obstetrics and Gynaecology, Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India. The study was conducted in 100 healthy newborns (50 males and 50 females) and 100 healthy volunteers in the age group of 18 to 25 years (50 males and 50 females). Ten milliliters of cord blood was collected from placental end of the umbilical vein and 10 mL of venous blood was collected aseptically from antecubital vein after a 12-hour overnight fast.

Total T_3 (TT_3) and total T_4 (TT_4) estimation was done by radioimmunoassay, and TSH estimation by immunoradiometric assay.

RESULTS

TT_3 values in the two groups were 107.16 ± 23.67 ng/dL in group I and 128.27 ± 27.37 ng/dL in group II respectively (84% , $p < 0.001$); TT_4 values in the cord blood were 6.59 ± 1.22 µg/dL and in adult sera were 7.49 ± 1.42 µg/dL (88%, $p < 0.001$); TSH in newborns was found to be threefold higher than that in healthy young adults (6.56 ± 2.62, 2.71 ± 1.65 µIU/mL respectively; $p < 0.001$).

CONCLUSION:

The TT_3 and TT_4 levels were higher in healthy adult males and females as compared with cord blood levels ($p < 0.001$, $p < 0.01$; $p < 0.01$, $p > 0.05$ respectively); TSH levels were significantly higher in cord blood of male and female newborns as compared with adults ($p < 0.001$; $p < 0.001$ respectively). The data on thyroid function tests can serve as a starting place for disease risk stratification since roots of adult heart disease begin *in utero*.

Serum Calcium and Fasting Blood Sugar Levels in Subclinical Hypothyroidism: A Hospital-based Study

[1]Reetwik K Dutta, [2]Saurabh Borkotoki

[1,2]Department of Biochemistry, Jorhat Medical College, Jorhat, Assam, India

INTRODUCTION

Thyroid-stimulating hormone (TSH) of the anterior pituitary controls synthesis and secretion of thyroid hormones – thyroxine (T4) and triiodothyronine (T3). Thyroid hormone stimulates almost all aspects of biomolecular metabolism, affects basal metabolic rate, and plays critical roles in maintaining metabolic homeostasis. Thus, thyroid dysfunction seems to be associated with deranged glucose and mineral metabolism.

Subclinical hypothyroidism is a condition in which TSH is elevated, indicating lowered thyroid activity, but free T4 is normal. Assam belongs to the sub-Himalayan Goiter belt, thus a prevalent region of thyroid dysfunction and therefore, by estimating serum calcium and fasting blood sugar (FBS) levels in cases of high TSH with no clinical symptoms, the study attempts to evaluate the findings critically.

AIMS AND OBJECTIVES

- To determine serum calcium and FBS level in subclinical hypothyroid cases.
- To analyze the values of the biochemical parameters and compare the findings with other studies.

MATERIALS AND METHODS

Type of Study: case–control study (30 cases and 30 controls).
Place of Study: Department of Biochemistry, Jorhat Medical College, Jorhat, Assam, India
Laboratory Investigations:

- Serum calcium and FBS – Vitros 250 dry chemistry autoanalyzer
- Serum TSH, T3 and T4 –Access Immunoassay Systems (Beckman Coulter).

STATISTICAL ANALYSIS

Statistical analysis and significance was carried out using Microsoft Excel and online calculator.

RESULTS

Mean values of TSH, serum calcium, and FBS in cases was 6.65 ± 0.995 µIU/mL, 121 ± 9.02 mg/dL, and 8.04 ± 0.31 mg/dL. In subclinical hypothyroid cases, the FBS value was found to be higher and serum calcium was found to be lower when compared with the controls. FBS showed a positive (r = 0.369), while serum calcium showed a negative (r = –0.645) Pearson coefficient value with TSH.

CONCLUSION

Serum FBS value increases and serum calcium decreases with increase in the amount of TSH, thus implying weightage in a thyroid dysfunction patient.

Salivary Amylase and Salivary Total Protein Levels in Leukemia Patients

[1]R Sethi, [2]P Ghalaut, [3]J Bala, [4]R Singh, [5]VS Ghalaut, [6]K Saurabh, [7]R Tiwari

[1-7]Pt. Bhagwat Dayal Sharma University of Health Sciences, Rohtak, Haryana, India

INTRODUCTION

Oral manifestations are produced during different stages of leukemia and often reflect underlying systemic disease, which can be used as diagnostic indicator.

AIMS AND OBJECTIVES

This study was done to evaluate various oral complications produced by leukemic patients and to estimate the salivary amylase and salivary total protein levels in these patients to support the diagnostic value of saliva.

MATERIALS AND METHODS

The present study was conducted in the Department of Biochemistry, in collaboration with the Department of Medicine (Clinical Hematology unit), Pt. Bhagwat Dayal Sharma University of Health Sciences, Rohtak, India. Thirty patients with leukemia after

confirmed diagnosis, who were not on chemotherapy drugs, were included in the study group. Age- and sex-matched healthy individuals were enrolled as controls. Unstimulated saliva was obtained from the patients and healthy controls and analyzed for salivary amylase and salivary total proteins by autoanalyzer the same day.

RESULTS

Salivary amylase levels in leukemia patients ranged from 15 to 76 U/L, while in control group, serum amylase value ranged from 14 to 58 U/L. Mean serum amylase levels in leukemia patients were 46.3 + 21.69 U/L and higher; in the control group mean serum amylase levels were 28.45 + 11.60 U/L, and this difference was statistically significant ($p = 0.02$). The mean salivary total protein levels were 0.38 + 0.10 g/dL in the control group and in leukemia patients were 0.41 + 0.10 g/dL. Although the mean salivary protein levels were higher in leukemia group, this difference was not significant statistically ($p = 0.355$).

CONCLUSION

As leukemia patients showed higher salivary amylase and salivary total protein levels than control group and there is associated oral complications in leukemia group, this indicates decline in oral health with associated changes in saliva composition in leukemia patients. Hence, the diagnostic value of saliva in coexisting systemic diseases, such as leukemia is supported.

Association of Serum Magnesium and Lipid Profile in Chronic Kidney Disease Patients

[1]Rohit K Bonthapally, [2]Priscilla Chandran, [3]NN Noorjahan Sridevi

[1-3]Nizam's Institute of Medical Sciences, Hyderabad, Telangana, India

INTRODUCTION

Recent reports suggest that chronic kidney disease (CKD) patients receiving dialysis have significant coronary artery disease. Magnesium depletion is considered as the missing link between cardiovascular risk factors and atherosclerosis in CKD.

AIMS AND OBJECTIVES

This study aims at comparing the levels of magnesium and lipid profile between healthy controls and CKD patients.

MATERIALS AND METHODS

There were a total of 60 subjects. Among these, 30 were healthy controls and 30 were diagnosed CKD patients. Biochemical parameters analyzed were serum creatinine, magnesium, and lipid profile. Methods used to estimate are kinetic Jaffe for serum creatinine and xylidyl blue method for magnesium.

RESULTS

Out of 60 subjects, 30 were CKD patients (males = 20, females = 10) and 30 were healthy controls (males = 14, females = 16) whose mean age in years was 43.6 ± 19 and 38.7 ± 9.8 years respectively, which showed no significant difference between the two groups ($p = 0.1$). Mean and standard deviation of serum creatinine (mg/dL) between CKD patients and controls were 6.54 ± 3.34 and 0.9 ± 0.18, with p-value <0.00001. CKD patients showed significantly lower levels of Mg (mmol/L) [(0.63 ± 0.27) *vs* (0.96 ± 0.19), p = <0.00001] and significantly higher levels of triglycerides (mg/dL) [(143.2 ± 62.5) *vs* (104.4 ± 48), $p < 0.004$] when compared with healthy controls. Serum magnesium levels showed a negative correlation with triglycerides and positive correlation with high-density lipoprotein (HDL); however, it was not significant.

CONCLUSION

Our results suggest a strong association of hypomagnesemia and atherogenic dyslipidemia in patients with CKD. Magnesium may affect the metabolism of triglyceride and HDL in liver and kidneys, and it may be involved in enzymes responsible for lipoprotein synthesis. This gains particular importance in the high cardiovascular risk-borne CKD patients, as supplementing magnesium would go a long way in reducing the risk of cardiovascular morbidity and mortality in CKD. For controlling hyperlipidemia, body weight normalization, dietary modification, regular exercise, and education about diet should be applied.

Correlation Study of Blood Glucose-6-phosphate Dehydrogenase Level with Oxidative Stress in Type II Diabetes Mellitus

[1]Ruchika Priyadarsini, [2]Pramila K Mishra, [3]Sharmistha Swain, [4]Nirupama Devi, [5]Rasmita K Padhy

[1-5]Department of Biochemistry, M.K.C.G. Medical College, Berhampur, Odisha, India

INTRODUCTION

Diabetes mellitus (DM) is a heterogeneous condition reflecting different metabolic disorders accompanied by a variety of complications. Glucose-6-phosphate dehydrogenase (G6PD) is the rate-limiting enzyme of pentose phosphate pathway that produces the reduced form of NADP (NADPH), the cell's principal reductant. Oxidative stress is a state of imbalance between the generation of reactive oxygen species (ROS) and ROS scavenging antioxidant system, regulated by the intracellular NADPH to nicotinamide adenine dinucleotide phosphate ratio.

AIMS AND OBJECTIVES

- The current study was designed to evaluate blood G6PD and oxidative stress in type II DM.
- Oxidant and antioxidant capacity was correlated with blood G6PD levels.

MATERIALS AND METHODS

A total of 100 patients (76 males 24 females) with history of type II diabetes and 100 age- and sex-matched healthy controls were studied.

Blood G6PD was measured by chemical method in semiautoanalyzer. Total oxidative stress was measured as FOX-2 (ferrous oxidation in xylenol orange 2) and total antioxidant capacity measured as FRAP (ferric reducing ability of plasma) by spectrophotometer. Statistical analysis was by Statistical Package for the Social Sciences version 20 software.

RESULTS

As compared with healthy controls, increased serum G6PD levels were found in DM, which significantly correlates with the increase of oxidative stress ($p < 0.01$).

CONCLUSION

In our present study, we observe that there is a significant impact of oxidative stress on blood G6PD levels. Estimation of blood G6PD level may be used as a screening test to know the oxidative status in DM patients, thus avoiding further clinical complications.

Thalassemia: A Disease to be Checked and Controlled

[1]Rumi Deori, [2]Anju B Teli

[1]Department of Biochemistry, Assam Medical College & Hospital, Dibrugarh, Assam, India
[2]Department of Biochemistry, Jorhat Medical College & Hospital, Jorhat, Assam, India

INTRODUCTION

The hemoglobinopathies are characterized by the production of structurally defective hemoglobin (Hb) due to abnormalities in the formation of the globin moiety of the molecule. Thalassemias are a group of inherited disorders caused by defects in the synthesis of one or more of the Hb chains. β-Thalassemia is caused by reduced or absent synthesis of β-globin chains. World Health Organization figures estimate that 5% of the world population are carriers for hemoglobinopathies and of these, thalassemia syndromes, particularly β-thalassemia major, are a serious and major cause of morbidity. The frequency of β-thalasemia in India ranges from 3.5 to 15% in general population.

AIMS AND OBJECTIVES

To find the occurrence of β-thalassemia and the type of common mutants of β-thalassemia present in the population of Upper Assam.

MATERIALS AND METHODS

A retrospective study was carried out on 1,108 anemic patients referred to "Hemoglobinopathy screening lab," Assam Medical College & Hospital, Dibrugarh, Assam, India, and were screened for Hb variant by high-performance liquid chromatography method in D10 (BIORAD) and molecular study of β-thalassemia mutation was done by amplification-refractory mutation system polymerase chain reaction method.

RESULTS

A total of 34.3% had Hb variant, out of which Hb-E was the most common (22%), followed by Hb-S (5.3%), β-thalassemia trait 2.3%, β-thalassemia major 0.5%, compound heterozygous for Hb E-β-thalassemia (1.9%) and Hb S-β-thalassemia (0.7%).

Molecular study of β-thalassemia mutation showed IVS 1-5 (G-C) the most common followed by 619 bp deletion.

CONCLUSION

Assam is a state of ethnic diversity and as the incidence of intercaste marriages is on the rise, the increase in the occurrence of β-thalassemia trait calls for the need of antenatal and premarital screening to prevent the burden of a newborn affected with β-thalassemias.

Fasting Plasma Glucose to Avoid Oral Glucose Tolerance Test in the Diagnosis of Gestational Diabetes

[1]S Basavaraju, [2]V Vijaya Kumari, [3]K Pratibha

[1-3]Department of Biochemistry, Employees' State Insurance Corporation Medical College & Hospital and Post Graduate Institute of Medical Sciences & Research, Bengaluru, Karnataka, India

INTRODUCTION

To evaluate the performance of fasting plasma glucose (FPG) in determining the need for oral glucose tolerance test (OGTT) to diagnose gestational diabetes (GDM) by the International Association of Diabetes and Pregnancy Study Groups (IADPSG) criteria.

MATERIALS AND METHODS

A prospective case–control study was conducted in Employees' State Insurance Corporation Medical College, Bengaluru, Karnataka, India, with 100 pregnant women aged 20 years and above attending the obstetrics outpatient department during January to July 2016. All women diagnosed with GDM underwent FPG and single 2-hour 75-mg OGTT by 24 to 28 weeks of pregnancy.

Statistical analyses were made using paired t-test, and mean and standard deviation were calculated at 5% level of significance.

RESULTS

The mean FPG in the group is found to be 101.7 mg/dL (±8.1 mg/dL). After 1 hour, plasma glucose in the group is found to be 188 mg/dL (±8 mg/dL). After 2 hours, plasma glucose in the group is found to be 161 mg/dL (±8.1 mg/dL).

CONCLUSION

Using a FPG cutoff to diagnose GDM and to determine the need for postload OGTT measurements is a valid strategy to diagnose GDM by the IADPSG criteria by reducing costs and increasing convenience.

Estimation of Urinary Delta Aminolevulinic Acid Levels in Children of Age Group I to V Years as an Index of Lead Exposure: A Pilot Study

[1]Sachin Patharkar, [2]Shraddha Chavan, [3]MS Phadke, [4]Neelam Patil

[1-4]Department of Biochemistry, Topiwala National Medical College & B.Y.L. Nair Ch. Hospital, Mumbai, Maharashtra, India

INTRODUCTION

Lead poisoning is one of the most common conditions of childhood environmental toxin. It accounts for about 0.6% of the global burden of disease. Lead exposure and poisoning have created more social concern and panic due to the recent ban on a leading noodles food brand in India. Common sources of lead exposure are paint used for toys, newspaper ink, and habit of wrapping food in newspapers. Lead exposure, even at low levels, has a significant negative impact on general health, overall growth, development, and educational outcomes.

AIMS AND OBJECTIVES

To find out the prevalence of lead poisoning among the age group of I to V years.
To estimate urinary delta aminolevulinic acid (δ-ALA) levels as an index of lead exposure.
To find out the prevalence of lead exposure among the chosen age group.
To educate the community about health hazards of lead exposure and protection from it.

MATERIALS AND METHODS

This is a cross-sectional pilot study done in the Mumbai suburban locality of Vile-Parle (East). Two-stage random sampling design was used. The study was done on 60 randomly chosen children of age group I to V years. Their urine samples were analyzed for δ-ALA by Ehrlich method.

RESULTS

According to the observation, it was found that out of 60 urine samples, 20 samples were normal, while 40 samples showed increased urinary δ-ALA levels.

CONCLUSION

Prevalence of lead exposure among our study population is 66.66%; hence, lead exposure is a serious condition and necessary precautions can reduce the blood lead levels.

A Correlational Study of Hepatic Sonography with Insulin Resistance, Liver Enzymes (SGPT, SGOT), and Lipid Profile (HDL, TG) in Young Medicos of North Bengal Medical College and Hospital

[1]Swati Bhattacharyya, [2]Samarpita Mukherjee, [3]Asit C Roy, [4]Ushasi Banerjee

[1-4]North Bengal Medical College, Thiknikata, West Bengal, India

INTRODUCTION

Hepatic steatosis and metabolic syndrome are the most common upcoming health disorders in urban young adult population living a stressful life. They lead to grave consequences like cirrhosis, cardiovascular complications, type II diabetes, etc.

AIMS AND OBJECTIVES

To find if there is any correlation between hepatic steatosis and liver enzymes [serum glutamic pyruvic transaminase (SGPT), serum glutamic oxaloacetic transaminase (SGOT)] and markers of metabolic syndrome [insulin resistance (IR), high-density lipoprotein (HDL), triglyceride, body mass index (BMI)].

MATERIALS AND METHODS

The study was an institutional observational cross-sectional study done on 65 young medicos (aged between 18 and 30 years) of North Bengal Medical College by detailed questionnaire after taking proper consent. The BMI, fasting blood glucose, insulin, SGPT, SGOT, HDL, and triglyceride were measured. The IR was calculated by Homeostatic model assessment of insulin resistance calculator. Ultrasonography was done to assess hepatic steatosis.

RESULTS

Among 65 subjects, 72.3% did not have any metabolic or ultrasonographic abnormality and were otherwise normal, 21.5% had grade I fatty change, and 6.2% had grade II fatty change, though there was no significant association between occurrence of nonalcoholic fatty liver disease (NAFLD) and sex distribution. Unpaired t-test was done for normally distributed parameters. There were significant differences between averages of the variables, namely BMI, IR, triglyceride, SGPT among normal and NAFLD group ($p < 0.05$), but not in case of averages of HDL and SGOT. On Pearson correlation test, hepatic steatosis was positively correlated with BMI, IR, triglyceride, SGPT and negatively correlated with HDL ($p < 0.05$).

CONCLUSION

The NAFLD groups have higher values of BMI, IR, serum triglyceride, SGPT, and SGOT than normal group, and there were positive correlation of anthropometric parameter, liver enzymes, and triglyceride level with hepatic steatosis; HDL, which was significantly lower in NAFLD groups, was negatively correlated with hepatic steatosis.

A Comparative Study of Serum Macro- and Micro-element Levels between Healthy Normoglycemic Individuals and Type II Diabetes Mellitus Patients Attending a North Bengal Medical College and Hospital

[1]Swati Bhattacharya, [2]Sandipan Datta, [3]Shiuli R Adak, [4]Ritam Banerjee, [5]Subhrajit Saha

[1-5]Department of Biochemistry, North Bengal Medical College and Hospital, Siliguri, West Bengal, India

INTRODUCTION

There is accumulating evidence that the metabolism of several macro- and micro-elements is altered in patients with type II diabetes mellitus and these nutrients might have some specific roles in the pathogenesis and progression of this disorder. The objective of the present study, an observational cross-sectional study, was to measure and compare the serum levels of zinc, magnesium, iron, calcium, and copper among normoglycemic, type II diabetes mellitus patients at the time of diagnosis and patients diagnosed to have type II diabetes at least 5 years earlier.

MATERIALS AND METHODS

The study includes 51 recently diagnosed type II diabetic patients, 46 type II diabetic patients diagnosed at least 5 years back, and 33 subjects as healthy control. Blood samples of all the subjects were collected after an overnight fasting. All the parameters were analyzed by colorimetric method using commercial kit in semiautomated and automated analyzer.

RESULTS

The mean value of serum Zn level is significantly reduced in blood samples of both recent onset diabetics and diabetic patients diagnosed at least 5 years back as compared with control subjects ($p < 0.01$). The mean value of magnesium is reduced and copper is increased in both recent onset and at least 5 years diabetes group significantly ($p < 0.01$), when compared with healthy control. But no significant alteration is found when compared between recent onset diabetes and 5-year-old diabetes. The iron level is significantly increased ($p < 0.01$) in diabetic population and also related with time-bound progression of the disease. Interestingly, there is no significant difference found in mean calcium levels of recent onset diabetics as compared with control group, but significantly increased ($p < 0.01$) in 5 years diabetics when compared with control. Again, no significant alteration was found when two diabetic groups are compared with each other.

CONCLUSION

The results confirm that alteration of some essential elements is associated with onset of diabetes mellitus and its progression.

Impact of Glycemic Status on Serum Uric Acid Level in Indian Population

[1]Sarama Saha, [2]Manisha Naithani, [3]Anissa A Mirza

[1-3]Department of Biochemistry, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

INTRODUCTION

Cohort studies revealed that uric acid could be a risk factor for type II diabetes mellitus (T2D) and might even be considered as predictors of T2D. However, the serum uric acid level in prediabetic individuals has not clearly been explored. Hence, the present study is aimed to evaluate the relationship between various glycemic parameters and serum uric acid level in prediabetic and diabetic individuals.

MATERIALS AND METHODS

A cross-sectional study was conducted in 201 individuals attending the outpatient department at All India Institute of Medical Sciences, Rishikesh, India. The enzymatic method was carried out for measurement of serum uric acid (Uricase) and blood glucose (BG) (Hexokinase) level, and hemoglobin A1c (HbA1c) was determined by immune inhibition method. One-way analysis of variance was carried out to observe the significance of mean differences among continuous variables. Pearson's correlation and multivariate analysis were performed to assess the association of HbA1c, fasting blood glucose (FBG), and postprandial blood glucose (PPBG) with serum uric acid level.

RESULTS

Out of 201 patients (104 males and 97 females), 14 and 93 individuals belonged to impaired glucose tolerance (IGT) group and T2D respectively (according to American Diabetes Association classification), while 15 patients had both IGT and impaired fasting glucose. There was a remarkable decrease in uric acid level in T2D individuals (5.0 ± 1.4) but increase in IGT (5.9 ± 1.5) compared with the normal individuals (5.7 ± 1.3). The HbA1c and BG levels were found to be negatively correlated with uric acid level in

T2D individuals (FBG: r = −0.161, p = 0.124; PPBG: r = −0.233, p = 0.024, r = −0.245, p = 0.018), and this association persists even after adjustment with age and sex. On the contrary, there was a positive association between FBG and PPBG with uric acid level (FBG: r = 0.346, p = 0.226; PPBG r = 0.123, p = 0.676) in IGT group.

CONCLUSION

From the present study, demonstrating a linear increase in serum uric level in IGT individuals and significant decrease in T2D individuals, it could be concluded that serum uric acid may be a potential determinant of altered glucose metabolism giving rise to different glycemic status.

Hypothyroidism, the Prime Thyroid Dysfunction in Human Immunodeficiency Virus -positive Patients on Antiretroviral Therapy

[1]Seema Lekhwani, [2]Ritu Agarwal, [3]Veena S Ghalaut, [4]Vijay Shanker, [5]Uma Chaudhary

[1,3,4]Department of Biochemistry, Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India
[2,5]Department of Microbiology, Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India

INTRODUCTION

Lesser the CD_4 count, severe is the disease in an human immunodeficiency virus (HIV)-positive patient, and antiretroviral therapy (ART) associated with immune restoration syndrome may cause thyroid dysfunction.

AIMS AND OBJECTIVES

This pilot project was undertaken to study the incidence of thyroid abnormalities (hypo or hyper) in HIV-positive patients with CD_4 count <500 cells/μL before and after the start of ART with no prior thyroid disorder.

MATERIALS AND METHODS

In this cross-sectional study of 80 patients attending the HIV clinic in Pt. Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, India, thyroid status was studied in low CD_4 count, further divided into two groups of 40 each, the first group consisting of patients just diagnosed as HIV positive and the other group as advance disease on ART for at least 2 months.

RESULTS

The data were analyzed applying simple statistic methods. No correlation was found between CD_4 count and thyroid profile of patients. Only 4 out of 80 patients were reported as hypothyroid, none hyperthyroid. Among these 4, only 1 patient who was on ART had all the three parameters of thyroid profile deranged from normal limits, while the rest had only increased thyroid-stimulating hormone levels, only 1 among them was a non-ART. The incidence of hypothyroidism was 250 per 10,000 patients (2.5%) in non-ART and 750 per 10,000 patients (7.5%) in ART group.

This study confirms previous studies that found no correlation between CD_4 count and thyroid status. Though insignificant, the role of ART in effecting thyroid status is evident as the ratio of 1 non-ART: 3 ARTs is hypothyroid. It is almost 25 times more than that reported in a retrospective study by Nelson et al.

CONCLUSION

Routine screening of thyroid status in HIV-positive patients should be done at least annually both before and after the start of ART.

Role of Adenosine Deaminase Activity, Uric Acid, and C-reactive Protein Levels in Patients with Psoriasis

[1]Seraj A Khan, [2]Sudha Agrawal, [3]Nirmal Baral, [4]Madhab Lamsal

[1-4]Department of Biochemistry, B.P. Koirala Institute of Health Sciences, Dharan, Nepal

INTRODUCTION

Psoriasis is a chronic inflammatory skin disease characterized by pathological skin lesions because of various exogenous and endogenous factors and associated with a number of biochemical and immunological disturbances.

AIMS AND OBJECTIVES

The aim of the present study is to determine the level of serum adenosine deaminase (ADA) activity, uric acid, and high-sensitivity C-reactive protein (hs-CRP) in psoriatic patients and compare them with normal healthy controls and to see the correlation of the various biochemical parameters with the disease severity if any.

MATERIALS AND METHODS

This was a hospital-based comparative cross-sectional study for the duration of 1 year. The study was performed in clinically and histopathologically diagnosed psoriatic patients (n = 50) and in healthy controls (n = 50). The severity of the disease was scored with psoriasis area and severity index. The serum ADA activity was determined using Guisti and Galanti method. Uric acid was measured by uricase method (Cobas-311 Autoanalyzer, Rosche Diagnostics, Germany), and hs-CRP was estimated by enzyme-linked immunosorbent assay technique.

RESULTS

The serum ADA activity, uric acid, and hs-CRP level of the psoriatic patients were found to be significantly higher ($p < 0.001$) than that of the healthy controls. There was no significant correlation between the disease severity, body surface area, and the serum ADA, uric acid, and hs-CRP, though we found a significant correlation between hs-CRP and ADA and uric acid level in the patient ($p < 0.001$).

CONCLUSION

Serum ADA activity, uric acid, and hs-CRP level were higher in psoriatic patients but no correlation was found with the disease severity.

Association of Serum Ferritin in Acute Myocardial Infarction

[1]Shikha Agarwal, [2]BK Gupta, [3]Jas K Kaur

[1-3]Department of Biochemistry, Subharti Medical College, Meerut, Uttar Pradesh, India

INTRODUCTION

The National Health and Nutrition Examination Survey, 1988 to 1994, first time reported a significant, positive association in iron storage and heart disease risk. Thereafter, several researchers have found an association between iron overload, serum ferritin (SF), and myocardial infarction (MI). Very less Indian studies were available in the literature and so we decided to find out the relation of SF with MI.

MATERIAL AND METHODS

A total of 25 patients with acute MI were included in the study group between the age 50 and 80 years, and similar numbers of age- and sex-matched healthy volunteers were included in the present study.

RESULTS

Mean ± standard deviation of SF in the control group was estimated to be 30 ± 7.6 ng/dL and in patients it was found to be 60.4 ± 18.4 ng/dL in 24 hours from attack and 205.8 ± 58 ng/dL on the 6th day of the attack.

DISCUSSION

The SF level was found to be raised on days 1 and 6. The values on comparison were found to be statistically significant.

CONCLUSION

Our study showed that SF levels were found to be raised and statistically significant in patients with acute MI within 1 and 6 days of attack, so there could be some association in SF with acute MI.

Correlation of Serum CA 15-3 and CA 27-29 with Recurrence in Treated Cases of Breast Cancer on Follow-up

[1]Shilpa Jain, [2]Hinal Shah, [3]Anil Goel

[1-3]Medical College Baroda and Shree SayajiRao General Hospital, Vadodara, Gujarat, India

INTRODUCTION

In recent years, many new and better treatment modalities have come up for treatment of recurrence cases of breast cancer. So there is a need for markers which can detect early recurrence in treated cases of breast cancer. CA 15-3 and CA 27-29 are two important epitopes of MUC-1 protein. Their increasing levels can detect early recurrence.

AIMS AND OBJECTIVES

To measure serum CA 15-3 and CA 27-29 levels in posttreatment cases of breast cancer on follow-up and to correlate these levels with disease status.

MATERIALS AND METHODS

This cross-sectional study, on 70 treated patients of breast cancer, was carried out at Shree SayajiRao General Hospital and Medical College Baroda, Vadodara, India. Group I consisted of 35 cases on follow-up with evidence of recurrence and group II consisted of 35 cases on follow-up without evidence of recurrence. In all the cases, serum CA 15-3 and CA 27-29 levels were checked using enzyme-linked immunosorbent assay technique. Statistical analysis was done using Mann–Whitney U test.

RESULTS

In groups I and II, the median value of CA 15-3 was 52.50 and 12.10 U/mL respectively (p-value < 0.0001) and the median value of CA 27.29 was 9.30 and 1.40 U/mL respectively (p-value < 0.0001).

CONCLUSION

There is excellent correlation between serum CA 15-3 and CA 27-29 levels with recurrence in treated cases of breast cancer on follow-up.

Correlation of Levels of Vitamin D with Disease Control in Patients of Bronchial Asthma

[1]Shivani Jaswal, [2]Vrinder Saini, [3]Jasbinder Kaur, [4]Seema Gupta

[1,3,4]Department of Biochemistry, Government Medical College & Hospital, Chandigarh, India
[2]Department of Pulmonary Medicine, Government Medical College & Hospital, Chandigarh, India

INTRODUCTION

Changing environmental factors like atmospheric pollution, dietary changes, decreased exposure to sunlight, and allergens etc., associated with urban lifestyles may underlie the increased prevalence of bronchial asthma. A growing body of literature has suggested a relationship between vitamin D status and asthma-related response symptoms presumably through the immunomodulatory effects of vitamin D.

AIMS AND OBJECTIVES

The study was planned to investigate the prevalence of vitamin D deficiency in adult patients with bronchial asthma and its potential relationship with asthma control.

MATERIALS AND METHODS

A total of 200 patients with bronchial asthma formed the study group. Asthma control was assessed according to the criteria of Global Initiative for Asthma using a categorical scale to identify controlled, partly controlled, and uncontrolled asthma. Blood samples were estimated for vitamin D by chemiluminescence on ADVIA CENTAUR XP. Patients were divided into three categories on the basis of levels of vitamin D, deficient with levels <20 ng/mL, insufficient with levels 20 to 30 ng/mL, and sufficient with levels >30 ng/mL. Data was expressed as mean ± standard deviation normally and Student's t test was used for statistical significance.

RESULTS

About 50.3% of the subjects were found to have uncontrolled bronchial asthma. The mean vitamin D levels in the subjects of the study group was found to be 13.04 ± 10.38 ng/mL. Vitamin D deficiency was found to be common, with 82.7% of the study population having vitamin D values less than 20 ng/mL. Only 6.3% of the subjects of the study group had sufficient vitamin D Levels. It was found that the levels of vitamin D were significantly lower in patients with uncontrolled and partly controlled asthma as compared with patients with controlled asthma ($p < 0.001$).

CONCLUSION

The burden of Bronchial asthma is on the increase and challenge still remains to identify newer therapeutic interventions. In our study significant low levels of vitamin D were found in patients of bronchial asthma which correlated significantly with disease control, suggesting that, Vitamin D may be further investigated for its therapeutic potential and used to decrease the morbidity and mortality in patients with bronchial asthma.

A Study on Renal Function Status of Patients with Hypothyroidism attending a Tertiary Care Hospital of North Bengal

[1]Indrajit Nath, [2]Shubhrajit Saha, [3]Mita Saha (Das), [4]Swati Bhattacharyya, [5]Sandipan Datta

[1-5]Department of Biochemistry, North Bengal Medical College & Hospital, Siliguri, West Bengal, India

INTRODUCTION

Thyroid hormones influence renal development, renal hemodynamics, glomerular filtration rate (GFR), electrolytes, and water homeostasis. These effects of thyroid hormones are in part due to direct renal actions and in part are mediated by cardiovascular changes that alter kidney functions. The location of the present study is situated at Darjeeling district of West Bengal, which is a part of sub-Himalayan Terai region with high prevalence of thyroid dysfunctions, especially hypothyroidism. The Objective of this observational cross-sectional study is to substantiate the effects of thyroid hormonal status on kidney by estimating serum creatinine, serum urea, urinary microalbumin, albumin–creatinine ratio (ACR) and estimated GFR (eGFR) among drug-naive primary hypothyroid patients, hypothyroid patients under treatment for more than 2 months, and age- and sex-matched control group.

MATERIAL AND METHODS

The study includes 48 patients with primary hypothyroidism in a drug-naive status, 40 hypothyroid patients under treatment, and 34 healthy controls in the age group of 25 to 55 years. The collected blood and urine samples from the study population are estimated by colorimetric methods using commercially available kits for the above-mentioned parameters where thyroid-stimulating hormone (TSH) and free thyroxine are estimated by enzyme-linked immunosorbent assay method. The eGFR is calculated by both chronic kidney disease Epidemiology Collaboration equation and four-variable Modification of Diet in Renal Disease study equation.

RESULTS

The mean values of serum creatinine, serum urea, microalbumin, and ACR are significantly increased among untreated patients with primary hypothyroidism with decrease in the eGFR, in comparison to healthy control group ($p < 0.001$), whereas patients on treatment for hypothyroidism show a fall in serum creatinine, serum urea, microalbumin, and ACR level with increase in eGFR values comparing drug-naive primary hypothyroid patients ($p < 0.001$). In addition, the results of eGFR, ACR, and urinary microalbumin are significantly correlated with TSH values.

CONCLUSION

Statistically significant alteration in renal function parameters is associated with untreated primary hypothyroidism. Initiation of the treatment for the same can cause reversal of the altered status of renal function.

Relation of Thyroid Function Tests with Serum Electrolytes

[1]Sibasish Sahoo, [2]Anirban Ganguly, [3]Suprava Patel, [4]Rachita Nanda, [5]Eli Mohapatra

[1-5]Department of Biochemistry, All India Institute of Medical Sciences, Raipur, Chhattisgarh, India

INTRODUCTION

Hypothyroidism has been considered as a cause in the analysis of hyponatremia-associated euvoluemia. However, several studies dispute the relationship between hypothyroidism and hyponatremia. The present study is conducted to examine the strength of the relationship of hypothyroidism with hyponatremia.

AIMS AND OBJECTIVES

To analyze thyroid function test and electrolyte status in patients with hypothyroidism.

MATERIALS AND METHODS

Retrospective analysis of data over a period of 1 year for same-day thyroid-stimulating hormone (TSH), free triiodothyronine, free thyroxine, and sodium. All laboratory tests were collected on outpatient basis.

RESULTS

There was a significant decline ($p < 0.05$) in serum sodium levels in patients with an increase in serum TSH values.

CONCLUSION

An association between thyroid function and electrolyte disorders seems to exist, although it is probably relevant in marked hypothyroidism.

Evaluation of Endocrine Parameters as Predictor of Major Depressive Disorder

[1]Soma Gupta, [2]Sanjoy Kunti, [3]Amrita Mukherjee, [4]Sangita Biswas, [5]Smarajit Bose, [6]Saswati Nath, [7]Harendra N Das

[1]Nil Ratan Sircar Medical College & Hospital, Kolkata, West Bengal, India
[2]College of Medicine & Sagore Dutta Hospital, Kolkata, West Bengal, India
[3,4,6,7]R.G. Kar Medical College & Hospital, Kolkata, West Bengal, India
[5]Indian Statistical Institute, Kolkata, West Bengal, India

INTRODUCTION

Major depressive disorder (MDD) is a leading cause of disability along with an alarmingly increased global prevalence; its pathophysiology is yet not established clearly. Hence, diagnosis of the disease entirely depends upon presence of some symptoms without any biochemical parameter to support it. Depletion of dopamine though is an established feature, which is not the sole causative factor of MDD. Moreover, it has very little diagnostic value owing to a short half-life. Other chemical messengers like hormones have also been found to get altered due to significant overactivity of hypothalamopituitary axis. Literature review suggests that cortisol, thyroid-stimulating hormone (TSH), and prolactin are mostly altered in MDD, which can be utilized to diagnose the condition.

AIMS AND OBJECTIVES

- To find out whether there is any significant alteration of these three hormones in MDD.
- To find out whether people can be successfully classified into depression and normal groups using these parameters.

MATERIALS AND METHODS

A total of 101 patients suffering from MDD along with 106 age- and sex-matched control subjects were included in this study. Cortisol, TSH, and prolactin were assayed in all study subjects by enzyme immunoassay. Student's t test and linear discriminant analysis were used for statistical analysis.

RESULTS

All the three hormones were found to be significantly high in cases suffering from MDD. When applied for classification purpose, the error in training group was found to be 17% (13 patients and 4 controls misclassified) and 17.75% errors were observed in the test group (15 patients and 4 controls misclassified).

CONCLUSION

Study is in progress to find out whether all the variables are important for prediction. A cutoff value of the responsible parameter should also be found so that they can be optimally used to predict a case of MDD.

Data Mining for Verification of Reference Interval for Selected Analytes from a Population in a Tertiary Cancer Care Centre: A Pilot Study

[1]Subhosmito Chakraborty, [2]Ranjan Bhattacharya, [3]Sandip Rath, [4]S Sugumar

INTRODUCTION

There may be a difference on the utility of reference intervals (RIs) in a tertiary cancer care setup. As majority of patients are referrals following diagnosis/treatment of cancer elsewhere, they could be more appropriately compared with RI derived from an ambulatory cancer cohort in the catchment area of the hospital in India instead of a healthy cohort derived in the United States and recommended by the reagent manufacturer. Conventional RI studies apart from being expensive and logistically demanding are difficult to perform in a setup that receives little or no "healthy" population.

AIMS AND OBJECTIVES

To determine RI of serum sodium, potassium, urea, and creatinine (electrorenal panel) from ambulatory cancer patients visiting the outpatient departments from 2012 to 2016.

MATERIALS AND METHODS

Data were obtained from 60,000 electrorenal panel results for patients ≥18 years of age from a dry-chemistry system. The inclusion/exclusion criteria were: (a) the patient was an ambulatory outpatient; (b) the maximum and minimum limits of each analyte were identifiable from critical decision limits [serum sodium: 120–150 mmol/L, creatinine: ≤1.3 mg/dL(males) and ≤1.1 mg/dL (females), potassium: 3.0–6.0 mmol/L, and urea: <50 mg/dL]; (c) one measurement only per individual per year was included; (d) results were validated against the quality assurance criteria. Data mining was performed using Bhattacharya analysis.

RESULTS

After rejection of outliers, 40,252 patients were included for analysis. The values obtained were: sodium (135–145 mmol/L), potassium (3.4–5.1 mmol/L), urea (7–45 mg/dL), and creatinine (males: 0.7–1.3 mg/dL, females: 0.5–1.1 mg/dL). The number of outliers at upper and lower limits of the intervals were low (2–3%) for all analytes.

CONCLUSION

The derived intervals were comparable to that of the manufacturer's, except for urea which showed a low value for the recommended lower limit. Data mining, therefore, may be used as a powerful verification tool for verification of RI.

Study of Red Cell Fragility in different Stages of Chronic Kidney Disease in Relation to Parathyroid Hormone

[1]S Panda, [2]A Mishra, [3]R Rattan, [4]UK Das, [5]M Swain, [6]S Mahapatra

[1-6]Department of Biochemistry and Nephrology, SCB Medical College, Cuttack, Odisha, India

INTRODUCTION

Chronic kidney disease (CKD) is a major public health problem and is associated with several complications. Declining kidney function results in deficiency of activated vitamin D and an increase in phosphorus excretion by the remaining functional nephrons. Studies have revealed that both these changes stimulate an increase in parathyroid hormone (PTH) synthesis and secretion leading to secondary hyperparathyroidism. This results in bone changes and also could cause severe anemia, which may have an unfavorable influence in anemic patients.

AIM AND OBJECTIVES

To analyze the association of serum ionized PTH (iPTH) status with the severity of anemia in CKD patients and outline the possible pathogenesis of anemia by determining the fragility of red blood cells and ionized Ca level.

MATERIALS AND METHODS

This study was conducted in the Department of Biochemistry, SCB Medical College, Cuttack, India, in collaboration with the Department of Nephrology. A total of 60 CKD patients attending the outpatient department or admitted to the Department of Nephrology of SCB Medical College were taken up for study and compared with 50 age- and sex-matched healthy controls.

Routine biochemical and hematological parameters like random blood sugar, urea, creatinine, uric acid, Na+, K+, hematocrit were carried out in the study group. Estimated glomerular filtration rate was calculated for the CKD patients using the Modification of Diet in Renal Disease formulae; iPTH was estimated by chemiluminescence immunoassay method. Osmotic fragility of the red blood cells was estimated by measuring the degree of hemolysis in serially diluted buffered saline.

RESULTS

There is a significant rise of serum iPTH, with the decline of the renal function ($p < 0.001$). A negative association was seen between iPTH and blood hemoglobin level. With a progressive increase in the iPTH, the fragility of red blood cells increased along with a fall in serum ionized calcium.

CONCLUSION

The iPTH negatively correlated with hematocrit and ionized calcium. This may help to explain the cause of anemia in CKD patients and develop treatment strategies in patients with the early stages of kidney disease when therapy would have greater benefits.

Prevalence of Hyponatremia and its Clinicodemographic Profile in a Tertiary Care Setup

[1]S kumari, [2]I Dash, [3]M Mangaraj

[1-3]Department of Biochemistry, All India Institute of Medical Sciences, Bhubaneswar, Odisha, India

INTRODUCTION

Hyponatremia is a serious electrolyte disorder often overlooked by clinicians. It is commonly seen in hospital population with varied etiology. Being asymptomatic to critically ill, it potentiates morbidity and mortality in patients. Symptomatology develops

with the degree of severity and rate of development. Because of its diverse etiology and association with a wide range of deleterious changes in different systems, early identification of cause becomes crucial. So we took up a study to find out the incidence of hyponatremia of varied etiology and to analyze their clinicodemographic profile in a newly established tertiary care set up of All India Institute of Medical Sciences, Bhubaneswar, India.

A total of 400 hyponatremia cases of all age groups and from both sexes detected during biochemical investigation for other conditions were included in the study following inclusion, exclusion criteria. Their clinicodemographic profile was studied and statistically analyzed by Statistical Package for the Social Sciences 21 version.

Majority of cases were from in-patient department (IPD) with male preponderance. Nausea and vomiting were the common symptoms, with severity more pronounced in indoor patients. Hypoosmolar hyponatremia was more prevalent (94%), followed by osmolar hyponatremia (4%). Very less number of patients (1%) had hyperosmolar hyponatremia. Syndrome of inappropriate antidiuretic hormone was more marked associated in IPD patients, especially postoperative cases and patients in the intensive care unit.

Hypokalaemia was the most commonly associated electrolyte change (pointing toward loss through urine or gastrointestinal tract) followed by hypocalcemia and hyperkalemia. Diabetes mellitus is the most common associated morbidity followed by surgery and respiratory infections.

Duration of treatment and rate of response to therapy by different modalities are more or less observed the same in both IPD and outpatient department patients. However, no mortality was noticed because of early intervention with corrective measures.

CONCLUSION

Early detection of hyponatremia is very vital. It improves the accuracy of diagnosis and effectiveness of treatment by differentiating it from primary diseases.

Diagnostic and Prognostic Efficacy of Serum Adenosine Deaminase, Gamma Glutamyl Transpeptidase, and Alkaline Phosphatase Levels in Carcinoma Breast Patients A Tertiary Center Study

[1]Sudeshna Behera, [2]Subhasish Nayak, [3]Subhashree Ray, [4]Sunil Agrawal

[1-4]Department of Biochemistry, Siksha 'O' Anusandhan University, Bhubaneswar, Odisha, India

INTRODUCTION

Breast cancer is the second most common neoplasm affecting Indian women next to cervical cancer. For its early detection, a number of biochemical tumor markers such as CA 15-3, CA 549, CA 27-29, etc., have been studied. Many of these are unapproachable for general population as the facilities are only available at sophisticated and well-equipped centers with latest technology and they are also expensive.

Recent studies have shown increased serum levels of adenosine deaminase (ADA), gamma glutamyl transpeptidase (GGT), and alkaline phosphatase (ALP) in carcinoma breast patients. Assessment of these parameters could substitute for the classical tumor markers in remote and rural areas where facilities for these are not readily available. These are also simple, accurate, and cost-effective.

AIMS AND OBJECTIVES

To assess the diagnostic and prognostic significance of promising enzyme markers like ADA, GGT, and ALP in breast cancer patients and to correlate their serum levels in different stages.

MATERIALS AND METHODS

Twenty-five clinically and histopathologically confirmed female breast cancer patients were taken as cases. Same numbers of age-/sex-matched healthy controls were taken. The parameters were calculated by standard biochemical methods.

RESULTS

The activities of serum ADA, GGT, and ALP were significantly increased in carcinoma breast patients in comparison to controls. When all the four stages were compared with controls, serum ADA and GGT were found to be significantly increased in all, whereas ALP was increased in stages III and IV. Interstage comparison revealed a steady and progressive increase of these enzymes from stage I to IV.

CONCLUSION

Estimation of serum ADA, GGT, and ALP levels can be used as routine screening tests in suspected carcinoma breast patients and as important biochemical aids for diagnosing and monitoring the progression of carcinoma breast as these are easily assayed, less expensive, and approachable by the general population.

Can Nonfasting and Fasting Lipid Profile be Mutually Exclusive?

Sudhanshu S Pati

Department of Biochemistry, Ispat General Hospital, Rourkela, Odisha, India

INTRODUCTION

In the recent past, there has been a growing compulsion for estimating lipid profile in nonfasting samples. There is no consensus so far for nonfasting lipid estimation.

AIMS AND OBJECTIVES

To estimate lipid profile in fasting and 2 hours postprandial samples, both in diabetic and nondiabetic population to evaluate the clinical significance in both.

MATERIALS AND METHODS

Lipid profile in both diabetic and nondiabetic population was estimated in AU5800 autoanalyzer in fasting and nonfasting state in each subject.

In nondiabetic population of 290 subjects, the average nonfasting value of cholesterol was lower by 3.59 mg/dL ($p = 0.35$) compared with fasting value. The mean triglyceride nonfasting value was higher by 32.41 mg/dL ($p = 0.01$). The difference between fasting and nonfasting high-density lipoprotein (HDL) was 2.85 mg/dL ($p = 0.18$). The average direct low-density lipoprotein (LDL) in fasting was higher by 5.51 mg/dL compared with fasting ($p = 0.23$). When triglyceride values more than 400 mg/dL were excluded, the average difference in calculated LDL in fasting and nonfasting value was 7.18 ($p = 0.17$).

In diabetic population of 310 subjects, the mean change in cholesterol was 7.1 mg/dL ($p=0.22$), triglyceride 31.22 mg/dL ($p=0.04$), HDL cholesterol 2.73 mg/dL ($p=0.08$), direct LDL 5.33 mg/dL ($p=0.24$), calculated LDL excluding patients with values of triglyceride higher than 400 mg/dL was 10.2 mg/dL ($p=0.10$).

CONCLUSION

Except for triglyceride, the values in fasting were not significantly different in nonfasting sample. Hence, nonfasting values may be accepted for screening of patients for lipid profile, and fasting samples may be required when antilipid therapy is warranted. Fasting and nonfasting samples should be complementary to each other and not mutually exclusive.

Identifying the Unidentifiable: Uncovering Disease Genes using Exome Sequencing

[1]Sudhesna Mohapatra, [2]Robyn Jamieson

[1]SRL Diagnostics, Bengaluru, Karnataka, India
[2]Children's Medical Research Institute, Sydney, New South Wales, Australia

INTRODUCTION

Identification of genetic defect in inherited disorders is essential to determine the natural history of the disease, management, and developing strategies for treatment. Sanger sequencing continues to be the gold standard for molecular diagnosis of disorders. But when the disease-associated genes are numerous in number, like congenital disorders of glycosylation (CDG) with more than 101 genes implicated, it is practically not feasible to perform Sanger sequencing. Next-generation sequencing (NGS) methods have made it possible to identify mutations in genes by screening multiple genes associated with the disorder.

AIMS AND OBJECTIVES

In this presentation, we will walk through a process of novel gene identification in a family afflicted with CDG using whole exome technique.

MATERIALS AND METHODS

Pedigree analysis is performed to determine the mode of inheritance. The three main steps in NGS technique are (1) template generation, (2) sequencing, and (3) data analysis. Data analysis involves bioinformatic tools that are essential in the processing of NGS generated data. Various steps are: (1) base calling, which is done by proprietary software depending on the platform that one uses. (2) Alignment is the process of assigning each read to a corresponding position in a reference sequence. (3) Variant calling refers to the search for variants in a sample as compared with the reference genome. (4) Variant filtration: variants are filtered and annotated to find clinically significant variations. The final step is validation and segregation analysis of the variants.

RESULTS

All novel and apparently pathogenic changes are reported for the proband. It is cross-checked by Sanger sequencing in the other members of the family.

CONCLUSION

Exome-sequencing strategy is a fast approach for the identification of disease-causing variants in rare conditions. Identification of the gene is to be followed by functional studies using cell-based or animal models.

A Practical Holistic Approach for Interpretations from Levey–Jennings Chart: Beyond the Westgard's Rules

[1]Sudip K Datta, [2]Sudhanshu Shekhar, [3]Ganeshwar Tudu, [4]Tapasyapreeti Mukhopadhyay, [5]Chowdari Pavani

[1-5]Department of Laboratory Medicine, All India Institute of Medical Sciences, New Delhi, India

INTRODUCTION

Levey–Jennings (L-J) charts are most commonly used in diagnostic laboratories for evaluation of internal quality control (IQC). Westgard's rules (WGR) are used to evaluate and interpret these charts for identification of systematic and random errors. However, in a practical setting, evaluation of several other factors along with WGR could increase the utility of L-J charts for decision-making and rational intervention.

AIMS AND OBJECTIVES

To evaluate the use of L-J charts and WGR in synergy with other factors in a practical setting for day-to-day decision-making for rational intervention.

MATERIALS AND METHODS

We evaluated the IQC data obtained from two autoanalyzers (Modular P, Roche Diagnostics, USA) for 1 year; QC materials (two levels) procured from Roche Diagnostics were used. The target mean (provided by manufacturer) and the lab mean (derived in lab) were used for analysis along with standard deviation, variance, etc. Besides WGR, we used other observations like trends, shifts, swings, etc., and analyzed them systematically to arrive at a rational intervention. The interventions were carried out and changes observed in the L-J charts.

RESULTS

Several practical problems were observed in evaluation of data: (a) use of multiple bottles of reagent for the same parameter, (b) need-based replacement of reagent bottles, (c) difficulties in tracking the reagent positions by the in-built software. Several trends, shifts, and swings were noted in the patterns that were analyzed holistically using WGR, knowledge about analytical methods (viz. wavelength of measurement of optical density), and instrumentation and reagent details (single reagent *vs* double reagent), etc. These led us to draw conclusions regarding possible systematic errors (like light source problem, stirrer malfunction, etc.). These were found to get rectified with necessary interventions.

CONCLUSION

The L-J charts could be better utilized for monitoring of quality control in the lab by using holistic evaluation methods stretching beyond the existing WGR for root cause analysis of systematic errors.

Serum Phosphate Levels as Prognostic Indicator among Hyperphosphatemic Critically Ill Patients

[1]HR Suma, [2]Kavita P Rasalkar, [3]G Chandana, [4]J Chinmai, [5]BA Praveen Kumar

[1]PES Institute of Medical Sciences & Research, Kuppam, Andhra Pradesh, India
[2-4]Department of Biochemistry, PES Institute of Medical Sciences & Research, Kuppam, Andhra Pradesh, India
[5]Department of Community Medicine, PES Institute of Medical Sciences & Research, Kuppam, Andhra Pradesh, India

INTRODUCTION

Hyperphosphatemia predicts an increased risk of death among hospitalized critically ill patients, according to researchers. The cross-sectional study on 2,390 emergency room patients found that hyperphosphatemia was associated with a significantly increased

odds ratio of 3.3 fold in-hospital death within 28 days. By multivariate analysis, they concluded that hyperphosphatemia is an independent risk factor for mortality and is not restricted to renal diseases or tumor lysis syndrome. Another study mentions that patients who died had a higher phosphorus levels, and patients with shock had lower calcium and higher phosphorous levels. Hyperphosphatemia could be the result of various causes, which lead to shift of phosphate from intracellular to extracellular compartment like those which cause tissue hypoxia, lactic acidosis, and diabetes ketoacidosis.

Severe hyperphosphatemia could be the consequence of the critical illness and will in turn cause hypocalcemia-associated morbidity.

AIMS AND OBJECTIVES

To evaluate whether serum phosphate levels can be used as prognostic indicator by clinical correlation, among hyperphosphatemic critically ill patients.

MATERIALS AND METHODS

Eighty critically ill patients admitted to the intensive care unit were followed up with regular phosphate level estimations and correlated with the clinical outcome during their hospital stay. The patients with chronic kidney disease, tumor lysis syndrome, and acute phosphate loads are excluded. Univariate and multivariate regression analysis and other relevant statistical analysis were performed to identify independent predictive value of phosphorous levels.

RESULTS AND CONCLUSION

Awaited.

Association of Serum Osteopontin Level in Severity of Allergic Contact Dermatitis

[1]Suman Debnath, [2]Th I Devi, [3]Rupak Das, [4]Laljem Haokip, [5]Udayan Majumder

[1-5]Regional Institute of Medical Sciences, Imphal, India

INTRODUCTION

Allergic contact dermatitis is one of the most common inflammatory skin diseases worldwide. Though the etiopathology and the course of skin inflammatory reactions are complex and not fully clarified, the development of the disease is thought to be attributed to the specific T-lymphocyte-dependent reaction of delayed hypersensitivity. Osteopontin, an acidic phosphoglycoprotein with diverse biological functions secreted by multiple tissue types and different cells, including T and B lymphocytes, dendritic cells, and macrophages, is strongly associated with induction of effector T lymphocytes in the skin, which may contribute to the clinical course of allergic contact dermatitis. The study objective was to evaluate any relation of serum osteopontin concentrations in allergic contact dermatitis and in its severity.

AIMS AND OBJECTIVES

To evaluate serum osteopontin concentrations in patients with disseminated form of allergic contact dermatitis as well as in healthy controls. To compare the results and evaluate any relationship between serum osteopontin level and disease severity.

MATERIALS AND METHODS

Thirty-two patients with disseminated allergic contact dermatitis as cases and same number of age- and sex-matched healthy subjects as control were enrolled in the study. Serum osteopontin levels were measured in cases twice, in the acute stage and during remission and in the controls once by enzyme-linked immunosorbent assay.

RESULTS

Serum osteopontin concentrations were significantly increased in patients with disseminated allergic contact dermatitis in the acute stage as compared with healthy controls and patients during remission ($p < 0.01$ and $p < 0.001$ respectively). Osteopontin levels were significantly higher in severe form of the disease compare with those with mild disease.

CONCLUSION

Disseminated allergic contact dermatitis is associated with increased level of serum osteopontin. The severity of the disease is positively correlated with the level of osteopontin, which indicates its role in the elicitation phase of allergic contact dermatitis. Inhibition of osteopontin activity may introduce a new therapeutic perspective in the management of severe disseminated contact dermatitis.

Serum Protein Ratio in Normotensive and Preeclamptic Pregnant Women in Relation to Severity of Preeclampsia and Parity

[1]Sumi Deka, [2]Syeda M Rohman

[1,2]Department of Biochemistry, Gauhati Medical College and Hospital, Guwahati, Assam, India

INTRODUCTION

Pregnancy is a very special time in a woman's life and becoming a mother is a precious gift of god to every woman.

Normal pregnancy is characterized by numerous metabolic alterations that may produce alterations in serum protein pattern.

Preeclampsia (PE) is a multisystem disorder of unknown etiology characterized by hypertension ≥140/90 mm Hg with proteinuria (≥300 mg/day) after the 20th week in a previously normotensive pregnant woman. It is believed that the pathophysiological changes occurring in PE may result from the abnormal expression of some proteins.

AIMS AND OBJECTIVES

The objective behind the study was to determine the serum total protein, albumin, and albumin/globulin (A:G) ratio in normotensive and preeclamptic (mild and severe) pregnant women and to correlate, if any, relation with severity and parity of PE.

MATERIALS AND METHODS

The study was carried out in the Department of Obstetrics and Gynecology, Gauhati Medical College and Hospital, Guwahati, Assam, India, in a group of 90 pregnant women who were subdivided into three groups: 30 women with severe PE, 30 with mild PE, and 30 gestational period and age-matched normotensive pregnant as control.

RESULTS

The mean total protein level was very significantly low in severe PE (mean ± standard deviation = 5.68 ± 0.366) and in mild PE (6.24 ± 0.53), in comparison to normotensive pregnancy (6.60 ± 0.49) – p-value <0.001. Albumin decreased to 3.35 ± 0.41 in normotensive pregnancy to 3.02 ± 0.30 in mild PE and to 2.11 ± 0.29 in severe PE, and was highly significant ($p < 0.001$). The A:G ratio also decreased very significantly from 1.04 ± 0.16 in normotensive to 0.97 ± 0.17 in mild and to 0.65 ± 0.12 in severe PE ($p < 0.001$). There was no significant change in level of total protein, albumin, globulin, and A:G ratio in relation to parity in all three groups respectively.

CONCLUSION

It was concluded that total protein, albumin, and A:G ratio were significantly decreased in women with PE compared with control group, and strong correlation exists with severity of PE, while there no significant change in globulin with PE as compared with nomotensive pregnancy and not influenced by parity.

Establishment of Reference Ranges for Lipid Profile in Puducherry

[1]Sunil K Nanda, [2]N Bharathy, [3]Lopamudra Ray

[1-3]Department of Biochemistry, Pondicherry Institute of Medical Sciences, Puducherry, India

INTRODUCTION

The International Federation of Clinical Chemistry and Laboratory Medicine recommends each laboratory to set its own reference ranges for all parameters. In India, most of the laboratories use reference ranges from the kit literature of the manufacturers, which are generally based on Western population. There are very few studies done to establish the reference ranges for lipid profile in Puducherry. Hence, this study was taken up.

AIMS AND OBJECTIVES

To establish reference ranges for total cholesterol, high-density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL) cholesterol, and triglycerides.

MATERIALS AND METHODS

The study was a prospective study; 260 fasting samples of healthy individuals between the age group of 20 to 70 years were analyzed for total cholesterol, HDL cholesterol, LDL cholesterol, and triglycerides.

RESULTS

The mean ± standard deviation of total cholesterol, HDL cholesterol, LDL cholesterol, and triglycerides were 190 ± 47, 41 ± 10, 137 ± 73, 133 ± 45 mg/dL respectively.

CONCLUSION

Our reference ranges were comparable to the reference ranges of National Cholesterol Education Program ATP III risk classification for total cholesterol and HDL cholesterol, but our LDL cholesterol values were much higher when compared with LDL cholesterol values of National Cholesterol Education Program ATP III risk classification.

Epidemiological and Biochemical Profile in Hepatitis C Patients in Punjab and Haryana

[1]Sunita, [2]Parveen Malhotra, [3]Ashuma Sachdeva, [4]Veena S Ghalaut, [5]Asha Kumari

[1-5]Pt. Bhagwat Dayal Sharma University of Health Sciences, Rohtak, Haryana, India

INTRODUCTION

Hepatitis C virus (HCV) is a major cause of liver disease worldwide and a potential cause of substantial morbidity and mortality in the future.

AIMS AND OBJECTIVES

The aim was to study epidemiological and biochemical profile in patients infected with HCV and to assess the various risk factors, genotypes, viral load, and geographic foci of the disease.

MATERIALS AND METHODS

The study was conducted in the Department of Biochemistry in collaboration with Gastroenterology Department and included confirmed 5,000 patients with hepatitis C. Liver function test, kidney function test, blood sugar, and serum bilirubin were estimated on autoanalyzer. Thyroid profile was done with radioimmunoassay. Genotyping was done by polymerase chain reaction.

RESULTS

A total of 65% subjects were male, 81% belonged to rural residential areas, and 84% were married. The age distribution curve showed a sharp peak between the age group 20 to 35 years (38%). More than one-third (37.37%) of the patients were from Kaithal alone. Kaithal and Fatehabad together made up 60% of the subjects. History of previous surgery and tattooing appeared as major risk factors. About 60% of the patients were asymptomatic and were screening during preanesthetic checkups and blood donation. Genotype 3 was the most common (58%) followed by genotype 4 (22%) and genotype 1 (17.30%). Genotypes 5 and 6 were seen only in 0.2 and 0.1% respectively. There was no case of genotype 2. Majority of patients had raised transaminases of twice the upper limit of normal.

CONCLUSION

The burden of hepatitis C infection (genotype 3 most prevalent followed by genotype 4) is more in young males, especially in rural areas. Causative factors are lack of awareness, hygiene, and shortage of health facilities. The biochemical parameter most commonly altered is serum transaminases. Major risk factors are use of unsterilized needles and equipments. Tattooing has emerged as a major player here.

Biochemical Markers for Early Detection of Risk of Nephropathy and Atherosclerosis in Type II Diabetes Mellitus Patients

[1]Sunita Singh, [2]Kiran KB Sodavadiya, [3]BK Agrawal

[1-3]Department of Biochemistry, Index Medical College Hospital & Research Centre, Indore, Madhya Pradesh, India

INTRODUCTION

The major long-term complications in patients with type II diabetes are diabetic nephropathy and atherosclerosis. It is also a strong indicator of the risk of chronic kidney diseases and cardiovascular disorders.

Diabetes leads to the formation of advanced glycated end products, oxidative stress, and inflammatory conditions, which lead to atherosclerosis and nephropathy.

In earliest stages of diabetic nephropathy, creatinine, albumin, and high-sensitivity C-reactive protein (hs-CRP) are important markers for diagnosis. For atherosclerosis, homocysteine and lipid profile are important markers.

AIMS AND OBJECTIVES

This study was intended to establish the role of biochemical markers for early detection of risk of nephropathy and atherosclerosis in type II diabetes mellitus patients and to find out the relationship between different markers and risk of disease.

MATERIALS AND METHODS

This study consisted of 200 patients divided into two groups. Group A consisted of 100 nondiabetic patients and group B consisted of 100 diabetic patients. The tests which we performed are creatinine, albumin, total cholesterol, low-density lipoprotein (LDL) cholesterol, hs-CRP, and homocysteine. Tests were done by ERBA autoanalyzer.

RESULTS

Diabetic patients have significantly higher levels of creatinine (r = −2.71), cholesterol (r = −8.06), LDL (r = −11.61), hs-CRP (r = −12.78), homocysteine (r = −11.19) and significantly lower level of albumin (r = 6.06) than nondiabetic patients.

CONCLUSION

Thus, decreased level of albumin and increased level of creatinine, hs-CRP, total cholesterol, LDL cholesterol, and homocysteine can evaluate the risk of nephropathy and atherosclerosis in type II diabetic patients.

Is Autoverification of Reports a Need of the Hour in Clinical Biochemistry Laboratory?

[1]Swati Rajput, [2]Shilpa Jain

[1,2]Department of Biochemistry, Sir Sayajirao General Hospital & Medical College Baroda, Vadodara, Gujarat, India

INTRODUCTION

Autoverification is the process by which patients' results are generated from interfaced instruments and sent to the Laboratory Information System, where they are compared against the laboratory-defined acceptance parameters. Autoverification can greatly reduce time and effort of laboratory staff as it is a mammoth task, especially in a tertiary care center to go through entire examination and report it. According to a presentation of Stanford University, criteria for autoverification include quality control within acceptable limit, no instrument errors, and no calculation errors.

AIMS AND OBJECTIVES

- To know the number of tests/sample load which are autoverifiable.
- To compare advantages and disadvantages of autoverification.

MATERIALS AND METHODS

A prospective observational study was conducted at the Clinical Chemistry laboratory in Sir Sayajirao General Hospital and Medical College, Vadodara, India, with samples from April 15 to July 15, 2016. At the end of the day, all reports were analyzed and the ones autoverifiable along with its percentage were calculated.

RESULTS

In our lab, percentage of autoverifiable reports for glucose was found to be 90% (12,550/14,000), for urea 85% (17,000/20,000), for total bilirubin 77% (14,000/18,000), for creatinine 83% (15,000/18,000), for total protein 71% (3,200/4,500), and for albumin 71% (3,200/4,500).

CONCLUSION

Although autoverification is a complex task, the outcome is absolutely worth the effort. It has its own advantages and disadvantages. Advantages include improved consistency of reporting, appreciable reduction of errors, decreased work time, and more organized workflow. Disadvantages are that it is costly, validation is protracted, results can be affected due to instrument errors and interference due to interruption of network. Advantages overweigh the disadvantages, which surely proves that autoverification is not only a immediate need of the working scenario but also a boon for all clinical biochemistry laboratories.

Utility of Aspartate Transaminase as a Marker of Viral Hepatitis

[1]Tarunima Gupta, [2]Vibha Sakhare, [3]Pramod Ingale

[1-3]Department of Biochemistry, Lokmanya Tilak Municipal General Hospital and Lokmanya Tilak Municipal Medical College, Mumbai, Maharashtra, India

INTRODUCTION

Aspartate transaminase (AST) and alanine transaminase (ALT) are routinely performed as a part of Liver function tests. The AST is widely distributed in equal amounts in the heart, skeletal muscle, and liver; AST exists in two different genetically distinct isoenzyme forms: Mitochondrial and cytoplasmic. It is found in highest concentration in heart as compared with other tissues of the body, such as liver, skeletal muscle, and kidney. Elevated mitochondrial AST is seen in extensive tissue necrosis during myocardial infarction. The ALT, on the contrary, is found mainly in the liver, making it a more liver-specific enzyme.

AIMS AND OBJECTIVES

To evaluate AST and ALT levels in viral hepatitis and find out the utility of AST as a marker of liver function in viral hepatitis.

MATERIALS AND METHODS

Data of 300 patients of viral hepatitis admitted in tertiary care hospital were analyzed to see the significance of AST as a marker of liver function.

RESULTS

Statistically significant rise in ALT with normal AST values were observed in viral hepatitis.

CONCLUSION

Incidence of viral hepatitis is quite high as compared with the other hepatic disorders. Performing AST in such individuals does not give any additional information but adds to the financial burden on the patients. Hence, it is concluded that estimation of AST is not recommended for the diagnosis and follow-up of viral hepatitis patients.

Association of Peripheral Neuropathy in Type II Diabetes Mellitus Patients with Subclinical Atherosclerosis

[1]Vandana Saini, [2]Megha Arora, [3]Amita Yadav, [4]Anju Jain

[1-3]Department of Biochemistry, Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi, India
[4]Department of Biochemistry, Lady Hardinge Medical College and Hospital, New Delhi, India

INTRODUCTION

Type II diabetes mellitus is an independent risk factor for cardiovascular morbidity and mortality. Studies have proposed link between diabetic retinopathy and nephropathy and atherosclerosis; however, the association between diabetic neuropathy and atherosclerosis is not widely reported.

AIMS AND OBJECTIVES

This study was conducted to investigate the association of diabetic peripheral neuropathy with novel markers of atherosclerosis, i.e., high-sensitivity C-reactive protein (hs-CRP), nitric oxide (NO), activated protein C, and plasminogen activator inhibitor-1 (PAI-1).

MATERIALS AND METHODS

A total of 127 patients with type II diabetes mellitus of at least 5 years duration were enrolled and 64 selected patients were further subdivided into two groups: Group I: 32 patients with peripheral neuropathy without evidence of nephropathy/retinopathy/macroangiopathy; group II: 32 patients without peripheral neuropathy/any other complication. Blood glucose, lipid profile, serum albumin, serum creatinine, and hemoglobin A1c were estimated by commercially available kits by autoanalyzer. Nitric oxide was estimated by modified Griess method; PAI-1, activated protein C, and hs-CRP levels were estimated by enzyme-linked immunosorbent assay using commercially available kits.

RESULTS

In our study, type II diabetic patients with neuropathy had significantly increased levels of hs-CRP and PAI-1 as compared with patients without peripheral neuropathy. The levels of NO and activated protein C were significantly reduced in diabetic peripheral neuropathy. Area under receiver operating characteristic curve was >0.7 for all the parameters and was maximum for hs-CRP.

CONCLUSION

There is increased risk of subclinical atherosclerosis in type II diabetes mellitus patients with peripheral neuropathy.

Sample Rejection Rate in Clinical Biochemistry Laboratory of a Tertiary Care Center

[1]Vasant Gosai, [2]Shubhra Jandial, [3]Shilpa Jain

[1-3]Department of Biochemistry, Shree SayajiRao General Hospital & Medical College Baroda, Vadodara, Gujarat, India

INTRODUCTION

Recent publications have reported that up to 70% of total laboratory errors occur in the preanalytical phase. Many times, samples have to be rejected in the laboratory without analysis. The common causes of rejection are quantity not sufficient, hemolyzed samples, lipemic samples, and samples in improper containers.

AIMS AND OBJECTIVES

- To calculate the proportions of samples being rejected due to various preanalytical errors.
- To enumerate the different reasons for rejection of samples.

MATERIALS AND METHODS

This retrospective descriptive study was carried out on samples rejected over 1 year period from January 2015 to December 2015 in the Clinical Biochemistry Laboratory of Shree SayajiRao General Hospital and Medical College Baroda, Gujarat, India. The source of data was Laboratory Information System (LIS) of our Clinical Biochemistry Laboratory. In our laboratory, test requests, test results, and information of rejected samples are entered in LIS routinely. From this LIS data, the mean rejection rate was calculated. The types of rejection were categorized as: Insufficient volume of samples, hemolyzed samples, lipemic samples, and samples in improper containers.

RESULTS

A total of 1,57,382 blood samples were received during the period of study (Jan 2015 to Dec 2015). Among these samples, 2,315 blood samples were rejected. Total rejection rate was 1.47%. Most common cause was quantity not sufficient (78.83%) followed by hemolyzed samples (18.92%), lipemic samples (1.81%), and samples in improper container (0.43%).

CONCLUSION

Among the patient samples included for a 1 year period (Jan 2015 to Dec 2015) in our study, the maximum number of sample rejection was due to insufficient volume of sample received from different wards and outpatient departments. This is mainly due to lack of proper training of a person collecting the blood samples. Whenever a sample is rejected, a new sample has to be collected, which increases turnaround time and thus affects patient care. The development of better blood collection procedures, training, and interdepartmental communication can reduce these errors. Further studies should be performed after preventive and corrective actions to obtain a possible decrease in number of rejected samples.

Is it Required to Carry Out Repeat Testing of Critical Results in Clinical Biochemistry Laboratory?

[1]Vibha V Sakhare, [2]Tarunima Gupta, [3]Pramod Ingale

Lokmanya Tilak Municipal Medical College and Hospital, Sion, Mumbai

INTRODUCTION

A common laboratory practice is to retest samples showing critical values before reporting the test results to the clinical care provider. This causes delay in test reporting, making it an unnecessary step without adding value to the accuracy of the test result.

AIMS AND OBJECTIVES

To find out the changes in laboratory values after retesting of samples with critical values and to conclude usefulness of such retesting.

MATERIALS AND METHODS

A retrospective audit of repeat testing of blood glucose, Ca, Mg, Na, K, Cl was done for the period from January 2016 to July 2016 at the Clinical Biochemistry laboratory of a tertiary care center. Data of initial and repeat test values were collected for each of the above-mentioned parameters. Difference of 10% and above between the original value and repeat value was considered to be significant. Two-level internal quality control (IQC) records of above parameters were also recorded.

RESULTS

During this period, 1,758 samples were retested for either of the six test parameters mentioned above. Difference of 10% and above between the original value and repeat value was observed only in three samples. IQC results were consistent and showed no major outliers. Wherever there were IQC deviations, appropriate corrective actions were taken before processing the samples.

CONCLUSION

Based on above findings, it can be concluded that, if the laboratory implements stringent IQC, then the test results are always reliable. Rather than repeating samples, it is advised to have a stringent IQC program and its implementation. This not only saves time but helps financial saving as more and more repeats can be avoided.

Inflammatory Markers Interleukin 6 and Tumor Necrosis Factor α in Metabolic Disorders of Youth

[1]Victoriaa Laishram, [2]Abhishek Dubey, [3]Chubalemla Longkumer, [4]MA Singh

[1-4]Department of Biochemistry, Regional Institute of Medical Sciences, Imphal, Manipur, India

INTRODUCTION

Interleukin 6 (IL-6) and tumor necrosis factor alpha (TNFα) have been characterized in recent years as indices of subclinical inflammation. Both have been associated in adult studies, with insulin resistance and metabolic syndrome (MS).

AIMS AND OBJECTIVE

To compare IL-6 and TNFα levels in obese and overweight youth with their normal weight counterparts. Furthermore, we compared IL-6 and TNFα levels in obese and overweight individuals with and without additional metabolic disorders, such as MS and prediabetes.

MATERIALS AND METHODS

All 40 consecutive obese children and adolescents with body mass index (BMI) ≥ 95th centile and 40 overweight children and adolescents with 85th ≤ BMI < 95th centile were screened for MS and prediabetes. Serum IL-6 and TNFα were measured in all the participants and in 40 normal weight age-matched individuals (controls). Serum IL-6 and TNFα were measured using enzyme-linked immunosorbent assay kit.

RESULTS

The IL-6 levels were increased in obese children and adolescents compared with controls (8.3 ± 1.8 *vs* 7.1 ± 0.5 pg/mL, $p < 0.001$) and the overweight participants (7.5 ± 1.7 pg/mL, $p < 0.05$). The IL-6 was also elevated in overweight compared with normal weight youth ($p < 0.05$) and in youth with MS compared with their counterparts without MS (8.8 ± 1.7 *vs* 7.6 ± 1.6 pg/mL, $p < 0.05$). The TNFα levels were comparable between obese and normal weight (15.5 ± 1.4 *vs* 15.0 ± 0.7 pg/mL respectively, $p = 0.731$), overweight and normal weight (15.3 ± 1.0 pg/mL, $p = 0.743$), and obese and overweight participants ($p = 0.832$).

CONCLUSION

Youth with excessive weight have elevated IL-6 levels, especially in the presence of MS. The TNFα levels, although comparable between normal weight and excessive weight youth, are raised in overweight and obese individuals.