

Female preponderance in patients with congenital adrenal hyperplasia: How can it be possible in an autosomal recessive disorder?

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Background: Congenital adrenal hyperplasia (CAH) is an autosomal recessively inherited metabolic disorder affects both males and females equally with abnormal *CYP21A2* genotype and life-threatening neonatal adrenal crises. Females can be diagnosed early in life due to the presence of ambiguous genitalia while males miss the diagnoses because of their normal external genitalia until they present with adrenal crises. **Aim of the Study:** To find out the probable factors responsible for female preponderance and *CYP21A2* genotype in patients with a history of sibling deaths.

Materials and Methods: For the present study, CAH patients were recruited from the endocrine clinic of AIIMS Hospital, New Delhi. This study was approved by the Institutional Ethics Committee. Detailed history was taken including the prader staging, genital appearance, sex of rearing and hirsutism status.

Genotyping was done by PCR, RFLP and direct sequencing to find out the underlying mutations of *CYP21A2* gene. **Results:** In a large cohort of 130 CAH patients, 111 were females and 19 were males. Out of these 111 females, 14 were reared as males. Familial clustering was observed in 25 patients (31 siblings). Among these patients, 14 families had a history of neonatal deaths (13M & 7F). Mutations of *CYP21A2* gene were found in 12 patients with homozygous (c.118C>T/c.118C>T = 2; p.Q318X/p.Q318X = 1; p.I172N/- = 1) heterozygous (In2/- = 2; Δ8bp/- = 1) and compound heterozygous/homozygous (c.118C>T/- + p.Q318X/p.Q318X/- = 1; c.118C>T/c.118C>T+c.138C>A/- = 1; c.-4C>T/- + p.P30L/- = 1; p.P30L/- + Int2/- + p.Q318X +/- = 1; p.P30L/p.P30L + Int2/- + p.Q318X +/- + p.R356W +/- = 1) state respectively. **Conclusion:** Female predominance and high frequency of deaths among males was observed in our large CAH cohort. It is interesting to note that females with severe type of mutations with adrenal crisis survived till the age of puberty. It is possible that the androgen excess may give a survival advantage for females.

Keywords: Adrenal crisis, *CYP21A2* genotype, female preponderance

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Primary testicular failure: A search for ideal biomarkers

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Background: Primary testicular failure (hypergonadotropic hypogonadism) refers to conditions where testes fail to produce sperm despite adequate hormonal support. It affects approximately 1% of all men and 10% of those seeking fertility evaluations. Normal testicular function depends on co-ordinated interplay between tubular and interstitial compartments of testes. Serum markers of interstitial compartment (mainly Leydig cells) are testosterone, LH and insulin-like factor 3, whereas tubular compartment (mainly Sertoli cells and germ cells) are FSH, lactate, AMH and inhibin B. An elevated FSH level indicates primary testicular failure. Inhibin B is regarded as a marker of spermatogenesis and may offer an improved diagnosis of testicular dysfunction. AMH is expected to be high in cases of Sertoli cell immaturity and low value reflects a primary alteration in Sertoli cell function or number that may leads to spermatogenic arrest. Lactate is produced by Sertoli cells and used by germ cells as an energy substrate. Lactate is an important intermediate for the regulation of the survival of pachytene spermatocytes and round spermatids. One should expect low value of lactate in late maturation arrest and a high value indicates either non-utilization of lactate by germ cells as with SCOS. However,

these markers are not tested yet to diagnose various subtypes of primary testicular failure. In this study we are assessing these biomarkers for diagnostic/prognostic role in varius subtypes of primary testicular failure. **Materials and Methods:** This study was based on 181 cases of primary testicular failure. Study groups were comprised of 76 cases of maturation arrest, 66 cases of Sertoli cell only syndrome, 31 cases of hypospermatogenesis and 08 cases of testicular fibrosis. There were 50 normal fertile male as control. All these cases were investigated with FSH, LH, T, lactate (some), AMH and Inhibin B. **Results:** Details of various parameters of study groups and controls are summarized as follows. FSH was high in 32%, 89%, 39%, 100% cases of MA, SCOS, HS & TF respectively. Inhibin B was low in 66%, 67%, 71%, 88% cases of MA, SCOS, HS & TF respectively. AMH was low in 51%, 56%, 19%, 88% cases of MA, SCOS, HS & TF respectively. Lactate was low in 49%, 50%, 24%, 73% cases of MA, SCOS, HS & TF respectively. Testosterone was low in 1.3%, 15%, 0%, 88% cases of MA, SCOS, HS & TF respectively. We have observed lower predictive value of FSH with maturation arrest as well as hypospermatogenesis. The FSH value is often normal in these subgroups. Serum inhibin B is more accurate than serum FSH in predicting these cases. **Conclusion:** FSH was found to be best marker in SCOS and tubular fibrosis. Inhibin B was relatively better marker for maturation arrest and hypospermatogenesis. We did not find any added advantage of using AMH and lactate. Role of LH and testosterone is minimal as gross biochemical hypogonadism is infrequently found in these cases.

Keywords: Biomarker, FSH, inhibin B, primary testicular failure

GA/HbA1c ratio variability as an independent glycemic marker in chronic kidney disease patients with type 2 diabetes mellitus

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Background: Optimum glycemic control as reflected by controlled haemoglobin A1c (HbA1c) level and glycated albumin (GA) avert progression of nephropathy in subjects with type 2 diabetes mellitus (T2DM) with chronic kidney disease is known. **Methods:** HbA1c

and GA were estimated in subjects with diabetic nephropathy (DN) with chronic kidney disease CKD stage I (n = 120), II (n = 90), III (n = 68) and IV (n = 21) based on estimated glomerular filtration rate in mL/min according to KDOQI guidelines. Healthy subjects (n = 100) were treated as control. GA/HbA1c ratio was calculated as mean \pm S.D and P value <0.001 were considered to be significant.

Results: GA/HbA1c ratio of CKD subjects was observed as stage I ($3.91 + 0.66$, P < 0.001), stage II ($3.51 + 0.26$, P < 0.001), III ($3.39 + 0.45$, P < 0.001), IV ($2.22 + 0.53$, P < 0.001) compared to healthy ($2.86 + 0.46$). **Conclusions:** GA/HbA1c ratio was found an alternative precise marker of glycemia in patients of CKD with T2DM. Combination of both long term and short term glycemic variables would serve as a future approach in diagnosis of CKD progression in T2DM.

Keywords: Chronic kidney disease, diabetes mellitus, glycated albumin, HbA1c

An atypical presentation of Addison disease: A case report

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Introduction: Addison disease refers to primary hypoadrenalinism, most commonly caused by autoimmune adrenalitis and infections of the adrenal glands. It is a rare condition associated with high morbidity and mortality rates. However it is easily treatable once a correct diagnosis is made. Usual symptoms are weakness, tiredness, nausea, vomiting, postural dizziness and anorexia.

Sometimes Addison disease may present with unusual symptoms so that making a correct diagnosis may require a high index of suspicion. **Materials and Methods:** We describe a case of a 19 year old male who presented to the emergency with complaints of abnormal behaviour in the form of inability to recognize family members and 2-3 episodes of seizure for past 3 days. **Results:** He was found to have hypotension, hyponatremia and hypoglycemia and was diagnosed as a case of Addison Disease. CT scan of abdomen showed bilateral adrenal calcification. **Conclusion:** Physicians must be aware of the varied presentation of Addison disease and basic investigations may give important clue to the correct diagnosis. Addison disease must be kept in the differential diagnosis of such cases.

Keywords: Addison disease, atypical, seizure

Screening for congenital hypothyroidism in sick newborns - is second opportunity after missed chance at birth worthwhile?

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Background: Screening for congenital hypothyroidism (CH) is essential and should be done routinely after birth. This opportunity is currently not made available for all babies in India. **Methods:** CH was screened in extramural babies admitted to our hospital from January to June 2016. Venous sample was drawn after 24 hours of stabilization for thyroid function tests. Venous cutoff of thyroid stimulating hormone (TSH) $\geq 15\text{IU/mL}$ or $\geq 10\text{IU/mL}$ was used for recall for age less than 14 days or ≥ 14 days respectively.^[1] Cut offs for abnormal free thyroxine and tri-iodothyronine were age and gestation dependent.^[2] **Results:** A total of 146 babies were screened for CH at a mean age of 6.1 ± 1.4 days (range 1-32 days). Majority 76 (52%) were preterm babies. A delayed rise in TSH was seen in 16 (10.9%) babies comprising of sick term babies ($n = 6$) and preterm

babies ($n = 10$). Three babies (2%) had abnormal TSH; mean age of 4.4 ± 0.9 days. The TSH normalized in two babies after 1 week. One baby was diagnosed with permanent CH and was continued on long term thyroxine, after ruling out ectopic or aplastic thyroid gland. Transient hypothyroxinemia (free T4) was seen in 24 (32%) of preterm babies and in 16 (22.8%) sick term babies. Transient low free T3 was found in 15/123 (12.2%) babies. The risk factors identified for transient hypothyroidism included prematurity, birth asphyxia and shock. **Conclusions:** Screening for CH should be done at any contact during neonatal period if not tested before. Transient hypothyroidism is common in sick newborns and should be confirmed on repeat testing on follow-up.

Keywords: Preterm, thyroxine, transient hypothyroidism

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Trimester specific reference range of thyroid function and prevalence of iodine deficiency in Eastern Indian pregnant women

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Objective: To find the reference range of thyroid stimulating hormone (TSH), total thyroxine (TT4), free thyroxine (FT4) and total tri-iodothyronine (TT3) levels for normal pregnant women attending a tertiary care centre at Eastern India. **Methods:** In this cross-sectional study, 370 consecutive patients attending antenatal OPD for routine check-up were screened for TSH, TT4, FT4, TT3 using chemiluminescence assay. A reference population of 278 patients were obtained after exclusion of patient having Anti TPO positivity, Goiter WHO grade 2 or more, presence of thyroid nodule on ultrasound, low urinary iodine (<150 µg/L by Sandell-

Kolthoff method), hyperemesis gravidarum and those already on levothyroxine. The 2.5th and 97.5th percentile values of this reference population were calculated as the reference intervals for thyroid hormone levels during each trimester. **Results:** The reference intervals for the 1st, 2nd and 3rd trimesters for the following parameters were; TSH 0.42-4.48, 0.57-3.94 and 0.58-5.37 µIU/ml; FT4 0.93-1.53, 0.69-1.49 and 0.71-1.49 ng/dl; TT4 6.9-14.4, 6.67-14.62 and 4.84-13.95 µg/dl respectively. Our reference range for TSH is intermediate between those found in previous studies from Northern India and those suggested by American Thyroid Association. Out of 370 patients urinary iodine was deficient in 32 (8.6%) patients as per WHO reference range. **Conclusion:** Our study results suggest a new reference range for thyroid function and suggest stricter implementation salt iodination programme to eliminate iodine deficiency in pregnant population in Eastern India.

Keywords: Euthyroid range in pregnancy, subclinical hypothyroid, thyroid autoimmunity

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Prevalence of metabolic syndrome in hypothyroidism: Experience in a tertiary centre in South India

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Introduction: Thyroid disorders are among the commonest endocrine disorders, with overall prevalence of hypothyroidism about 10.95% in the general population. Prevalence of the MetS in the Indian population is about 31.6%, with prevalence of 22.9% in men and 39.9% in women 3. The objective of our study was to determine the prevalence of metabolic syndrome and its components in people with hypothyroidism. **Materials and Methods:** 154 hypothyroid patients attending our out-patient department were consecutively

enrolled for the study. Metabolic Syndrome identified by National Cholesterol Education Program's Adult Treatment Panel III report (ATP III). Clinical data was obtained by interviewing the patients and referring to their case folders and prescriptions. The anthropometric indices were recorded. The laboratory parameters that were analysed included fasting lipid profile, thyroid function tests and fasting blood sugars. **Results:** The patients were aged between 18 and 75 years, with a mean age of 43.6 years, and the female-to-male ratio was 123:31. The overall prevalence of the metabolic syndrome was 53.24% by Adult Treatment Panel III criteria, which is significantly higher than that in the general population, as reported earlier in various studies. The commonest occurring metabolic syndrome-defining criterion was increased waist circumference, and hypertension was the least documented criterion. **Conclusion:** Metabolic syndrome occurs in approximately every second patient of hypothyroidism, and so, routine screening for components of metabolic syndrome may be of benefit in this group.

Keywords: Adult treatment panel III criteria, hypothyroidism, metabolic syndrome

Ectopic ACTH syndrome in a case of duodenal neuro-endocrine tumour presenting with liver metastasis

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Ectopic ACTH syndrome is an uncommon disorder and comprises of about 15% of all patients with Cushing's syndrome (CS). Duodenal carcinoids are rare, indolent tumors usually associated with a benign progression. We hereby report a rare case of CS resulting from ectopic ACTH secretion from a duodenal neuroendocrine tumour (NET) presenting with liver metastasis. A 37-year old female presented with abdominal discomfort and dyspepsia of 1 month duration. Ultrasound abdomen suggested a well-defined hypoechoic lesion in the left lobe of the liver, suggestive of neoplasia. On clinical examination, she had Cushingoid features and persistent hypokalaemia. Midnight ACTH and cortisol levels were grossly elevated at 1027 pg/ml ($N < 46$ pg/ml) and 87.56 µg/dl ($N < 7.5$ µg/ml) respectively. Both overnight and high-dose dexamethasone suppression test confirmed non-suppressed

cortisol levels- 86.04 and 84.42 µg/dl ($N < 1.8$ µg/ml) respectively. MRI brain showed a structurally normal pituitary gland. CT-scan of the abdomen revealed hepatic lesion with bilateral adrenal enlargement. A diagnosis of ectopic ACTH-dependent CS was made. She was started on spironolactone and ketoconazole, following which hypokalaemia, blood sugars and blood pressure control improved. She was scheduled for surgical resection of the liver lesion. Intraoperatively, a duodenal lesion of 0.5 cm × 0.5 cm was identified alongside an 8 cm × 6 cm exophytic lesion in segment-IV of the liver. Frozen section of the duodenal lesion was positive for NET. She underwent a Whipple's surgery, cholecystectomy and left hepatic lobectomy. Histopathology for both the hepatic and duodenal masses showed intermediate grade NET. Immunohistochemistry was positive for MIB-1, Synaptophysin and Chromogranin. Gross pathologic and histopathologic examination of pancreas and other post-operative specimens received were normal and negative for NET. Post-operatively, she showed clinical and biochemical remission. On subsequent follow-up, she was weaned off anti-diabetic and anti-hypertensive medications. Herewith, we report the third case of duodenal carcinoid tumor presenting as Ectopic ACTH Syndrome, and the first with liver metastasis.

Keywords: Cushing syndrome, duodenal neuroendocrine tumour, ectopic ACTH syndrome

In silico prediction of interaction between saponins and TGR5 related to diabetes mellitus

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Title objective: TGR5 activation by cholic acid, a class of bile acids induce intestinal glucagon-like peptide-1 (GLP-1) release potentiating insulin release. This leads to improved liver and pancreatic function and enhance glucose homeostasis. **Aim:** To investigate TGR5 agonist property of saponins, which are structural analogue of cholic acid using *in silico* approach.

Materials and Methods: A molecular docking of five saponins (structural analogue of cholic acid, a bile acid) with TGR5 was performed using Autodock vina and compared with cholic acid. Validation of docking experiment was also done by comparing docking scores with experimental data. **Results:** All the saponins investigated except Curculigol (-6.7 kcal/mol) have higher binding affinity for TGR5 when compared with cholic acid (-7.2 kcal/mol). Charantin ranked highest with -8.9 kcal/mol, gypensapogenin (-8.6 kcal/mol), Diosgenin (-7.8 kcal/mol), arjunolic acid (-7.5 kcal/mol). Arg 80, Ser 95, Ser 270, Pro 92 and Thr 70 are amino acid residues at the active site are important for saponin binding affinity. A significant correlation ($r^2 = 0.7$) between different data derived from docking calculations and experimental data was revealed.

Conclusion: Saponins are a class of phytochemicals that may be potent lead compounds for the treatment of diabetes mellitus but further experimental and clinical confirmation are necessary.

Keywords: Diabetes mellitus, docking, GLP1, *in silico*, saponins, TGR5

Beneficial effects of 12-week yoga-based lifestyle intervention on stress and inflammation in subjects with metabolic syndrome

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Objective: To investigate the effects of 12-week yoga-based lifestyle intervention on markers of stress and inflammation in subjects with metabolic syndrome (Met S). **Materials and Methods:** Prospective single arm lifestyle interventional study was conducted on younger adults ($n = 89$) having Met S as per Joint Interim Statement, 2009. The subjects were assigned to pre-tested yoga-based lifestyle intervention including *asanas*, *pranayama*, relaxation techniques, lectures/discussion, group support, nutrition awareness program and individualized advice under supervision for approx. 2 hrs each

day for 2 weeks followed by continuation of the yoga practices at home for next 10 weeks. Outcome measures were: plasma levels of leptin, adiponectin, interleukin-6 (IL-6), tumor necrosis factor- α (TNF- α) and β -endorphin. These outcome measures were assessed at baseline, week 2 and at end of week 12. Statistical analyses were performed using the SPSS Version 20 (IBM Corp., USA). A P < 0.05 was considered statistically significant. **Results:** The mean age of the subjects was 37.67 ± 6.3 Years and mean body mass index was 30.7 ± 4.1 kg/m². Subjects following 12 weeks of yoga-based lifestyle intervention achieved significant reduction in levels of leptin ($p = 0.002$) and IL-6 ($p = 0.008$) from baseline to week 2 and week 12. There was significant increase in the levels of adiponectin ($p = 0.004$) and β -endorphin ($p = 0.013$) from baseline to week 12 wherein the levels remained same at week 2. No significant change was seen in the levels of TNF- α ($p = 0.114$) from the baseline to week 12 of the intervention period. **Conclusion:** A 12-week yoga-based lifestyle intervention is beneficial in improving stress and inflammation in younger adults having Met S.

Keywords: Inflammation, lifestyle intervention, metabolic syndrome, stress, yoga

Benefits of adherence to diabetes condition management program: A questionnaire based evaluation study by Apollo Sugar Clinics

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Objective: To assess the effectiveness and adherence of prescribed diabetes condition management program among adults with Type 2 Diabetes mellitus. **Methods:** It is a retrospective study where 421 patients with T2DM were taken from the database. Patients who were subscribed to a Diabetes condition management program at the clinic were counselled on diet at baseline. The adherence of patients to the prescribed diet plan was determined based on a structured call calendar and questionnaire throughout the program at pre-counselling status and periodically post-counselling at the clinic. Patients were

assessed based on the change in their meal pattern, choice of food and exercise duration. All patients were followed-up for more than 3 months. **Results:** On analysis it was found that 9.5% (40) patients who initially did not follow any meal plan at baseline initiated small and frequent meal pattern on follow-up and 97% (354) patients were adherent with the prescribed meal pattern. 6% (24) patients who had no idea on the choice of food at baseline claimed to have a clear idea post-counselling. Out of all patients, 14% (58) who did not exercise at all at baseline were exercising at least for 30 minutes/day post-counselling. All the patients were found to be satisfied with the method of education and awareness on diet. **Limitations:** Carbohydrate counting, an important criteria to assess calorie intake could not be measured due to inconsistency in the data. However further clinical benefits of Diabetes condition program will be presented in the near future. **Conclusion:** The present study found a notable change in the behavior and awareness of patients under diet management program. It shows that periodic follow-up and counselling helps bringing positive change towards adherence to lifestyle modifications.

Keywords: Adherence, diabetes, effectiveness, Type 2 diabetes

A case of unilateral Graves' disease with review of literature

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Introduction: Graves's disease is classically considered to involve both the lobe of thyroid gland but rarely there can be unilateral involvement of the thyroid gland in this condition. **Case:** A 30 year housewife presented to us with hyperadrenergic symptom suggestive of thyrotoxicosis. On examination there was diffuse enlargement of thyroid left greater than right. Thyroid ultrasound even following review did not reveal any nodule. Technetium 99 thyroid scan showed uptake in the left lobe of thyroid. TSH receptor antibody was positive

further to support the diagnosis of unilateral Graves' disease. On literature review it was found to have predominant involvement of right lobe. All the cases which were treated with hemithyroidectomy went on to develop thyrotoxicosis involving other lobe. Hence we propose unilateral to bilateral involvement of the thyroid being natural history of the Graves' disease. The time duration in unilateral to bilateral involvement is usually very small. Hence, it's rarely encountered with unilateral involvement in clinical practice unless thyroid scan is done in early part of the disease. Due to some differences in between the thyroid lobe either anatomically or due to infection the unilateral to bilateral progression is slower or hence can be picked up. **Conclusion:** We present a case of Graves' disease with unilateral involvement of the thyroid on the left side. We propose unilateral to bilateral involvement of the thyroid being natural history of the Graves' disease. Unilateral graves should be treated with treatment to target both lobe of thyroid.

Keywords: Graves', hemithyroidectomy, unilateral

Glucocorticoids in management of Graves' disease: A case report

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Introduction: Management of Graves' disease involves anti thyroid drugs (ATD), radioiodine ablation (RIA), & surgery. ATD can causes serious hematopoietic toxicity. Glucocorticoid is rarely used in Graves' disease except in thyroid storm. **Case Report:** Forty year lady, presented with complaints of swelling in front of neck, weight loss, heat intolerance, insomnia, tremors for last 4-5 month, no history of neck pain, fever, hoarseness of voice. On examination pulse rate was 124/min, BP was 142/100 mm Hg, goiter grade 2, soft, diffuse, non tender, with bruit was present. Fine tremors, moist hands & proptosis of both eyes were present. Investigations revealed increased T3 10.22ng/dl (normal 0.8-2.41) & T4 38.52 μ g/dl (normal 4-12 μ g/dl) and TSH was 0.001 μ IU/ml. USG neck was suggestive of diffuse goiter and increased velocity of blood on doppler. **Treatment:** Patient was treated with carbamazole 30 mg/day. After 16 weeks patient

became euthyroid. After 6 month patient presented with complaint of fever, sore throat, dry cough. Investigation revealed pancytopenia (Hb:8.4mg/dl, WBC:2600/ μ L, DLC:P70, L26, E4, Platelet:56000). Liver and kidney function test, urine analysis, chest xray were normal. Diagnosis of ATD induced hematopoietic toxicity was made. Carbamazole was stopped supportive measurement along with IV antibiotics was given to patient. After 4 days her blood count were normalized. Again after 1 month patient presented with generalized weakness and easy fatigability. Investigation revealed pancytopenia and thyrotoxicosis. Bone marrow biopsy was suggestive of erythroid hyperplasia with megaloblastosis. Folic acid was 5.47 ng/ml (normal > 6.59). Patient was advised tablet Lithium 300 mg, thrice daily and folic acid 5 mg/day. After 20 day she presented with complaints of diarrhea, tremors, altered sensorium, investigations revealed increased Lithium concentration 2.42 nmol/L (0.6 – 1.20), & thyrotoxicosis. Lithium was stopped, and Tablet prednisolone 40 mg/day was advised. After 3 month patient became euthyroid after which RIA was done. Since then patient is euthyroid. **Conclusion:** Glucocorticoids can be used under exceptional circumstances for treatment of Graves' disease.

Keywords: Antithyroid drugs, glucocorticoids, Graves' disease, hematopoietic toxicity, radio iodine ablation

PRevalence of obESity among rehabilitated urban slum dwellers in South India and altered body iMage pErception as a risk factor for obesity in Indian context (PRESUME)

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Introduction: Obesity is defined by World Health Organization (WHO) as excessive fat accumulation that presents a risk to health. Body Mass Index (BMI) ≥ 25 kg/m² is considered as overweight whereas BMI ≥ 30 kg/m² is obesity. An understudied risk factor for overweight/obesity in our population is distorted body image perception where studies from the west have proved a clear association between the two. **Objectives:** The study was performed to assess the prevalence of overweight/obesity among rehabilitated slum dwellers in a south Indian city and to evaluate if altered perception of ideal and current body image is a risk factor

for overweight. **Materials and Methods:** It was a cross sectional study done during February 2015. The participants were recruited from among permanent residents of Tamil Nadu Slum clearance board residential apartment blocks. Systematic random sampling followed by Cluster sampling was done. All consenting individuals above 18 years of age were included. Pregnant women, bedridden patients and those who had an acute illness in the last 2 weeks were excluded. Data was collected using a semi-structured standardised pilot tested questionnaire which included the Stunkard's figure rating scale. **Results:** Number of families included were 170 and 315 individuals participated. Prevalence of overweight was 36.5% and prevalence of obesity was 12.4%. Prevalence of body-image dissatisfaction (BIDS) was 68.3% (women 68.9% and men 67%) and prevalence of body image distortion (BID) was 59% (women 57.5% and men 62.1%). Distorted body image [adjusted odds ratio (aOR); 95% confidence intervals (95% CI): 1.927;1.057,3.514] and underestimating body image size (aOR; 95% CI: 8.001;4.223,15.159) were highly significant predictors of obesity estimated by logistic regression. **Conclusion:** Though majority of population belonged to daily wage labourer work force, prevalence of overweight is high. Distorted ideal and current body image perception is also significantly high and is a definite risk factor for obesity.

Keywords: Obesity, overweight, perception, slum

The impact of subclinical hypothyroidism on cognitive functions among the elderly

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Background: Most recent cross sectional and longitudinal studies have failed to find an association between cognitive dysfunction and subclinical hypothyroidism. A recent paper from our country however suggested a significant association. **Objectives:** This study was undertaken to determine the prevalence of cognitive impairment among educated, elderly Indian patients (>60 years) with and without subclinical hypothyroidism. **Materials and Methods:** This study was conducted on educated, elderly patients admitted to the in-patient department of our hospital. One hundred patients with subclinical hypothyroidism and an equal number of controls with normal thyroid functions were

interviewed after taking informed consent. Subclinical hypothyroidism was defined as serum TSH level more than 4.0 mIU/L with serum FT3 and FT4 in the normal reference range. Cognitive function was assessed using Hindi mini mental status examination (HMSE) and clock drawing test (CDT). **Results:** The cases (n = 100) had a mean age of 68.2 years, there were 59% males, and had a mean body mass index of 25.5kg/m² compared to controls (n = 100) who had a mean age of 69.9 years (p=0.09, there were 64% males (p=0.5), and had a mean BMI of 25.3 kg/m². All other baseline variables including co-morbidities, family history of dementia, head injury, smoking, alcohol use, fruit and vegetable intake, daily newspaper reading, education and exercise regularity were comparable in both groups. The cases had mean HMSE of 26.1 and controls of 25.9 (p=0.68) respectively. The cases had mean CDT of 2.19 and controls 2.18 (p=0.95). **Conclusions:** There is no difference in cognitive function in elderly with subclinical hypothyroidism in comparison with elderly population having normal thyroid function.

Keywords: Biochemical, cognitive functions, elderly, hypothyroidism, subclinical

Profile of Turner syndrome in Eastern India: A case series

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Objectives: To determine the pattern of patients with Turner syndrome in Eastern India. **Materials and Methods:** Five patients of Turner syndrome attending the Department of Endocrinology during the last one year were evaluated and compared on the basis of clinical, biochemical and radiological criteria in addition to chromosomal analysis. **Results:** Primary amenorrhoea (PA), short stature and delayed secondary sexual characteristics were the commonest clinical presentations. The age of presentation was between 11-15 years (Mean = 13 years). The height of presentation was 122.04 ± 5.84 while the target height was 148.02 ± 3.61 and Height age was 7.6 ± 1.08 . Other external phenotypic stigmata was encountered in 3 of the 5 patients (60%). All had normal intelligence. Ultrasonography of genitourinary tract revealed Horse shoe kidney in 1 (10%) patient, small and hypoplastic uterus in 4 patients (80%) while ovaries were not visualized in 4 (80%) patients and 1 (10%) had streak gonads. All had normal external genitalia. None of the

patients had cardiovascular abnormalities. Bone age was 9.7 ± 1.67 . Both FSH and LH were markedly increased in all the subjects. Two patients (40%) had associated autoimmune thyroid disease while IGF1 was decreased in one patient (10%). Among the 5 karyotypes examined 1 (10%) had complete monosomy (45X), 1 (10%) had complete structural abnormality (46X, del[Xq]). 3 (60%) of patients had Mosaicism including 1 (20%) complete mosaic (46XX[58]/45X[42] and 46X del [Xq]) and 2 (40%) mosaics with structural abnormalities. **Conclusions:** In our cohort, bone age was markedly delayed compared to the chronological age. Those subjects who had mosaicism had more delayed bone age. The biochemical markers (FSH & LH) were elevated in all the subjects. Patients with complete monosomy (45X) completely differed in their phenotypic characteristics with only primary amenorrhoea and short stature in common. A higher frequency of Turner Mosaic females were observed with highest number of cell lines having sex chromosome with structural abnormalities i.e. deletions of the short arm q (Xq-) or long arm p (Xp-), duplication of the long arm forming isochromosome (isoXq) or presence of ring (rX). Most of the TS patients with isochromosome Xq had mild phenotypes. Due to an increased variability of clinical presentation in Turner syndrome, it is pertinent to perform a Karyotyping in any female of short stature irrespective of age, not only to confirm the diagnosis but also to assess prognosis.

Keywords: Height SDS, karyotyping, Turner syndrome

Iatrogenic Cushing's syndrome due to 'Swasa Kalpa'

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A 22-year-old female was referred by her GP to Endocrinology Clinic in view rapid weight-gain. She had gained 15 kilograms in 3 months but otherwise well, including normal menstrual-cycles. For allergic rhinitis, she was using an Ayurvedic preparation called 'Swasa-Kalpa' for last 4-months, and reported feeling ill whenever she missed her daily dosages. Clinically, she had Cushingoid appearance with moon-face, mild hirsuitism, and purple-striae over axillae, chest, abdomen and legs; no goitre, and BP 110/60mmHg. 9 AM blood-tests showed FBS 87 mg%, TSH 7.880 mciU/mL (0.3-5.5), FreeT4 1.11 ng/dL (0.8-2.3), low-normal ACTH 13.77 pg/mL (7-60), and low Cortisol 60 nmol/L. On subsequent Short Synacthen Test (SST - 250mcg), Serum Cortisol levels at 30 min and 60 min were 222 and 247 nmol/L respectively, indicating adrenocortical insufficiency. Swasa-Kalpa's manufacturer's website

does not mention Corticosteroids as an ingredient, but advises users against stopping medicine abruptly, and to gradually reduce/stop the same. We made a diagnosis of Iatrogenic Cushing's syndrome (with Adreno-cortical Suppression) due to Swasa-Kalpa. Hydrocortisone tablets were started at replacement doses; Ayurvedic treatment was discontinued. Over next 8-months, her 9 AM Serum Cortisol rose to 351 nmol/L; SST revealed Cortisol levels 513 and 566 nmol/L, indicating normal response. Oral Hydrocortisone was gradually tapered-off. This case reveals the adverse impact of an Ayurvedic preparation that possibly contains un-named corticosteroids/steroid-like-compounds. Through Hypothalamo-Pituitary-Adrenal (HPA) feedback mechanism, Iatrogenic Cushing's lead to adrenal suppression, and low endogenous Cortisol levels. While adrenal suppression may be anticipated when Prednisolone 7.5 mg/equivalent is taken for over 3 weeks, the recovery of HPA axis can take weeks-to-months depending on potency/duration of the steroid used. In our patient, HPA recovery took 8 months. Commonly, Ayurvedic treatments are perceived to have no side-effects although detailed research in these aspects are lacking, and presently regulatory structure in India is weak; our case illustrates the risks associated with over-the-counter usage, and public must be cautioned against that.

Keywords: Cushing's syndrome, iatrogenic, Swasa Kalpa

BRAF mutation may predict higher risk of incomplete response to radioactive iodine ablation in papillary thyroid carcinoma

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Objectives of Study: The study was performed to analyse association of BRAF mutation status with risk-determining clinicopathological characteristics in papillary thyroid carcinoma (PTC). **Materials and Methods:** Consecutive consenting patients of PTC operated between March 2015 and March 2016, having adequate tissue available for DNA extraction, were included in the study, and assessed for BRAF mutation status by Sanger sequencing. The prognostic relevance of the mutation was then assessed by comparing it with high-risk

clinicopathological characteristics. **Results:** The study comprised 40 PTC patients. BRAF V600E mutation was found in 19 (47.5%) cases. Follow-up was available in 18 patients. Univariate analysis was suggestive of mutation to be associated with partial response & resistance to radio-active iodine (1/10, 10% in BRAF negatives vs. 4/8, 50% in BRAF positives, $P = 0.06$). There were 2 patients, who developed TENIS (thyroglobulin elevation but negative iodine scintigraphy) syndrome, and needed change of therapy in the form of sorafenib (a tyrosine kinase inhibitor) and repeat surgery, respectively. Significantly, both of these were BRAF mutated. However, no association was found with age, tumor multicentricity, extrathyroidal extension, tumor size, lymph node/distant metastasis. **Conclusions:** BRAF mutation seems to have clinical significance in determining response to radioiodine ablation in patients with PTC. These patients are more likely to show radioiodine resistance, thus requiring second line of management in the form of tyrosine kinase inhibitors.

Keywords: BRAF, papillary thyroid carcinoma, prognosis, radio-iodine resistance

The relationship between serum irisin, thyroid function and body composition in patients with chronic kidney disease

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Aims and Objective: Chronic kidney disease (CKD) is associated with metabolic alterations like dyslipidemia, sarcopenia, protein catabolism, insulin resistance, altered body composition and energy expenditure. Thyroxine and novel adiponectin-myokine irisin have physiological role in energy metabolism. CKD patients have reduced levels of serum thyroxine and irisin. The decreased serum concentration of irisin and thyroxine in CKD patient might have relation with these metabolic alterations. The aim of this study was to investigate whether the serum irisin differs in CKD patients with hypothyroidism as compared to CKD patients without hypothyroidism. Additionally, we examined the relationship between irisin and insulin resistance, inflammation and body composition.

Methods: It was a descriptive study conducted between November 2014 and October 2015 at Endocrinology and Nephrology department of a tertiary care center in South India – JIPMER. In this study 200

non diabetic CKD patients not on maintenance hemodialysis were included. All patients underwent thyroid function testing and body fat analysis. Fasting serum irisin, insulin and C reactive protein were measured in 40 patients with thyroid dysfunction and 40 age, BMI, waist circumference and level of activity matched controls. HOMA-IR and QUICKI indices were calculated. **Results:** The prevalence of the hypothyroidism was 21.5%. The median age, BMI, and eGFR of the study population, were 52 years, 21.01 kg/m² and 23 ml/min/1.73 m² respectively. The serum irisin levels were not significantly different between hypothyroid CKD and euthyroid CKD patients. The serum irisin levels had no correlation with thyroid function tests, renal function, and inflammatory marker. The serum irisin concentration (median) was higher in females 467.00 ng/ml than in the males 54.00 ng/ml. The median serum irisin levels were significantly higher in subjects with low activity (99.50 ng/ml) compared to those with moderate activity (34 ng/ml) and high activity (28.50 ng/ml). In univariate analysis, irisin correlated with BMI, waist circumference, insulin indices, and fat mass indices. In multivariate analysis, the significant predictors of irisin were female gender and total fat mass. **Conclusions:** The regulation of irisin in CKD patients is probably multifactorial. The association with fat mass suggest that fat mass is a significant contributor to the circulating irisin in CKD patients. The gender dimorphism in irisin levels needs to be studied in further.

Keywords: Fat mass, gender, irisin, thyroid

Aldose reductase gene polymorphism (C-106T) in type 2 diabetes mellitus with peripheral neuropathy in North Indian population

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Objectives: Polymorphism in the aldose reductase (ALR) gene at nucleotide C(-106)T (rs759853) in the promoter region is associated with susceptibility to the development of peripheral neuropathy. The aim of this study was to detect the association of the C-106T polymorphism of ALR gene and its frequency among patients with type 2 diabetes mellitus with and without peripheral neuropathy.

Materials and Methods: The study subjects were divided in to two groups. Group I included 357 patients with Diabetes having peripheral neuropathy and Group II included 225 patients with

Diabetes without neuropathy. Genotyping of ALR -106C>T SNPs was performed using a polymerase chain reaction-restriction fragment length polymorphism method using gene specific primers and restriction enzyme (BfaI). The genetic risk among case and control groups was compared and tested by calculating odds ratio with a 95% class interval. Two tailed P value of <0.05 was interpreted as statistical significant (using Graphpad software). **Results:** CT genotype was statistically not significant among both Group I (141 patients; 39.5%) and Group II (81 subjects; 37.5%). ALR 106TT genotype was significantly higher in the Group I compared to Group II with odds ratio 3.52 (95% CI: 1.91-6.47; P < 0.01). Recessive model, as well as dominant models of association, revealed significant association to increase risk with odds ratio 3.04 (95% CI: 1.69-5.48; P < 0.01) and 1.72 (95% CI: 1.23-2.43; P < 0.01) respectively. **Conclusion:** In conclusion, the ALR106TT genotype (-106C>T polymorphism) in the ALR gene was associated with an increased risk of neuropathy in type 2 diabetes mellitus patients than subjects with the C-106C genotypes.

Keywords: Aldose reductase gene, peripheral neuropathy, type 2 diabetes mellitus

The serological and biochemical markers of adrenal cortex and endocrine pancreas dysfunction in patients with Hashimoto's thyroiditis: A hospital based pilot study

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Aim: To assess the proportion of Addison's disease and type 1 diabetes mellitus in patients with Hashimoto's thyroiditis. **Materials and Methods:** The subjects with hypothyroidism due to Hashimoto's thyroiditis were included in this study over 2 years. Hypothyroidism was defined as high serum thyroid stimulating hormone (>5 mIU/l) with or without low serum thyroxine level. Hashimoto's thyroiditis was defined as patients having high TPO antibody titer (>40 IU/ml).

ml). Autoimmune markers of Addison's disease and type 1 diabetes mellitus i.e. anti-adrenal (21-hydroxylase) antibody, anti-glutamic acid decarboxylase (GAD) antibody and islet antigen-2 (IA-2) antibody were measured among them. Additionally, 250 microgram ACTH stimulation test was done in subjects with positive anti-adrenal antibody. Similarly, beta cell function was assessed in patients with positive anti-GAD and/or anti-IA2 antibody. **Results:** Out of 150 subjects screened, 136 patients were included in this study. Seven subjects had positive anti-adrenal antibody while 15 had anti-IA2 antibodies. None had both anti-adrenal and anti-IA2 antibody. The anti-GAD antibody was not present in any of the subjects in the study. ACTH stimulation test was done in 4/7 subjects with positive anti-adrenal antibody & beta cell function was assessed in 8/15 subjects with positive islet cell antibodies. Neither adrenal insufficiency nor impaired beta cell function was found in any of these subjects. **Conclusions:** Nearly one-sixth of subjects with hypothyroidism with Hashimoto's thyroiditis had either anti-adrenal or islet cell antibodies with normal adrenal and beta cell function.

Keywords: Anti adrenal antibodies, anti GAD antibodies, anti IA2 antibodies, APS2, Hashimoto's thyroiditis, subclinical autoimmunity

A rare case of fibrocalcific pancreatitis presenting in children: Case analysis

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Case 1: A 14-year old girl child presented with complaints of tiredness, dehydration, amenorrhea since puberty, mental retardation, absence of fifth metacarpal. The RBS was found to be 246 mg/dL. Urinary Ketones, Serum ketones, anion gap, bicarbonate and pH of blood were all indicative of DKA. USG abdomen revealed chronic calcific pancreatitis. Necessary IV fluids were initiated and insulin therapy was provided. **Case 2:** A 11-year old boy presented with complaints of polyuria, polydipsia, polyphagia, abdominal pain, weight loss, difficulty in eating and increase bowel movements. The RBS was found to be 622mg/dL. Urinary Ketones, Serum ketones, anion gap, bicarbonate

and pH of blood were all in the normal range. Thus indicative of Hyperglycemic Hyperosmolar Syndrome. USG abdomen and MRI revealed dilated duct showing calcific pancreatitis. Necessary IV fluids were initiated and insulin therapy was provided. **Comparison Study:** Both cases had calcific pancreatitis, consanguinity, poor diabetic control in common. What was unusual between them was, one presented with DKA and other had No DKA. Mental retardation, facial features, absent metacarpal and amenorrhea were presented only in case 1, thus the associated syndromes must be taken into account. **Conclusion:** The clinical presentation of fibrocalcific pancreatitis is rare in children and associated with the SPINK 1 gene. Conservative glycemic control, frequent blood glucose monitoring and correction of the micro and macronutrient deficiencies are very fundamental in the management of patients with FPD and should be strongly emphasized. Treatment responses will be variable in both cases and the other associated conditions of hormonal abnormalities need to be corrected for better quality of life for the children. Such cases of calcific pancreatitis in children are rare and should be thoroughly investigated.

Keywords: DKA, fibrocalcific pancreatitis, SPINK 1 gene

The impact of pharmacist counselling on glycaemic control among patients with diabetes mellitus: Data from a Sri Lankan Teaching Hospital

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Introduction: Diabetes is a global health burden due to its increasing prevalence, morbidities and premature deaths. Data in international literature provides evidence of success of involving pharmacists to achieve glycaemic control. However, this is the first study in Sri Lanka on the impact of pharmacist counselling among outpatients with diabetes. **Aim:** To assess the impact of pharmacist counselling on glycaemic control of outpatients with diabetes. **Methods:** 400 consecutive patients with diabetes mellitus attending outpatient

medical clinics at Colombo North Teaching Hospital were randomized into either intervention group (IG) or control group (CG). Patients in the IG group received pharmacist counselling (verbal and written) for four consecutive monthly visits in addition to standard care at the clinic, while patients in the CG received standard care only. Glycaemic control was assessed for both groups with HbA1c measured at the end of the four months. **Results:** Mean age of the participants was 61.79 ± 9.06 and 67% were female. Non parametric tests were performed since the data did not follow normal distribution. On analysis of the HbA1c data, the IG had a median of 7.2% (IQR 8%-6.5%) whereas the CG had a median of 7.7% (IQR 8.7%-6.8%). Patients in the IG had statistically lower HbA1c levels compared to those in the CG, according to the Mann-Whitney U test ($P = 0.001$). HbA1c levels <8.00% indicate good/fair glycaemic control. 78.7% of the IG, but only 60% of the CG subjects had levels <8.00%. While only 6.2% of the IG had very poor glycaemic control (HbA1C level >10.00%), 14% of the CG had levels >10%. **Conclusion:** Pharmacist counselling in the outpatient clinics can improve the glycaemic control of the patients with diabetes.

Keywords: Diabetes, HbA1c, pharmacist counseling

Correlation of vitamin D and PTH with insulin resistance in Indian obese adults: A cross sectional study

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Background and Objective: Obesity is often linked with metabolic disorders and studies have suggested that it might be associated with vitamin D deficiency. This study was planned to evaluate serum vitamin D [25(OH) D], Parathyroid Hormone (PTH) levels and to correlate it with insulin resistance/insulin sensitivity in Indian obese adults. **Methods:** This cross sectional study included 111 (M: 41 & F: 70) Indian obese adults and was conducted at Integral Health Clinic, Dept. of Physiology, AIIMS, New Delhi. We evaluated anthropometric

parameters, blood glucose, serum 25(OH) D, insulin, PTH and HOMA IR. Blood samples were collected in the morning after overnight fasting. Statistical analyses were done using GraphPad Prism 5. **Results:** Mean age and BMI of subjects were 33.96 ± 6.3 yrs & 32.52 ± 1.98 kg/m². In this study 90.9% of the subjects were vitamin D deficient (<20 ng/mL) and 9.1% were vitamin D insufficient (20-29.9 ng/mL) with mean serum 25(OH) D (10.55 ± 6.04 ng/mL) and PTH (67.58 ± 56.08 pg/mL) respectively. Serum 25(OH) D levels showed significant negative correlation with HOMA-IR and positive correlation with HOMA-S ($r = -0.202$ $P = 0.033$, $r = 0.197$ $P = 0.037$). Significant positive correlation ($r = 0.189$ $P = 0.047$) was also observed between PTH levels and HOMA-IR. **Conclusion:** These results suggest that both vitamin D and PTH might play possible role in the development of Insulin resistance and lower vitamin D might be an important risk factor for development of metabolic disorders in Indian obese individuals.

Keywords: Insulin resistance, obesity, parathyroid hormone, vitamin D deficiency

Vascular complications as presenting manifestation of thyrotoxicosis

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Introduction: Incidence of vascular complications as initial manifestation is less than 1 %. We report 2 cases of hyperthyroidism which presented to Emergency department. **Case 1:** A 35 year old male presented with sudden onset of headache, altered sensorium and left hemiplegia. History of increased appetite, hyperdefecation, excessive sweating and weight loss since 6 months. On examination, patient is emaciated, multinodular goiter and proptosis is seen. Patient had hyperpyrexia, tachycardia and high BP. The calculated Burch-Wartofsky-Score was 105 which is suggestive of thyroid storm. Thyroid profile is in thyrotoxic range (FT3 16 pg/ml, FT4 >5.96 ng/dl, TSH 0.14 mIU/L), Anti TPO positive. MRV showed thrombosis

of deep cerebral veins. Factor VIII activity was increased. Protein-C, protein-S, Factor V Leiden mutation and homocysteine were normal. So, this as a case of Cerebral Venous Thrombosis secondary to transient hypercoagulable state due to thyrotoxicosis. Thyroid storm was managed and recovered well. **Case 2:** A 62 old female presented with typical anginal pain. ECG showed anterior wall ischemic changes, 2D echo showed anterior wall hypokinesia, and biomarkers are elevated. History of weight loss, hyperphagia and palpitations since 3 months. Examination showed left STN. TFT was done which was shown to be in thyrotoxic range (FT3- 17 pg/ml, FT4- 5.39 ng/dl, TSH- 0.02 mIU/l). Coronary angiogram was done which showed mild CAD in LAD territory. This is a case of coronary vasospasm due to thyrotoxicosis. **Conclusion:** In cases of acute vascular events, thyrotoxicosis should be kept in mind and should be evaluated.

Keywords: Thrombosis, thyrotoxicosis, vasospasm

Acknowledgement

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Rare case of Conradi-Hünermann-Happle syndrome

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Introduction: Conradi-Hünermann-Happle syndrome (CHH syndrome) is very rare cause of short stature. Annual incidence of CHH syndrome has been estimated to be at least 1/400,000 births. We report such a very rare case. **Case Report:** A 18 year old female with short stature, admitted for implanted nail replacement. She is born to a non consanguineous parents, had generalized ichthyosis of skin from birth, bilateral congenital cataract which were operated at age of 3 years with IOL implantation, short stature and difficulty in walking. History of genu valgum was present for which corrective

ostotomy and nail implantation was done at age of 10 years, after which she is able to walk properly. No history of fracture is present. On examination patient had disproportionate short stature with preferential shortening of humerus and femur, scoliosis, mid facial hypoplasia, depressed nasal bridge, bilateral IOL, alopecia, hyperpigmented thick dry scaly skin. Past x-rays showed epiphyseal stippling, scoliosis of spine and platyspondyly of vertebrae. She had normal intelligence and regular menstrual cycles. Hormonal evaluation was done to rule out other causes of short stature and found to be normal. **Conclusion:** In disproportionate causes of short stature having specific stigmata, this CHH syndrome should be kept in differential diagnosis.

Keywords: CHH syndrome, epiphyseal stippling, short stature

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Delayed endocrine complications of neonatal meningitis

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Introduction: Endocrine complications of neonatal meningitis is rare. We report such 2 varied presentations, one presenting as precocious puberty and other as delayed puberty. **Case 1:** A 7 years girl presented with premature menarche. She had thelarche and pubarche from 6 months with no growth spurt. Patient had a history of neonatal meningitis with obstructive hydrocephalus. On examination her height is 132 cm which is 50 centiles above the MPH in growth chart. SMR is B2A1P3. Her bone age corresponds to 12 years. Hormonal evaluation

showed basal LH is 12.41 mIU/ml, FSH is 5.50 mIU/ml, Estradiol is 143 pg/ml. Thyroid function tests are normal. As the base line LH levels are high, the diagnosis of gonadotrophin dependent precocious puberty is made. CT brain showed normal sella and dilated ventricles and VP shunt insitu. She is started on GnRH analogue luperolide monthly injection and responded well. **Case 2:** A 15 years old boy presented with short stature and global developmental delay. He was born to non consanguineous parents, developed meningitis at age of 20 days and seizures on and off till 7 years. On examination found to had height -7 SD and no other dysmorphic features. Stimulated growth hormone is less than 1 ng/ml, Serum cortisol is 4.7 µg/dl, remaining other pituitary hormones are normal. CT sella showed partial empty sella. This is a case of combined pituitary hormone deficiency, a neonatal meningitis post sequela. **Conclusion:** Children with a history of neonatal meningitis should be closely followed for complications in growth.

Keywords: Neonatal meningitis, puberty

Atypical features of idiopathic tumoral calcinosis: An experience from JIPMER

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Objective of Study: To evaluate the clinical features, radio-imaging, bone scan and biochemical parameters and efficacy of bisphosphonate in patients with idiopathic tumoral calcinosis. **Materials and Methods:** We retrospectively studied the 7 cases (3 males and 4 females) of idiopathic tumoral calcinosis over past 5 years. Clinical features, radio imaging, bone scan and biochemical parameters like serum calcium, phosphorus, TMP/GFR, intact PTH, 1, 25(OH) vit D and C-terminal FGF-23 were assessed. Three patients received the bisphosphonate and followed up over 1 to 4 years. **Results:** Median age of patients was 21 (5 to 47) years and common site of

lesion were near the hip, elbow and shoulder joints. Five patients had hyperphosphatemic (mean serum phosphorus, 6 ± 0.75 mg/dl) and two, normophosphatemic (mean serum phosphorus 3.5 mg/dl) tumoral calcinosis. In hyperphosphatemic, three patients had low serum intact PTH (mean 6.9 ± 1.9 pg/ml) with high levels of C-terminal FGF-23 [median 2620 (582 to 5361 RU/ml)] and normal 1, 25(OH) vit D (mean, 28.9 ± 5.3 pg/ml) and calcium (mean 9.3 ± 0.2 mg/dl). One patient had increased tracer uptake in the right thyroid cartilage on Tc-99m MDP bone scan. Two patients with recurrent tumour following surgery and one patient with multifocal lesion received bisphosphonate. On follow-up there was decrease in size of lesion in one patient while in other two patients lesions were increased. **Conclusions:** Unusually low intact PTH in three patients, increased tracer uptake in right thyroid cartilage on bone scan in one patient and near complete response to bisphosphonate in one patient are the atypical features in our series of patients with idiopathic tumoral calcinosis.

Keywords: Bisphosphonate, idiopathic tumoral calcinosis, parathyroid hormone

Post-partum hypocalcemia secondary to hypoparathyroidism during early lactation: A case report

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Calcium homeostasis during pregnancy and post-partum is an essential phenomenon to adequately favor calcium flux across the placenta during pregnancy and into breast milk in lactation. This ensures normal fetal and neonatal skeletal mineralisation. Any depletion in this, can progress to hypocalcemia. The exact cause and mechanism is not yet clear, but treating this condition is vital to avoid any complications. **Case Study:** A 24 year old female patient was received in OPD, 4 months post-partum with complaints of parasthesia, carpopedal-spasm and dyspnea. On examination, serum calcium-5.6 mg/dl (8.5-10.5 mg/dl) was unusually low; and serum phosphorous-5.4 mg/dl (2.5-4.8 mg/dl) was elevated, confirming

severe symptomatic hypocalcemia, during early lactation. Hence, further investigation was warranted to identify exact cause. **Results:** The patient was evaluated and results revealed intact PTH-15.6 pg/ml (10-65 pg/ml) levels although inadequate for the degree of hypocalcemia. The vitamin D-46.1 ng/ml (21-100 ng/ml) levels were within the limits. This confirms postpartum hypoparathyroidism associated hypocalcemia with adequate vitamin D reserve in this patient. **Conclusion:** Pregnancy and lactation exert excessive strain on calcium requirements of the mother. Sub-clinical pathological calcium metabolism disorders in pregnant and lactating women are on a rise. This can be linked to over expression of PTHrP (Para-Thyroid Hormone receptor Proteins) in amniotic and breast tissue, during pregnancy and lactation, following which the levels of PTHrP drop drastically causing hypocalcemia with hypoparathyroidism. So, the risk of hypocalcemia peaks following labour, during early lactation and cessation of lactation. Thus, a step-wise endocrinological investigation, follow-up and work-out are key factors in such cases to prevent associated complications.

Keywords: A case report, early lactation, hypocalcemia, hypoparathyroidism

Nesidioblastosis a rare onset in adults: Case report

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Nesidioblastosis is a medical term which describes the pathological hyperplasia of primary islet cell, which refers mainly to beta cell pancreatic dysfunction and causes hyperinsulinemic hypoglycemia. Nesidioblastosis has been commonly associated with children and its incidence being mostly sporadic in adults. **Case Study:** A 39-year-old male patient was admitted with complaints of tiredness, giddiness, hunger & sweating. He was a known case of seizure disorder. On outpatient examination his BP- 130/80 mmHg and RBS – 48 mg/dL. His blood glucose levels were suggestive of hypoglycemia indicating further investigation. **Results:** The patient was admitted and a continuous glucose monitoring with Freestyle Libre was performed which indicated a serious decrease in blood sugars as low

as 26 mg/dL. Urine screening for Sulphonylureas was negative. The serum levels of insulin – 56.26 mU/L (3.00 – 25.00) and C-peptide – 3.79 ng/mL (0.81 – 3.85) were as follows. Anti-Insulin antibodies were negative. He was further thoroughly investigated including endoscopic USG to locate insulin secreting tumor, in the meantime, DOTA EXENDIN PET suggested a diffusely increased Ga68 uptake in the pancreas, is of concern for diffuse nesidioblastosis. **Conclusion:** Radiological DOTA PET studies aided in differentiating Noninsulinoma pancreateogenous hypoglycemia from Insulinoma. The majority of hypoglycemic spells are caused by insulinoma and 5% are caused by noninsulinoma hypoglycemic syndrome which is also referred to as nesidioblastosis. The mutations associated with GLUD1, GCK, SLC16A1 are commonly associated with children and some of the milder mutations of ABCC8 and KCNJ11 may escape recognition in infancy and first be discovered to have hypoglycemia as adults. Thus the pancreatic cells undergo morphological changes resulting in the formation of a set of new cells that intervene with the adjacent acinar parenchyma. This case highlights the evolving incidence of Adult Onset Nesidioblastosis.

Keywords: DOTA EXENDIN PET, hyperinsulinemic hypoglycemia, nesidioblastosis

Precocious puberty associated with Mc-Cune Albright syndrome: A case report

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Background: Precocious puberty in girls is defined as attainment of any sign of secondary sexual characters before the age of 8 years. Precocious puberty in case of McCune Albright Syndrome is gonadotropin independent due to autonomously functioning follicular cysts of the ovary. It is classically characterized by cafe-au-lait spots, polyostotic fibrous dysplasia and precocious puberty. **Case:** A 6 year 3 months old female child brought with history of acyclical vaginal bleeding and breast development since 2 years. H/O pain and limp in the right hip since 3 years. No H/O fractures, bony deformities. H/O pigmented macules over body since birth. No history of growth spurt, axillary & pubic hair development. General examination showed café au lait macules with irregular borders involving the right side of the body. Limb length discrepancy was noted, with a short right lower limb. Height:

110 cm (10-25th centile) weight: 16 kg (10-25th centile) and SMR: B3 A1 P1. Vital data and systemic examination were normal. Base line investigations including thyroid functions and calcium profile were within normal limits. Bone age was 9 years. FSH&LH <0.3 mIU/ml (pre pubertal FSH & LH). Serum estradiol: 110 pg/ml. Right ovary had a cyst measuring 16 × 14 mm. Uterine size was 35 × 11 × 17 mm. Bone scan showed polyostotic fibrous dysplasia. **Discussion:** A diagnosis of McCune Albright Syndrome was made. Child was started on letrozole at a dose of 2 mg/m² to ameliorate the effects of estrogen. Child was started on cyclical pamidronate therapy along with calcium and vitamin D for relief of hip pain. Follow up at the end of 4 months, no further vaginal bleeding or progression of breast development. Estradiol at follow up was 12 pg/ml. Uterine measurements and cyst size remained unaltered. She responded to letrozole therapy without any adverse effects. Pain in the hip reduced in severity and there was improvement in walking distance. **Conclusion:** Prompt recognition and treatment of sexual precocity is important for the prevention of emotional disorders in the child and alleviation of parental anxiety; promotion of understanding by early sex education, and preventing sexual abuse.

Keywords: McCune Albright syndrome, precocious puberty

Effect of metformin therapy on TSH levels in women with PCOS

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Aim of the Study: To evaluate the effect of metformin therapy on TSH levels in PCOS patients who are euthyroid with or without treatment. **Materials and Methods:** The study included all PCOS (Polycystic ovarian syndrome) patients of the reproductive age group. Polycystic ovarian syndrome was diagnosed according to Rotterdam criteria. Polycystic ovarian syndrome patients were divided in to two groups. The first group was on life style modification and metformin therapy (group-I) while second group was on life style modification alone (group-II). In both groups of patients, TSH levels were done at baseline and after 3 months of follow up. **Results:** A total of 61

patients with PCOS who were euthyroid were randomly assigned to group-I ($n = 33$) and group-II ($n = 28$). Baseline BMI between two groups was not significant ((27.52 ± 3.58) (group-I) vs. 28.07 ± 4.22 (group-II); $P = 0.58$). Among group-I nine subjects and among group-II eleven subjects were followed up over three months. Mean TSH levels between group-I and group-II were not significant at baseline (2.345 ± 0.90 vs. 2.530 ± 0.90 ; $P = 0.48$). The TSH levels in group-I at baseline and after three months of follow up showed a trend towards significance (0.357 ± 0.512 ; $P = 0.069$) but mean difference of TSH levels in group-II at baseline and after three months were not significant (0.322 ± 0.739 ; $P = 0.18$). The difference in the TSH levels between both groups after three months was also not found to be significant ($P = 0.94$). **Conclusion:** The euthyroid patients with PCOS who were started on metformin therapy showed a change in the TSH levels at follow up which showed a trend towards significance.

Keywords: Metformin, Polycystic ovarian syndrome, thyroid stimulating hormone

Assessment of glycemic status in patients with acute ischemic stroke

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Aim and Objective: To assess the glycemic status in patients with acute ischemic stroke after oral glucose tolerance test (OGTT).
Materials and Methods: Forty patients presenting within 24 hours with CT/MRI findings of acute ischemic stroke were recruited. A detailed history and physical examination was done at presentation and the National Institute of Health Stroke Scale (NIHSS) was calculated. RBS was recorded at presentation and subsequently OGTT was performed at 4th day, between days 7-10 and at 1 month. According to the results patients were classified as normoglycemic, with impaired glycemic status (IFG/IGT) or as having diabetes

mellitus. **Results:** Out of the 40 patients, 52.5% were males and 47.5% were females. The age of the subjects ranged from 26 to 90 years. Regarding the final glycemic status of our patients, 18 (45%) were found to have normoglycemia, 11 (27.5%) had IFG/IGT and 11 (27.5%) were found to have diabetes mellitus. The phenomenon of stress hyperglycemia (improvement in OGTT from 4th day to 7th-10th day) was seen in 10 (25%) patients. **Conclusions:** Given the high prevalence of hyperglycemia detected, all patients of acute ischemic stroke should be screened by OGTT, a simple and inexpensive test. Also, since stress induced hyperglycemia usually settles down within the first week of the acute illness, OGTT should be performed at least 7 days after the acute event, to give a more accurate assessment of the patient's glycemic status. If any glycemic abnormality is found, it should be managed appropriately as uncontrolled hyperglycemia has been shown to increase the morbidity and mortality in these patients, leading to a poor prognosis.

Keywords: Hyperglycemia, oral glucose tolerance test, stress hyperglycemia, stroke

Thyroid nodule scoring: Can it help triage management of thyroid nodules?

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There is no isolated sonographic feature capable of predicting malignancy in thyroid nodules with a 100% diagnostic accuracy. The results of the sonography and nodule cytology is currently used to guide the management of thyroid nodules in most cases. The limitations of the sonography and cytology have led to a continuing search for additional characteristics like elastography, gene-analysis that can be used to predict malignancy. We aimed to predict risk of malignancy in thyroid nodule preoperatively using combination of sonographic and FNAC features of thyroid nodule which was confirmed by final histopathology and derive a thyroid nodule score using clinical profile of patient, FNAC Bethesda score and Sonographic features of thyroid nodule to predict malignancy pre-operatively. A total of 52 nodules from 45 patients (31 females - 60%) with age range from 21-74 years (mean 42 (SD: 14 years)). Out of the 52 nodules that were removed surgically, 73% were malignant (n = 38) and 27% were benign (n = 14) on histopathological examination. The mean size of the nodule was 2.7 cm (SD 1.9), mean TSH among the cohort was 2.02 mIU/L (SD 1.62). Most of the malignant nodules on sonography were predominantly solid, having intra-nodular flow (3/4 vascular flow), having ill defined margins, lacked halo and were hypo-echoic in echogenicity. A thyroid nodule score (1-45) that was derived from the clinical, sonographic and bethesda system was used to delineate benign versus malignant histology [Table 1]. A cut off >8 in our study has 76% sensitivity, 100% specificity with for predicting malignancy [Figure 1]. A sub-analysis of the scoring with respect of different types of differentiated thyroid cancer is shown in Table 2. The strengths of the current study was that it was a prospective study with single person reviewing sonographic & cytology data. However the decision to operate was not based on thyroid nodule score. Our score needs validation with more numbers in setting of indeterminate cytology (Bethesda 3). The proposed thyroid nodule score greater than 8 is able to predict thyroid cancers with

a very high specificity. It may be used in patients with indeterminate cytology (particularly Bethesda 4) to triage management.

Keywords: Malignancy, score, thyroid nodule

Table 1: Narayana health thyroid nodule scoring

Criteria	Score	Source
Age: > 45 years or <20 years	1	McGill TNS
Gender: Male	1	McGill TNS
Hypothyroid	1	McGill TNS
Hyperthyroid	1	NH
Diabetes	1	NH
History of cancer	1	NH
History of thyroid cancer	2	NH
Radiation exposure	3	McGill TNS
Hoarseness of voice	3	NH
Dysphagia	3	NH
Family history of thyroid cancer	3	McGill TNS
Clinically palpable nodule	1	McGill TNS
Palpable lymph nodes (L 4, 5, 6)	2	NH
TSH >1.5 mIU/ml	1	McGill TNS
Solitary nodule (only 1 nodule)	1	NH
MNG (>1 nodule >1 cm)	1	NH
USG size >4 cm	1	McGill TNS
Taller than wider	1	TIRADS/McGill TNS
Hypoechoic	1	TIRADS/McGill TNS
Lack of Halo	1	TIRADS/McGill TNS
Microcalcification	2	TIRADS/McGill TNS
Macrocalcification	1	TIRADS/McGill TNS
Suspicious lymph node - yes	3	McGill TNS
>20% increase in size in 6 months	2	McGill TNS
PET-CT positive	3	McGill TNS
Bethesda score (2-6 only)	2-6	NH
Total score maximum possible is 45		

PET-CT: Positron emission tomography-computed tomography, USG: Ultrasound, MNG: Multinodular goiter, TSH: Thyroid stimulating hormone

Table 2: Thyroid nodule score in the various categories of differentiated thyroid cancer and the score in the Bethesda categories 3 and 4

Pathology	Numbers	Thyroid nodule score (mean)	Thyroid nodule score (range)
PTC (classic)	19	13.3	8-20
PTC (FV)	4	9.75	9-11
PTC (tall cell)	2	13.5	11-16
FTC (min Inv)	10	7.2	4-11
FTC (Hurthle)	2	10.5	7-14
Benign nodules	14	5.6	3-8
Bethesda 3 (M)	5	7.2	4-10
Bethesda 3 (B)	2	8	8
Bethesda 4 (M)	10	8.4	4-14
Bethesda 4 (B)	3	6.6	5-8

M: Final histopathology: malignancy, B: Final histopathology: Benign, PTC: Papillary thyroid carcinoma, FTC: Follicular thyroid carcinoma

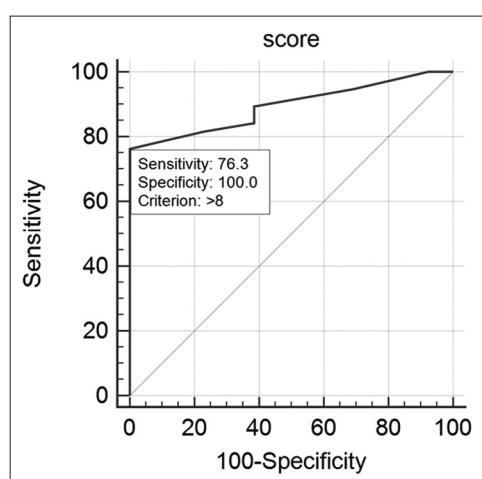


Figure 1: Receive operative characteristic curve on the thyroid nodule score

The prevalence of new onset diabetes mellitus after renal transplant in patients with immediate post-transplant hyperglycemia in a tertiary care centre

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Objectives: This study aimed to review the prevalence of New Onset Diabetes after renal transplant (NODAT) and the prevalence of immediate post-transplant hyperglycemia. It also aims at answering whether post-transplant hyperglycemia per se is a risk factor for NODAT. **Materials and Methods:** A retrospective study was conducted by reviewing the records of patients undergoing kidney transplantation under a single surgical unit in a tertiary care hospital in the last 5 years. All known people with diabetes were excluded from the study. Immediate post-operative hyperglycemia was

defined as random blood sugar (RBS) >200 mg/dl or requirement of insulin while the patient was off dextrose containing fluid infusions (usually from 4th post-operative day). NODAT was defined as fasting glucose >126 mg/dl or RBS >200 mg/dl or if the patient is receiving therapy at 6 weeks or 3 months. **Results:** The study population included 191 patients. The overall prevalence of NODAT and post-transplant hyperglycemia was 26.7% and 31.4% respectively. NODAT developed in 28 patients (46.7%) of those who had post-transplant hyperglycemia. Thus, post-transplant hyperglycemia was associated with a four-fold increase in risk of NODAT ($P=0.000$). Post-transplant hyperglycemia was associated with increased infections ($P=0.04$) and prolonged hospital stay ($P=0.0001$). Increased age was a significant risk factor for NODAT ($P=0.000$); while gender, acute rejection, cadaveric kidney, HCV status, high calcineurin levels, HLA mismatch, and tacrolimus dose were not significant. **Conclusion:** Post transplant hyperglycemia is associated with a significant risk of NODAT, hence it is prudent to follow up these patients more diligently in a resource limited setting wherein monitoring in all patients is cumbersome.

Keywords: New onset diabetes after renal transplant, post-transplant hyperglycemia, risk factors

Characteristics of patients treated with teneligliptin: A cross-sectional multicenter study in India

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Background and Objective: Teneligliptin, the latest gliptin launched has become the most prescribed gliptin in India within short period of one year. Current data audit was planned to understand the characteristics of T2DM patients' prescribed with teneligliptin across India in real life clinical setting. **Materials and Methods:** Data of patients who were on teneligliptin was collected from prescribing physicians in a proforma. Information on demographic details, concomitant medications, comorbid conditions and glycemic

parameters like HbA1c, fasting and post prandial glucose (FPG and PPG) levels was collected. Descriptive statistical analysis was done to study the results. **Results:** Total 10932 patients' data was analyzed. The mean age of entire population was 50.3 years with 58% of them being males. Teneligliptin was found to be used most commonly (32%) as triple drug combination with metformin and sulfonylurea followed by dual combination with metformin (22%). Moreover, 14% of patients were receiving teneligliptin as monotherapy, 10% were receiving teneligliptin in combination with insulin with or without other oral anti-diabetic drugs. At the time of starting teneligliptin, the mean HbA1c, FPG and PPG levels were 8.5%, 180.6 mg/dl and 260.6 mg/dl respectively. Hypertension (48%) and dyslipidemia (33%) were the most common co-morbid conditions with similar proportion of patients on anti-hypertensive (40%) and statin therapy (35%). **Conclusion:** This analysis shows that teneligliptin is prescribed in wide range of diabetic patient population in India & is being used most commonly as add on to ongoing antidiabetic treatment.

Keywords: Antidiabetes, India, T2DM, teneligliptin

Perioperative glycemic management of patients with type 2 diabetes mellitus undergoing cardiac transplantation

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Objective: Glycemic control in patients undergoing cardiac transplantation has not been extensively studied. The control of glycemia during cardiac transplantation poses specific challenges as these patients require very high dose of steroids during the procedure. We are presenting here our experience of managing glycemia in patients of type 2 Diabetes Mellitus undergoing cardiac transplantation. **Methods:** We present here our experience of management of perioperative glycemia in three cases of type 2 Diabetes Mellitus undergoing cardiac transplantation. **Results:** A total of 3 cases with type 2 Diabetes Mellitus with a mean \pm SD

age of 54 ± 8.19 years underwent cardiac transplantation at our tertiary care centre, two of them being males. Preoperatively, their HbA1c ranged from 8.6% to 11.0% (mean \pm SD = 9.23 ± 1.57). In the period two weeks preceding surgery, plasma glucose levels were maintained in the range of 120-180 mg/dL. The creatinine clearance of the patients were 68.94 mL/min, 58.08 mL/min and 46.42 mL/min. The mean insulin requirement per kg body weight on postoperative days 0,1 and 2 were 3.96 ± 3.03 U/kg, 3.64 ± 4.35 U/kg and 1.03 ± 0.45 U/kg respectively. The mean insulin requirement at the time of discharge was 1.1 ± 0.54 u/kg. All three patients underwent successful cardiac transplantation and are in follow up with good glycemic control without any complications.

Conclusion: Perioperative glycemic control is very essential for successful cardiac transplantation in patients with type 2 Diabetes Mellitus. These patients need good glycemic control immediately prior to surgery, for a better outcome.

Keywords: Cardiac transplantation, glycemic management, perioperative

Assessment of Toll like receptor-4 polymorphism in urinary tract infection in type 2 diabetes mellitus

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Objectives: Urinary tract infection (UTI) remains a significant concern in diabetic patients due to associated morbidity and mortality. The innate immune response against UTI is controlled by the Toll like receptors (TLRs) expressed on urinary bladder epithelium. Previous studies in non diabetic patients showed that TLR4 mutations increase susceptibility to UTIs. The present study evaluated the association of single nucleotide polymorphisms (SNPs) of TLR4. A (896) G (corresponding to an Asp299Gly substitution mutation; SNP ID: rs 4986790) and TLR4 C (1196) T (corresponding to a Thr399Ile

substitution mutation; SNP ID: rs 4986791) with risk of UTIs in the patients of type 2 diabetes mellitus. **Materials and Methods:** A total 446 type 2 diabetic patients (224 with UTI and 222 without infection) and 270 healthy control subjects were examined for TLR4 A(896)G and C(1196)T polymorphisms by means of polymerase chain reaction and restriction fragment-length polymorphism. **Results:** In diabetic UTI patients TLR4 896AG genotype and TLR4 896G allele has higher prevalence than healthy control. [896AG versus control p = 0.0004 (OR 2.1 95% CI 1.428-3.312), 896G P = 0.005 (OR 2.5 95% CI 1.173-2.24)]. TLR4 1196CT genotype and 1196T allele has also higher prevalence than control. [1196CT versus control P = 0.0001 (OR 2.5 95% CI 1.618-3.826), 1196T P = 0.0001 (OR 2.16 95% CI 1.472-3.173)]. No statistically significance correlation was detected in between control and diabetic patients without infection [OR 0.9 P=0.75]. **Conclusion:** TLR4 A(896)G and C(1196)T polymorphisms are associated with the development of UTI in type 2 diabetes.

Keywords: Toll like receptor 4, type 2 diabetes mellitus, urinary tract infection

Profile of thyroiditis in Bengaluru

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Aims of the Study: The present study was a prospective study done over a period of six months to study demographic, clinical and scan profile of patients with thyroiditis from two nuclear medicine centres at Bengaluru. **Methods:** The prospective data was collected from two nuclear medicine centres at Bengaluru where the referral was for a probable diagnosis of thyroiditis and the scan findings confirmed absent or poor uptake on Technetium 99m pertechnetate (Tc99m) scan. **Results:** The total number of patients were 215 with a mean age of 38.18 ± 12.12 years which included 138 females (64.2%) and 77

males (35.8%). The maximum number of referrals were from urban areas (96.3%, N = 207). The presentation with fever was seen in 21.4% cases (N = 46). Neck pain was the presenting complaint in 41.4% (N = 89) patients. Previous history suggestive of thyrotoxicosis was present in 2.8% (N = 6) cases. The maximum patients were from the middle socioeconomic strata (64.3%, N = 137). The TC99m scan showed an absent uptake (0%) in 10.2 % patients while it showed decreased or poor uptake (<0.3%) in 89.8% patients. None of the patients who had been referred for the scan had complaints of ophthalmopathy. **Conclusions:** The thyroiditis was more common in females at a comparatively younger age as compared to what has been reported in other studies. It was predominant in the urban population mostly belonging to middle socioeconomic strata with neck pain being the common complaint.

Keywords: Scan, technetium 99m pertechnetate, thyroiditis

Difference in systolic blood pressure between arms is a novel risk marker for diabetic nephropathy in patients with Type 2 diabetes

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Aim: To study the relationship between a difference in systolic blood pressure (SBP) between arms and the degree of albuminuria in type 2 diabetes mellitus patients. **Methods:** Blood pressure in the arms of 300 patients with Type 2 diabetes coming in endocrinology OPD were recorded and difference in SBP between arms was calculated. Difference of more than 10 mmHg was considered as significant. Relationship of the difference in SBP between arms to the degree of urinary albumin excretion (UAE) was evaluated.

Timed urinary samples were collected. Nephropathy was graded as follows: Normoalbuminuria <20 µg/minute; microalbuminuria, 20–200 µg/min. Patients with advanced renal dysfunction (defined as Serum Cr >2mg/dl) were excluded. **Results:** The average difference in SBP >10 mmHg between arms were present in 46 patients out of 300 (15.3%). While microalbuminuria was seen in 62 (20.7%) patients. Mean fasting plasma glucose and post prandial plasma glucose was 143.2 ± 38.2 and 205.12 ± 55.9 mg/dl respectively. Difference in SBP between arms was significantly associated with prevalence of microalbuminuria ($P = 0.017$), ECG changes ($P < 0.01$), glycemic control ($P = 0.042$) and prevalence of retinopathy ($P = 0.02$). However difference in SBP as well as microalbuminuria was not significantly associated with duration of diabetes, type of diabetic treatment (Insulin vs. oral hypoglycemic agents) or hypothyroidism. **Conclusion:** A difference in SBP between arms can be a novel risk marker for diabetic nephropathy in patients with Type 2 diabetes.

Keywords: Inter arm, microalbuminuria, nephropathy, systolic blood pressure

Testicular mass presenting with central precocious puberty: A rare case report

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Leydig cell tumors (LCT) of testis are very rare tumors accounting for 1-3% of the total testicular tumors. Although testicular mass is the presenting feature in most of the cases rarely these patients can have other symptoms due to tumor ability to secrete a variety of hormones such as testosterone, estrogen and corticosteroids. We report a 8 year old boy presented with precocious puberty, on examination found to have a right testicular mass of 25 ml while left testicular size was 2 ml. Penile length was 11 cm. Biochemical parameters showed high testosterone (10.09 ng/ml) with normal LH & FSH (0.8 µIU/ml & 0.04

µIU/ml respectively). Bone age was advanced (14 years). Orchiectomy was done and histopathology report showed LCT. Clinical and biochemical features regressed following surgery. However after 4 months of surgery, size of left testis increased to 6 c.c. Biochemical parameters showed increase in testosterone accompanied by increase in FSH, LH. GnRH stimulation test showed LH to be 26.35 µIU/ml, 29.98 µIU/ml, 35.29 µIU/ml while FSH was 15.47 µIU/ml, 17.12 µIU/ml, 21.89 µIU/ml at 30, 60, 90 minutes respectively showing premature activation of hypothalamus-pituitary-gonadal axis. CT brain was normal. Patient started on GnRH analog Leuproide monthly depot and is on regular follow up with regression of biochemical features and arrest of testicular size. Although rarely reported in literature, androgen producing tumors can cause premature activation of HPG axis if left untreated for long time. Therefore possibility of central precocious puberty should be kept in mind in these cases.

Keywords: Central precocious puberty, leydig cell tumor, peripheral precocious puberty, testicular mass

Hypothyroidism presenting as status epilepticus-hashimotos encephalitis

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A 32 year old lady with known hypothyroidism for 10 years on regular levothyroxine supplements was admitted with history of high grade fever and continuous headache for 1 week duration and history of fall and loss of consciousness. On admission she had 3 recurrent episodes of GTCS. On examination, she was drowsy but arousable and had normal vitals and systemic examination was normal. She was managed in ICU with IV antiepileptics and supportive care, meanwhile screened for infective and vasculitic causes which were normal. Chest imaging showed mild pleural effusion. MRI brain and CSF analysis for meningitis screen, HSV and MTB PCR, were negative. EEG showed bilateral diffuse dysfunction with epileptiform activity. Vasculitic workup was negative. Blood, urine and CSF cultures were sterile. Malarial, dengue and leptospira and toxicology screen

were negative. She developed status epilepticus and had persistent altered sensorium and was not responsive to multiple antiepileptic combinations. Serum CPK levels were elevated. Serum electrolytes were normal. Thyroid profile showed high normal TSH and normal ft4, ft3 and positive for anti TPO antibodies, consistent with hashimotos thyroiditis. Patient was started on IV methylprednisolone after which she began to improve gradually and supportive and rehabilitative care was continued and steroid dose was tapered off. Serum and CSF analysis for autoimmune encephalitis profile was negative for other autoimmune conditions. She was discharged on low dose oral steroids and combination antiepileptic regimen. During follow up FDG PET brain scan was done which showed relative hypometabolism in occipital, parietal and temporal lobes consistent with hashimotos encephalitis. She is doing well on low dose oral steroids and triple drug antiepileptic regimen and is under follow up. **Conclusion:** This is a rare presentation of hypothyroidism with status epilepticus diagnostically proven Hashimotos encephalitis, a steroid responsive condition.

Keywords: Hashimotos encephalitis, hypothyroidism, status epilepticus

Dunbar's syndrome – A rare cause of pain abdomen in Type 1 diabetes mellitus: A case report

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Introduction: The median arcuate ligament is a fibrous arch that unites the diaphragmatic crura on either side of the aortic hiatus. In 10-24% of the population it can cause compression of celiac axis, resulting in mesenteric ischemia presenting with post prandial pain abdomen, nausea, vomiting and weight loss. We report a case of Median Arcuate Ligament Syndrome (MALS) in a Type 1 Diabetic patient who presented with acute abdomen. **Case Report:** A 24 years old female patient, known type 1 diabetic of 10 years duration

presented with intractable nausea & vomiting. She had a history of 1 year duration of intermittent abdominal pain and 8 kg weight loss USG abdomen was remarkable for multiple gall stones collectively measuring 2.5 cm with no e/o cholecystitis or e/o biliary obstruction, pancreas was normal. Her liver and renal function tests were normal. S. Amylase was marginally elevated-204 units /L (25-115) with normal lipase- 64 units /L. Erect X-ray abdomen & chest X ray were normal. CECT abdomen revealed narrowing of the origin of celiac axis (with upward fish hook like configuration distally). Coeliac axis Doppler was not suggestive of MALS. A selective angiography & resection of MAL was planned. **Conclusion:** Mesenteric ischemia and MALS is a rare cause of abdominal pain. A diabetic patient presenting with acute upper abdominal pain will have DKA, pancreatitis, cholecystitis and MI in the differential diagnosis as a top priority. When these are ruled out as in our patient and if a chronic suggestive history is elicited MALS should be suspected.

Key words: Diabetic ketoacidosis, ischemia, mesenteric vascular disease, weight loss

A rare case of near total pancreatic lipomatosis with steatorrhea

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Introduction: Lipomatosis or fat replacement of the pancreas is the most frequent benign pathologic conditions of the adult pancreas. Most cases are asymptomatic and only some rare extreme degrees of lipomatosis lead to exocrine pancreatic insufficiency. We present a case of total pancreatic lipomatosis with steatorrhea. **Case Report:** A 50 year old female patient who is a known case of diabetes mellitus since 8 months on OHAs came with complaints of abdominal discomfort, decreased appetite, loose stools (3-4 episodes/day) with steatorrhea since 1 year. History of weight loss of 3-4 kgs

present since 2 months. There was no history of jaundice/pruritus / pale stools or any signs suggestive of pancreatitis/pancreatic cancer. Physical examination revealed pallor, grade 1 acanthosis and pitting oedema of bilateral lower limbs. Cardiovascular and respiratory system examination revealed no abnormality. Routine blood tests and renal function tests were normal. Liver function tests were also found to be normal. Ultrasound abdomen was done which revealed diffusely enlarged pancreas with hyperechoic echotexture. Computed tomography revealed near total fatty replacement of head, body and tail of the pancreas (attenuation value = -80 to -85 HU), and only a thin pancreatic parenchyma was seen. There was no calculus or dilatation of intrahepatic biliary radicals or common bile duct. Based on these findings, the diagnosis of diffuse pancreatic lipomatosis leading to steatorrhea was made. **Conclusion:** Despite the rarity of fatty replacement of the pancreas, clinicians must always exclude pancreatic lipomatosis in evaluation of cases of malabsorption. CT can reliably exclude the disease.

Keywords: Pancreas, pancreatic lipomatosis, steatorrhea

A case of clivus tumour with hyperprolactinemia

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Introduction: A tumoral mass at the clivus is uncommon and its differential diagnosis presents a challenge, since many different tumours may result in a similar radiological image. A chordoma is the most common of these tumours and represents 40% of all cases. Less common are meningiomas, astrocytoma, germinal cell tumours, lymphoma, metastases and rarely pituitary adenoma. We present a case of clivus tumour found to have hyperprolactinemia.

Case Report: A 48 year old male patient who is a known case of cervical disc prolapse came with complaints of headache since 2

months, localised in the right temporo - occipital region without any visual disturbances or vomitings. General physical examination as well as neurological examination were unremarkable. MRI brain was done which showed a well defined hypointense mass lesion involving the clivus, superiorly invading the sella, elevating the pituitary with parasellar extension and encasement of the left carotid. On biochemical investigation serum prolactin was found to be 2613.77 ng/ml, free T4 – 0.67, TSH – 1.14, serum cortisol – 150.1 nmol/L and serum testosterone – 0.53 ng/ml. He was started on Tab. Cabergoline 0.5mg twice weekly along with thyroxine and steroid replacement. On follow up, his prolactin came down to 8.36 ng/ml. **Conclusion:** Care should be taken while evaluating clival tumours, as ectopic pituitary adenomas, through extremely rare, are a possibility. These cases require a complete endocrinological workup preoperatively as the majority may respond to medical treatment.

Keywords: Clivus tumour, ectopic pituitary tumours, prolactinoma

A rare case of pituitary apoplexy secondary to dengue haemorrhagic fever

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Introduction: Pituitary apoplexy is a rare clinical syndrome that occurs as a result of acute haemorrhage and/or infarction within a pituitary tumour. The true incidence of this rare condition is difficult to determine. In a large epidemiological study from the UK, 6.2 Pituitary apoplexy cases/1,00,000 population were identified.

Case Report: We present a case of 39 year old female patient who presented to the emergency with acute febrile illness since 8 days, melena since 3 days and sudden onset loss of vision and ptosis in the right eye along with worsening of sensorium. She had history of amenorrhoea since 3 years along with galactorrhoea. She had

history of pituitary macroadenoma for which she underwent surgery 8 years back. On examination she was found to have dilated, non reacting pupil with external ophthalmoplegia on the right side. She also had galactorrhoea and sparse axillary and pubic hair. Febrile illness work up showed her to have dengue fever (IgM positive) with thrombocytopenia (11,000). Biochemical work up show free T4 – 0.95 ng/dl and 8 am cortisol – 120 nmol/L. MRI brain was done and it showed a pituitary adenoma with apoplexy. She was started on inj. Hydrocortisone infusion along with platelet infusions to correct thrombocytopenia. She underwent decompression surgery following which symptoms subsided. **Conclusion:** Dengue haemorrhagic fever leading to apoplexy in pituitary adenoma is extremely rare with very few cases reported in literature. Pituitary apoplexy should be considered as differential diagnosis in cases of sudden loss of vision with thrombocytopenia.

Keywords: Dengue haemorrhagic fever, pituitary apoplexy, pituitary tumour

Teneligliptin, prescriber's feedback on its usage in real world scenario

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Background and Objectives: Teneligliptin has shown good efficacy & tolerability in treatment of T2DM in various clinical trials. The present survey was aimed to seek & analyse feedback from teneligliptin prescribers on utilisation pattern in India. **Methods:** Questionnaire based survey was conducted with Indian teneligliptin prescribing clinicians. **Results:** Among total-281 clinician, who participated in this survey, 79.72% were general physician & 18.15% were endocrinologist. Cardiologist & nephrologist comprised of 1.78% & 0.36% respectively. Ninety-five percent of clinicians agreed that gliptins can be prescribed as first line in newly diagnosed T2DM and they also, prefer gliptins as 'first choice as add on drug for patients uncontrolled on monotherapy. Most, i.e. about 97% rated teneligliptin as efficacious as other gliptins. Moreover, 95% consider

it to have advantage over other gliptin owing to its pharmacokinetic properties. About, 97% clinicians are considering teneligliptin plus Metformin as a choice in new diabetes patients with higher HbA1c. Teneligliptin was used by 29% of clinicians in patients who were suffering renal failure of any stage. While, 43% & 26% were using it in moderate & mild renal failure respectively. In diabetic patients associated with mild to moderate hepatic failure, 91% of clinicians have been considering it without dose adjustment. When asked about availability of limited cardiovascular safety data; 12% considers it as not a concern for prescribing teneligliptin. While 18% thinks that gliptins as a class have established cardiac safety profile, therefore teneligliptin also should not have such concern. 70% of clinician were in the thought that more data is required; however, teneligliptin can be prescribed based on available data. **Conclusions:** The present survey shows that teneligliptin is considered as efficacious & well tolerated gliptin; and it is being prescribed in wide range of T2DM patients in India.

Keywords: India, real world, teneligliptin

Efficacy of teneligliptin in treatment of Indian T2DM patients when used as an add-on therapy

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Background: Teneligliptin - a recently launched gliptin in Indian market has gained significant popularity among practicing physicians for T2DM management because of its efficacy, safety and affordability. This retrospective study was conducted to evaluate the real life efficacy of teneligliptin when used as add on to other anti-diabetic drugs (ADDS). **Materials and Methods:** The physicians were requested to provide the details of patients prescribed with Teneligliptin as add on to ADDS. Data was collected between December 2015 and January 2016. Glycemic efficacy of teneligliptin assessed by analyzing the mean changes in HbA1c, fasting (FPG) and post prandial (PPG)

plasma glucose after three months of duration. Paired t test was used for statistical analysis. **Results:** Metformin was used in all 58 patients. Teneligliptin most commonly used as triple drug therapy with metformin and sulfonylurea (glimepiride/gliclazide) in nearly 46% of patients. Dual therapy of teneligliptin and metformin was used in 13.08% of patients. Glimepiride, voglibose, insulin, gliclazide, pioglitazone and dapagliflozin was used in 68.97%, 29.31%, 12.06%, 10.34%, 6.90% and 0.17% of patients respectively. The mean daily dose of teneligliptin, metformin and glimepiride was 20 mg, 1043.1 mg and 2.80 mg respectively. There was statistically significant reduction in HbA1c (n = 54), FPG and PPG at the end of three months by 1.4%, 68.9 mg/dl and 88.2 mg/dl respectively. Proportion of patients achieving the HbA1c target of <7% was 35% in entire patients, 50% in patients receiving dual therapy of teneligliptin and metformin, and 42.31% in those receiving triple therapy of teneligliptin, metformin and sulfonylurea. **Conclusion:** In our retrospective real life evaluation; teneligliptin found to be used most commonly as second or third line option after metformin therapy and significantly improved glycemic profile of patients after three months of therapy.

Keywords: India, T2DM, teneligliptin

Effect of vitamin D supplementation on cytokines expression in patients with diabetic foot infection

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Objectives: Vitamin D supplementation improves phagocytosis and it might have effect on inflammatory cytokines. In this study we assessed the effect of vitamin D over the expression of inflammatory cytokines IL-6 and TNF- α in diabetic patient with and without foot infection. **Materials and Methods:** The study subjects were divided in to two groups. Group I included 120 patients with Diabetes without any foot infection and Group II included 106 patients with Diabetes having foot infection. Both groups were supplemented with cholecalciferol 300000 IU per oral in 5 divided dose of at the enrollment. Serum concentration of 25(OH) vitamin D3, IL6 and TNF- α were estimated

by respective kits after 4 weeks. Data were expressed as mean \pm SD and Z-test was used to compare the mean values. **Results:** No significant difference was noticed in the mean (\pm SD) values of age, BMI, duration of T2DM and HbA1c, between the two groups. There was significant difference in the Mean values of FBS and PPBS levels at baseline and during follow up period in both groups ($p < 0.05$). Vitamin D deficiency was common in both the groups. Mean values of serum concentrations of 25-OH vitamin D3 at baseline and after 4 weeks were significantly different in both controls (group I, $p = 0.0122$) and cases (group II, $p < 0.0001$). Difference in mean levels of circulating serum inflammatory cytokines TNF- α and IL-6 at baseline and follow up was not significant in group I but significant in group II ($p = 0.0001$ for TNF- α , $p = 0.0026$ for IL-6). **Conclusion:** In this study we found that vitamin D supplementation reduced inflammatory cytokines in diabetic foot patients having heightened response of these cytokines. Vitamin D supplementation might be considered for as one of the treatment strategies of diabetic foot patients with objective of infection control and fast wound healing of diabetic foot ulcers.

Keywords: 25-OH vitamin D3, diabetic foot infection, interleukin-6, tumor necrosis factor- α

Acromegaly with fibrous dysplasia: McCune-Albright syndrome

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McCune-Albright syndrome (MAS) is characterized by a triad of poly/
monostotic fibrous dysplasia, café-au-lait macules and hyperfunctioning
endocrinopathies including growth hormone (GH) excess. Polyostotic

bone lesions and café-au-lait macules are common while monostotic
bone lesions are rare. Acromegaly as a manifestation of endocrine
hyperfunction with MAS is uncommon, and pituitary adenoma is
demonstrable in only 40–50% of these patients. Fibrous dysplasia of
the sphenoid bone may impair visualization of a pituitary adenoma.
Surgical treatment is difficult because of fibrous thickening of the skull
base. Medical treatment is therefore frequently being used. We report
a 16-year-old male patient with Polyostotic fibrous dysplasia, café-au-
lait macules and GH and Prolactin secreting pituitary macroadenoma.

Key words: Acromegaly, café-au-lait macules, fibrous dysplasia,
McCune-Albright syndrome

Single dose oral vitamin D3 90,000 IU is safe and as effective as 300,000 IU in treatment of nutritional rickets in children

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Aim: To compare efficacy and safety of 90,000IU and 3,00,000 IU oral single dose vitamin D3 for treatment of nutritional rickets in children. **Materials and Methods:** Study design-Randomized Controlled Trial. Setting: Tertiary care hospital. Participants–110 children (6 months to 5 years, median age 10.5 months), with radiological and biochemical diagnosis of rickets. Exclusion criteria were- confirmed/suspected diagnosis of malabsorption, severe systemic illness, intake of calcium/vitamin D preparation in last 6 months and rickets other than nutritional. **Intervention:** Vitamin

D3 as a single oral dose 90,000 IU (group A, n = 55) or 3,00,000 IU (group B, n = 55). **Methodology:** Severity of rickets was scored on knee and wrist x-ray as per Thatcher's radiographic score. Baseline serum levels of calcium, ALP, 25(OH)D, PTH were measured. Follow up was done at 1 week, 1 month and 3 months. Outcome variable–Primary- Radiographic score at 3 months. Secondary-serum levels of 25(OH)D, ALP and PTH at 3 months, clinical and biochemical adverse effects. **Results:** 86 patients (43 in each group) completed the 3 months' follow up. The baseline mean radiographic score was 6.90 in group A and 6.93 in group B. It reduced to 0.16 in group A and 0.23 in group B at 3 months. The two groups had comparable median serum levels of 25(OH)D, ALP and PTH at baseline and at 3 months. In each group, 25(OH)D increased and ALP and PTH decreased significantly from the baseline. There was no case of hypercalcemia. At 1 month there were 5 cases of hypercalcemia (Group A-3, group B-2) and at 3 months-3 in each group. There were 2 cases of hypervitaminosis (serum 25(OH) D >150ng/mL) in group B. There were no clinical adverse events. **Conclusion:** Single oral dose vitamin D3 90,000 IU is safe and as effective as 300,000 IU in achieving healing of rickets.

Keywords: Rickets, vitamin D3

The prevalence and prediction of endocrinopathies in patients with thalassaemia major

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Introduction: Thalassaemia major is an inherited haemoglobinopathy characterised by chronic anaemia. Excessive iron overload and suboptimal chelation result in deposition of iron in various tissues including endocrine glands. **Objective:** To estimate the prevalence and age of onset of common endocrinopathies in patients with thalassaemia major and risk factors for developing these complications among sample of Sri Lankan population. **Materials and Methods:** Cross sectional descriptive study of patients with thalassaemia major on active follow up in June 2015 to 2016 at Teaching Hospital Batticaloa, Sri Lanka were evaluated. Height, weight, and tanner staging for pubertal development, serum ferritin, oral glucose tolerance test, bone profile, liver and renal function, thyroid function, cortisol for all patients and FSH, LH, testosterone or oestradiol for girls over 13 years of age and boys over 14 years of age were assessed. **Results:** A total of 95 patients including 50 females and 45 males with mean age of 12.27 ± 4.6 years

were evaluated. Short stature was found in 57.5%, while 78.6% had hypogonadism. Hypocalcaemia was present in 37.5% and 25% had hypothyroidism. Diabetes mellitus and impaired glucose tolerance (IGT) were found in 7.5% and 13.2% respectively. Only 2.1% had cortisol deficiency. Age onset for developing endocrinopathies were as follows: Hypothyroidism; 3 years, short stature; 5 years, hypocalcaemia; 9 years, IGT; 9 years, diabetes; 10 years and cortisol deficiency; 14 years. Patients with serum ferritin level more than 2,500 ng/mL had increased risk to develop hypocalcaemia ($p = 0.05$). Even though not statistically significant hypothyroidism, hypogonadism, short stature and IGT were prevalent in this group ($p = 0.48$, $p = 0.50$, $p = 0.54$ and $p = 0.19$ respectively). The longer the duration of thalassaemia, the higher the risk for developing hypocalcaemia ($p = 0.00$), short stature ($p = 0.026$), and IGT ($p = 0.017$), but statistically no difference was found in the prevalence of hypothyroidism ($p = 0.085$), hypogonadism ($p = 0.484$), cortisol deficiency ($p = 0.118$) and diabetes ($p = 0.844$). **Conclusions:** A significant proportion of thalassaemia major patients have endocrinopathies. Hypothyroidism and short stature develop very early and other endocrinopathies also develop earlier indicating the need for early screening compared to the recommended guidelines. As the duration of thalassaemia increases the risk for developing endocrinopathies is high.

Keywords: Diabetes mellitus and risk factors, edocrinopathy, thalassaemia major

Ultrasonographic and FNAC correlation of thyroid nodules: A prospective study

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Introduction: Ultrasound scan (USS) is useful in assessing thyroid size and differentiate cystic from solid nodules, but cannot be used to distinguish benign and malignant disease. However there are some US characteristics which favour either benign or malignant lesions and these can be used to select the nodules for fine needle aspiration cytology (FNAC). **Objectives:** Aim of this study is to evaluate the accuracy of USS with FNAC in diagnosis of thyroid nodules. **Materials and Methods:** A prospective study was carried out on 100 cases with nodular goitre attending the Base Hospital

Kalmunai from May 2015 to June 2016. All patients were underwent USS by a single experienced radiologist and nodule size more than 1 cm were subjected to FNAC. **Results:** Radiologically, 74% cases were diagnosed as benign thyroid lesion, 19% as malignant and 6% were diagnosed as indeterminate. While on FNAC, 82% were benign thyroid lesions and 12% were malignant, and 5% were indeterminate. The accuracy of USS findings with FNAC for benign, and malignant and indeterminate lesions were 86.2%, 100% and 0% respectively. USS detected all malignant lesions as malignant but it has 36% of false positives in detecting malignant lesions. **Conclusion:** In the present study, we had concluded that in the diagnosis of thyroid lesions USS is useful guide to select nodules for FNAC with high accuracy for malignant lesions and reasonable accuracy for benign lesions if done by a experienced person.

Keywords: FNAC, thyroid nodule, ultrasound

Impact of one-on-one education session on diabetes management and HbA1c in type 2 diabetes

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Background: Education of diabetes and its complications are the most important components for management. The hypothesis tested was that one-on-one education would confer knowledge that would be reflected in metabolic improvement provided by Diabetes Education and Awareness Program (DEAP). **Study Objective:** The effectiveness of DEAP education and impact on diabetes management by measuring HbA1c, 6 months after the first one-on-one education session. **Methods:** From May 2015 to July 2016, more than 2500 T2DM patients educated by a diabetes nurse and a nutritionist. One-on-one education session, a detailed questionnaire and telephonic contact was carried out in the beginning and at follow up. During 1

year period, 239 patients (107 males; 132 females; mean age: 52.27 years). Previous glycemic status was reviewed before the education for intra-individual control. 196 of 239 patient's data was available for intra-individual comparison. For inter-individual, data of 109 patients (mean age: 50.36 years) who did not undergo DEAP was also retrieved. Box Cox transformation applied on non-normal data followed by comparisons between groups by Repeated Measures ANOVA. **Results:** A significant reduction in HbA1c levels (8.1% vs 6.7% ; p value : <0.001) after DEAP Intra-individual comparison of 196 patient showed that HbA1c was unchanged before DEAP (7.5% vs 7.6%), after DEAP the value dropped to 6.8% (p value = < 0.001) confirming the impact of DEAP. In comparison, Intra-individual and intra-individual control groups did not show significant difference in HbA1c. Data of 109 patients (no DEAP) for inter-individual control showed HbA1c unchanged at 3 different time points. (7.4% to 7.8%). The reduction in HbA1c was observed in all subgroups after DEAP. Results showed that awareness, general well-being, level of confidence and diet improved in >95% of the patients. **Conclusion:** The study concluded the impact of DEAP on diabetes management along with improvement in patient's compliance and confidence.

Keywords: Diabetes, education, HbA1c, management

Low ABI: A marker of progressive renal dysfunction in type 2 diabetes mellitus subjects

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The role of low ankle brachial index (ABI) in renal disorders in type 2 diabetics is not fully explored. This study focused on noninvasive evaluation of peripheral arterial disease (PAD) using ankle brachial index (ABI) and determining the association between renal dysfunction and peripheral arterial disease (PAD), in patients with type 2 diabetes mellitus (T2DM). The study included a total of 122 T2DM patients, mean age (52.64 ± 9.7) years. PAD was diagnosed by $\text{ABI} < 0.9$, and patients with eGFR ($< 60 \text{ ml/min}/1.73 \text{ m}^2$) were categorized for kidney disease. Clinical

data including sex, age, body mass index (BMI), HbA1c, serum creatinine, blood pressure (BP), fasting glucose was recorded of each patient. ABI values were measured using Doppler probe. Unpaired student t test and Pearson correlation analysis was used in statistical analysis. Patients with PAD ($n = 87$) had lower eGFR than patients without: 70.98 ± 30 versus 89.5 ± 20.9 . Diabetes duration, systolic blood pressure, HbA1c, fasting blood glucose were negatively correlated ($p < 0.05$) with eGFR. ABI was found to be positively co-related with eGFR in all patients ($r = 0.3865$, $p < 0.05$). The presence of PAD might imply significant atherosclerosis involving not only vasculatures of the brain, heart, and the lower limbs, but also the vasculatures of the kidneys, which could cause intra-glomerular hypertension, glomerular injury, and reducing eGFR. A declined value of ABI was positively correlated with declined value of eGFR, which implies the role of ABI in determining renal atherosclerosis.

Keywords: Ankle brachial index, renal dysfunction, type 2 diabetes mellitus

A rare but important cause of hypoglycemia – Auto immune hypoglycaemia: A case report

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Efficacy of Teneliglitin in Indian Setting: The maintenance of blood glucose (BG) levels closely depends on coupling of insulin-insulin receptors and BG levels. Any disruption leads to BG imbalance. Auto-immune hypoglycaemia is one such cause for BG variation attributed to humoral auto-immunity, i.e. auto-antibodies against insulin or insulin-receptors. Since, it is independent of exogenous insulin administration; AIH is attributed to non-diabetics. Incidence of AIH in Japan is quite high, but in India its a prevalent condition requiring prompt diagnosis to avoid unnecessary investigation and management. **Case Study:** A 62-year-old male presented to emergency with c/o altered sensorium, having no history of diabetes, but was a known hypertensive. Examinations revealed BP

was 150/90 mmHg and RBS was 40 mg/dl. Further to that, continuous blood-glucose monitoring with CGMS-Device was done for 24–48 hrs revealing persistent hypoglycaemia warranting further investigations via endoscopic USG, CT and MRI Scan to locate any insulin-secreting tumor and anti-insulin antibodies meanwhile. **Results:** With the presence of hypoglycaemia and BG levels as low as 25 mg/dL, serum insulin–11455 mU/L (3.00 – 25.00 mU/L) and C-peptide–18.98 ng/ml (0.81 – 3.85 ng/mL), the motive was to identify the exact cause. He showed no evidence of tumor or immunity-altered disease, but anti-insulin antibodies were positive, confirming AIH requiring appropriate management. **Conclusion:** Elevated C-peptide, Serum Insulin levels and positive anti-insulin antibodies highlights the incidence of Auto-Immune Hypoglycemia. He was treated with Diazoxide 50 mg and Prednisolone 20 mg, later discontinuing Diazoxide and tapering the dose of Prednisolone. After 6 months, the patient was switched to Hydrocortisone 5 mg. On regular follow-up, he was stable indicating positive steroid response (PPBS-119 mg/dL). Thus, suspecting AIH at the right time is essential to avoid any invasive surgical procedures.

Key words: Anti-insulin receptor antibodies, autoimmune hypoglycemia, C-peptide

Prevalence of chronic periodontitis in Type 2 diabetes mellitus in Coimbatore city

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Background: Diabetes mellitus is a metabolic disorder with several complications affecting both the quality and length of life. Periodontal disease is a chronic inflammatory condition that elicits considerable impact on systemic disease. One such systemic condition of global importance is diabetes mellitus of which type 2 diabetes has more prevalent. Though India is considered as Diabetic Capital, there is inadequate data in this regard from our country. Hence our objective was to study the prevalence and severity of periodontal disease in type 2 diabetes mellitus patients. **Materials and Methods:** 302 type

2 diabetic patients belonging to the age group of 35-75 years were included in the study. The study group was divided based on Glycated hemoglobin level into well, moderate and poorly controlled Diabetes mellitus. Information regarding oral hygiene and personal habits was obtained. Plaque index (PI) and Community periodontal index (CPI) was assessed to evaluate oral hygiene and periodontal status. The results were statistically evaluated. **Results:** The mean CPI score and the number of missing and mobile teeth were statistically significant ($p<0.05$), indicating that prevalence and extent of periodontal disease was more severe in diabetic patients. There is positive correlation with Glycated hemoglobin, duration of diabetes, oral hygiene habits with periodontal destruction. **Conclusion:** This study has made an attempt to determine the association between type 2 diabetes mellitus and periodontal disease. It was found that type 2 diabetes mellitus subjects manifested relatively higher prevalence (70.5%) and severity of periodontal disease.

Key words: Chronic periodontitis, community periodontal index, diabetes

Diet in diabetes – Benefits of diet intervention in patients with diabetes mellitus: A multi centric retrospective study

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Objective: To assess the effectiveness of diet management program (DMP) among adults with Type 2 Diabetes mellitus (T2DM).

Methods: Patients with T2DM, under routine clinical care, either participated in or declined dietary counselling by a registered dietitian in-clinic, along with fortnightly expert call center follow-up for at least

3 months. We undertook a retrospective analysis of the effectiveness of diet counselling by comparing plasma glucose and total cholesterol levels in both the groups. **Results (presented as value [SD]):** Age was 50.8 (11) years in DMP vs 53.6 (11.4) years non-DMP group; male gender 68.7 (90) in DMP vs 61.5 (184) non-DMP group. At baseline, HbA1c was >7.5% in all patients with no significant differences in other parameters. After 3 months HbA1c reduced from 9.5 (1.4) to 8.3 (1.6) in patients under DMP and from 9.5 (1.5) to 9.1 (1.6) ($p < 0.01$) in non- DMP patients. More patients under DMP achieved a HbA1c ≤ 7 (23.7%) compared to non-DMP patients (6.7%) ($p < 0.01$). Total Cholesterol decreased from 177 (46) to 153 (32) ($p < 0.01$) in patients under DMP vs a non-significant increase from 165 (52) to 168 (46) in non-DMP patients. **Conclusion:** The present study found a significant improvement in the HbA1c and total cholesterol levels of patients who were adherent to the diet program for a period of 3 months or more.

Keywords: Diabetes, diet, DMP, program

Prevalence of thyroid function abnormalities in male in-patients with alcohol dependence syndrome

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Objectives: To study the frequency of thyroid function abnormalities in male in-patients with alcohol dependence syndrome and to study the frequency of thyroid function abnormalities in relation to clinical variables and sociodemographic variables. **Materials and Methods:** 30 male patients with Alcohol dependence syndrome (ADS) (cases) and 30 patients with psychotic disorders (controls) were recruited between December 2015-February 2016 from departments of Psychiatry of Father Muller Medical College, Kankanady, Mangalore.

Patients were recruited considering inclusion and exclusion criteria for the study after giving written informed consent. Socio-demographic details and clinical data were collected by a predesigned proforma. Thyroid function results were noted. **Results:** 23.3% of Cases (Male ADS Patients) and 3.3% of controls (psychotic disorders) have TSH abnormality. 23.3% of cases and 10% of controls have FT4 abnormality. In cases, 16.6% are hypothyroid, 6.7%-are hyperthyroid. TSH abnormality is seen more in the individual whose age of onset of alcohol use is 20-30 years and this is found to be statically significant ($p = 0.010$). TSH abnormality is noted more in patient who consumed alcohol for more than 15 years and with quantity exceeding >720 ml. **Conclusion:** Study reveals TFT abnormality was more in ADS patients than in patients with psychotic disorders and this study supports the existing literature. It is extremely important to evaluate TFT in patients with ADS.

Keywords: Alcohol dependence syndrome, thyroid function test

An uncommon presentation of insulin resistance: A case report

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Introduction: Insulin resistance is subnormal glucose response to both endogenous and exogenous insulin. Insulin resistance can present with hyperglycemia and features like acanthosis nigricans, PCOD, lipodystrophy, growth abnormalities and muscle cramps. Major causes include Inherited states of target cell resistance, secondary insulin resistance and multifactorial etiology. **Case:** 16-year-old boy presented with severe muscle cramps and pain in both upper and lower limbs for one week with similar previous history

for two years which was managed symptomatically elsewhere. On General Physical examination, acanthosis nigricans was present on neck and axillae and legs with facial lipodystrophy. Otherwise General and Systemic examination was within normal limits. His lab parameters revealed Fasting plasma glucose of 200 mg/dl and Post Prandial plasma glucose of 186 mg/dl with urine sugar positive and an HbA1c of 9.4. Fasting Lipid Profile and Thyroid Function was normal. His Fasting Insulin levels was 40.60 mIU/L which was very high. He was diagnosed with Insulin Resistance and was started on Pioglitazone-Metformin (15/500) combination and was advised to continue it and to come for regular follow ups. **Conclusion:** Insulin Resistance can present with muscle cramps and muscle hypertrophy but is not common. Phenytoin may be used to reduce the severity of muscle cramps.

Key words: Insulin, resistance

Impact of comprehensive diabetes care on different outcomes

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Aims and Objectives: To assess the impact of different biochemical parameters by comprehensive and structured diabetes management. **Materials and Methods:** It is a retrospective analysis of patients with Type-2 Diabetes mellitus included in a structured and comprehensive diabetes management plan provided by Apollo Sugar clinics at Bhubaneswar, a city of eastern India, in the year 2015. The structured plan was patient centric, delivered via evidence based protocols by a

multi-disciplinary team. Program includes patient care with specialist consults, dietary interventions, lifestyle modification, counselling and patient engagement through frequent monitoring to ensure adherence to treatment and care plan via specialized call center, mobile apps and health coaches. **Results:** Study included 118 subjects with T2 DM who had HbA1c >7 at baseline with mean age of 53.5 (10.7) Yrs. Study included 82 (69.5%) male and 36 (30.5%) female patients. The mean follow-up period was 4.6 (2) months. At the end of follow-up, significant improvement was observed in HbA1c, FPG, PPG, TC, TG, LDL but not HDL. Around 19.5% (n = 23) patients who had HbA1c >7 at baseline attained the therapeutic goal of HbA1c <7 at the end of follow-up. The mean HbA1C level decreased from 9.2% (1.8) to 8.2% (1.4). **Conclusion:** These was a significant improvement in all parameters included in the comprehensive diabetes management plan.

Keywords: Comprehensive care, diabetes, impact

Usage of Dapagliflozin - A sodium glucose co-transporter inhibitor, in the management of T2DM: A real world evidence study in Indian patients (FOREFRONT)

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Aim: The aim of this multicentre observational study is to understand the usage and effect of Dapagliflozin in patients with inadequately controlled diabetes ($\text{HbA1c} > 7\%$) with existing anti-diabetic medications, prior to initiation of dapagliflozin treatment. **Methodology:** This study is a non-interventional, multicentre, prospective, observational study to be conducted at 50 sites in India. The study targets to enrol 2000 patients with 40 patients per site. The study would enrol T2DM patients who are/were inadequately controlled ($\text{HbA1c} > 7\%$) with existing anti-diabetic medications

and who have been prescribed dapagliflozin within past 3 months. No study medication will be prescribed or administered as a part of study procedure. Patients, who have been treated as per Investigators' routine clinical practice and prescribed dapagliflozin within last 3 months, will be screened for enrolment in study. Dosage of dapagliflozin and other medications should be as per the routine clinical practice and prescribing information. After the patients are found to be eligible, they will undergo physical examination on baseline visit and demographic information, medical & surgical history with relevant lab reports, HbA1c data, and current medication would also be collected. At visit 2 and visit 3 which would be after 3 months and 6 months respectively of baseline visit, demographic information, physical examination, HbA1c data, and any AEs would be collected. The study would not interfere with the current or ongoing treatment of patients. **Results and Conclusions:** In contrast to clinical trials, this study evaluates treatment in the everyday clinical practice. This study aims to provide data on real world to understand the usage and effect of Dapagliflozin in Indian patients. The study will be the largest national study of this kind ever performed.

Keywords: Diabetes, T2D

A non-interventional, multicentre, prospective, observational study to understand usage and effect of saxagliptin as first add-on after metformin in Indian type 2 diabetes patients

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Aims and Objective: The aim of this multicentre observational study is to understand the usage and effect of saxagliptin as first add on after metformin in Indian patients. Also to assess effect on HbA1c

reduction, side effects, hypoglycaemia and changes in quality of life scores. **Methodology:** This multicenter, observational, prospective study is expected to enrol approx. 1200 patients from 50 centres and each patient will be followed up for 3 months. Patients with T2DM those are not controlled on metformin alone and saxagliptin is added in past 15 days will be the target subject population. Data collected during follow up is expected to provide the details of Patient characteristics; demographics, Vital signs and lab tests, Medical history of T2DM, including presence of risk factors, Comorbidities and co-medications, Changes in diabetes treatments during follow-up and reasons, hypoglycaemic events and Patient reported outcomes. Study has completed patient recruitment with 1200 patients. **Results and Conclusions:** In contrast to clinical trials, this study evaluates treatment in the everyday clinical practice. This study aims to provide data on real world to understand the usage and effect of saxagliptin as first add on after metformin in Indian patients. The study will be the largest national study of this kind ever performed.

Keywords: Saxagliptin, T2DM

Hypogonadism in HIV male infected patients

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Introduction: Hypogonadism is one of the most common endocrinopathy among HIV male patients, even among men receiving ART. Role of testosterone in sexual functions and overall health is increasingly important in male HIV patients. The cause of low Testosterone is multifactorial. In HIV patients, androgen deficiency may result from both primary and secondary hypogonadism. However, the underlying causes and mechanisms remains unknown. **Objectives:** To estimate the level of Total testosterone and Luteinizing Hormone in HIV infected patients and to correlate with the level of CD4 count. **Methods:** A cross-sectional study among 426 males attending ART centre, RIMS Imphal, Manipur was screened using ADAM Questionnaire for adult onset hypogonadism. One hundred twenty patients who had probable hypogonadism with ADAM questionnaire were further evaluated. Morning blood samples were drawn by peripheral venepuncture. Total

Testosterone (TT) and Leutinizing Hormone (LH) was analysed using immunochemiluminescence (Vitros Microwell assay, Johnsons and Johnsons) and CD4 count was calculated by automated analyzer, Fluorescence Activated Cell Sorter (FACS). Data entry was done using IBM SPSS Statistics 21 for Windows. Descriptive statistics like frequency, percentages were used and chi-square test was used to compare two proportions. **Results:** Among 120 patients who underwent biochemical evaluation, 28 (23.3%) had hypogonadism using a cut-off serum testosterone level of 300 ng/dl as per Endocrine Society guideline. Out of these 28 patients, 24 had biochemical features of secondary hypogonadism and 4 had primary hypogonadism. There was significant association found between CD4 count and Total Testosterone level ($p = 0.037$). As BMI increased, CD4 count also increased significantly ($p = 0.045$). The prevalence of hypogonadism was 25.3% among patients below 45 years whereas it was 19.5% among those above 45 years showing a higher prevalence in the younger age group ($p = 0.47$). **Conclusions:** Around one fourth of the patients receiving ART had hypogonadism. Further studies with larger sample sizes are needed to support the findings.

Keywords: CD4 count, cross sectional, HIV male patients, hypogonadism

Does Vitamin D Deficiency and Renal Dysfunction play a role in the pathogenesis of Fluorotoxic Metabolic Bone Disease (FMBD)

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Aim: The study aimed at studying the role of fluoride in renal tubular damage and the role of vitamin D deficiency in the pathogenesis of FMBD. **Materials and Methods:** Thirty-six male Sprague-Dawley rats were divided into 6 groups ($n = 6$); 3 groups received Vitamin D deficient diet whereas the other 3 groups were fed Vitamin D replete (control) diet. Serum levels of 25OHD, calcium, phosphorus, creatinine, ALP, albumin, PTH, Osteocalcin and CTX were measured after exposing rats to varied levels of fluoride in drinking water. Full body DEXA scans were used to examine changes in bone morphology pre and post exposure to fluoride. Renal function was

assessed by measuring serum creatinine, urine fluoride and Cystatin C. Histopathological examination of sections of bone and kidney tissue was also performed. **Results:** DEXA scans revealed a significant decrease in the BMD and BMC ($p < 0.05$) but significant increase in fat mass ($p < 0.05$) and fat percentage ($p < 0.01$) in Vitamin D deficient rats pre-exposure to fluoride, with no significant change in biochemical parameters. The BMD of the control groups and the Vitamin D deficient groups increased ($p < 0.05$) with the increasing levels of fluoride in drinking water. Serum ALP, bone fluoride content, Osteocalcin, CTX and urine fluoride increased with increasing levels of fluoride in drinking water. Serum creatinine and cystatin C levels showed a mild increase among rats treated with high levels of fluoride. Light microscopic examination revealed mild thickening and increased osteoid in most (80%) of the Vitamin D deficient rats exposed to high levels of fluoride. Renal tubular changes were found only in two rats (one from each group). **Conclusion:** Fluoride affects osteoblastic activity and predisposes to deposition of fluoride in bone. These effects are accentuated in the presence of Vitamin D deficiency. Renal tubular changes, precursor to possible FMBD, were seen only in two rats.

Keywords: Fluoride, fluorotoxic metabolic bone disease, vitamin D

Levothyroxine requirement in newly diagnosed primary acquired hypothyroidism in children explained by pretreatment height and serum thyrotropin level; pediatric levothyroxine dose determinants

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Objective: Weight and age are traditionally used to decide levothyroxine (LT4) dose. The objective of study was to reanalyze the relationship of all the anthropometric measures and serum thyrotropin (TSH) with the LT4 requirement to achieve euthyroidism. **Study Design:** Study was prospective done at a single center (May 2014 to January 2016) in children brought to pediatric Endocrine clinic with newly diagnosed primary

hypothyroidism and being treatment naïve. Children were started on LT4, and dose adjusted at regular intervals to achieve normal range serum TSH (0.4 to 4.5 mIU/L). The relationship of age, gender, height, weight, body surface area (BSA), lean muscle mass (LBM) and baseline serum TSH with LT4 dose needed to achieve euthyroidism were assessed by multivariate regression analysis. **Results:** A total of 43 children (35 girls and 9 boys) completed the study. Mean LT4, LT4 based on weight (D/W), LT4 based on BSA (D/BSA) and LT4 based on LBM (D/LBM) were $68.75 \pm 31.82 \mu\text{g}$, $2.4 \pm 1.6 \mu\text{g/kg}$, $66.3 \pm 38.7 \mu\text{g/m}^2$, and $2.8 \pm 1.8 \mu\text{g/kg}$ respectively. Age, weight, height, BSA, LBM, serum TSH and TSH₁ (values above 100 mIU/L were assigned 100 mIU/L) had significant correlation with D/W, D/BSA and D/LBM. TSH₁ and gender explained 73% of variability in LT4 requirement. Height and serum TSH constituted the best fit model in multivariate regression analysis. The model Adjusted R² was 0.852, 0.837 and 0.857 for D/W, D/BSA and D/LBM respectively. **Conclusion:** Height and baseline serum TSH can be used to determine LT4 dose in newly diagnosed acquired hypothyroidism in children.

Keywords: Acquired hypothyroidism, height, levothyroxine, TSH

Polycystic ovarian syndrome and hyperandrogenism: Insights from a South Indian cohort

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Background: Hyperandrogenism has always been an indispensable arm of the clinicopathological entity described as Polycystic ovarian syndrome (PCOS). There are conflicting results regarding the androgenic steroid profile in PCOS. The relation between clinical manifestations like hirsutism, biochemical manifestations like insulin resistance and their relationship with testosterone, dehydroepiandrosterone sulphate (DHEAS) and dihydrotestosterone (DHT) has been debated. **Aims and Objectives:** (1) To study the differences in level of androgenic steroids (testosterone, DHT, DHEAS) in PCOS patients with and without hirsutism. (2) Elucidate the relationship between gonadal steroids and metabolic parameters like lipids and insulin resistance. **Materials and Methods:**

Serum samples of 53 consecutive patients with PCOS diagnosed by the Rotterdam criteria were analysed for androgenic steroids (testosterone, dihydrotestosterone & DHEAS). Clinical parameters including hirsutism scoring, metabolic parameters (fasting glucose, fasting insulin, lipid profile & insulin resistance according to the homeostatic model assessment: HOMA-IR) and radiological parameter (USG measurement of ovarian volume) were assessed. **Results:** Among the study group 56% (30/53) of PCOS patients were found to have hirsutism. Patients with hirsutism had higher DHEAS ($p = 0.02$) and higher DHT levels ($p = 0.001$) than patients without hirsutism. Insulin resistance as measured by HOMA-IR >2 was found in 62% (33/53) of patients. There was no statistically significant difference in insulin resistance between the hirsute & non hirsute group. Subjects with higher testosterone levels had greater insulin resistance ($p = 0.039$). Neither DHT levels nor DHT/Testosterone ratio were found to correlate with Insulin resistance. High BMI (>25) was found in 35.8% (19/53) cases and higher BMI was associated with higher testosterone levels. **Conclusions:** These results underscore the importance of DHT in hirsutism in patients with PCOS. Testosterone levels are higher in the insulin resistant patient. The cause vs effect of these findings need to be discussed and studied further.

Keywords: Hyperandrogenism, PCOD, PCOS

Wolfram syndrome unusual presentation

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Introduction: Wolfram syndrome-1 is a rare and severe autosomal recessive neurodegenerative disease characterized by diabetes mellitus, optic atrophy, diabetes insipidus, and deafness (DIDMOAD). Additional clinical features may include renal abnormalities, ataxia, dementia or mental retardation, and diverse psychiatric illnesses. The minimal diagnostic criteria for Wolfram syndrome are optic atrophy and diabetes mellitus of juvenile onset. We report a case of wolfram syndrome with unusual presentation. **Case Report:** A 9 year old female diagnosed with Insulin dependent DM at the age of 4 years has been on insulin since then. At 8 years of age child had nocturia, polyuria and polydipsia despite control of adequate sugar levels. Water deprivation test revealed central DI and the patient was started on desmopressin. Her visual acuity reduced to 4/60 in both eyes since 1 yr. On fundoscopic examination, she had bilateral optic atrophy without diabetic retinopathy. Neurological examination was normal with no focal neurological deficits. Subsequently patient had developed voiding difficulty, distension of abdomen and fever with chills and rigors. Renal sonography, CT abdomen showed pelvicalyceal dilatation in both kidneys suggestive of hydronephrosis grade III with dilation in proximal urethra and bladder enlargement. Urethral pressure profile showed atonic bladder. Pure tone audiogram showed mild sensory neuronal deafness. MRI brain showed mild thinning of bilateral optic nerves with absent posterior pituitary brightspot. **Discussion:** Wolfram syndrome (WFS) is a rare autosomal recessive genetic disease characterized by insulin dependent diabetes mellitus, optic

atrophy, blindness, hearing loss, and other neurological dysfunctions resulting in death from widespread neuro degeneration in the third or fourth decade. The causative gene (WFS1) encodes the wolframin protein, which resides in the endoplasmic reticulum (ER) membrane of a cell. The mutant forms predispose insulin-producing pancreatic β -cells to ER stress, impaired signal transduction, and mitochondrial dysfunction, all combining to result in β -cell apoptosis and diabetes. CISD2 is a second causative gene associated with WFS2, It encodes a mitochondrial and endoplasmic reticulum protein. Incidence is estimated at 1 in every 770,000 live births. Early-onset IDDM and optic atrophy are believed to be the initial and basic features of the syndrome. Patients usually demonstrate diabetes mellitus associated by optic atrophy in the first decade, sensorineural deafness and diabetes insipidus in the second decade, dilated renal outflow tracts early in the third decade, and several neurological abnormalities early in the fourth decade. The prevalence, severity and age of onset of the various manifestations of this syndrome are not constant in literature. In our case DM, diabetes insipidus, optic atrophy, renal manifestations and sensorineural deafness, all appeared in the first decade which is an unusual presentation. **Conclusions:** Generally cases having TYPE 1 DM and optic atrophy together need to be evaluated for Wolfram Syndrome. There is no specific treatment. Currently, no intervention is known to alter the progression or life expectancy in WFS, but earlier recognition of the syndrome in individuals could improve their quality of life by allowing earlier intervention for the various debilitating components of WFS. The prognosis is mainly linked to the severity of the neurological symptoms. The disorder should be kept in mind where consanguinity is prevalent. Genetic counselling should be carried out in highrisk couples.

Key words: Deafness, diabetes insipidus, diabetes mellitus, optic atrophy

A boy with hematuria

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Ovotesticular disorder of sexual development or true hermaphroditism is a very rare cause of genital ambiguity. Still

now only 400 cases have been documented worldwide. Late presentation of ovotesticular DSD is even rarer. To diagnose a case of ovotesticular DSD, biopsy of the gonads is mandatory. We hereby report a case of a 15 yr old adolescent boy with complaints of cyclical hematuria and gynecomastia who eventually was found to be having 46 XX karyotype and bilateral ovotestis on biopsy of the resected gonads.

Key words: Disorder of sexual development, hematuria, ovotesticular

Knowledge of the basic and practical concept of insulin therapy among the insulin-treated diabetes patients

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Objectives: To assess the knowledge of insulin therapy among insulin-treated diabetes patients and to evaluate the association between their knowledge of insulin therapy and sociodemographic and clinical characteristics. **Materials and Methods:** This cross-sectional study has been carried out among 464 insulin-treated diabetes patients. A 12-item, structured, open-ended, insulin knowledge test questionnaire (IKTQ) was developed and used for data collection. Patients' knowledge of insulin therapy was scored. The participant was categorized as having poor or acceptable

scores if total percentage score were <45 or ≥ 45 respectively. The reliability and validity of IKTQ has been tested. **Results:** The mean age of the participants was 47.92 ± 11.49 years, with 58.2% female. Seventy four percent had lower than secondary level of education with 31.5% illiteracy. The duration of diabetes was 8.35 ± 5.98 years and the duration of insulin treatment was 3.42 ± 3.43 years. The results showed large knowledge deficits in insulin therapy among the participants. The mean percentage IKT score was 38.07 ± 11.06 and 75% had poor score. In multiple logistic regression, the older age, illiteracy/low education, use of insulin alone, shorter duration of insulin treatment, and lack of previous education on insulin therapy were predictors of poor knowledge.

Conclusions: This study revealed significant knowledge deficits in insulin therapy among the insulin users. Sociodemographic and clinical characteristics of patients were associated with poor knowledge. Findings can be used in educating insulin-treated diabetes patients and in future research.

Keywords: Insulin therapy, type 2 diabetes

Graves' disease associated with pancytopenia

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Introduction: Pancytopenia is a rare complication of Graves' disease with few case reports being available in literature. The authors depict a typical case of Graves' disease which was complicated by pancytopenia. **Case Report:** A 47-year-old female presented with complaints of 'bulging eyes,' episodic palpitations and increased sweating for last one year. Examination revealed a regular pulse rate of 116/min and loud S1. Bilateral exophthalmos with slightly decreased extraocular movement in upward gaze but with preserved vision and normal fundi was found. Diffuse thyroid enlargement with audible bruit was noted. Complete blood count showed tri-lineage depression-Hb-8.2 g/dl; total WBC count- 3300/cmm (N-56%; L-35%) and platelet - 66000/cmm. Bone marrow aspirate with trephine biopsy showed normal cellular marrow with no abnormal cell. Thyroid function test showed increased FT4: 4.2 ng/dl (N:

0.8-1.9) and TT3: 431 ng/dl (N: 60-200) with depressed TSH0.03 uIU/ml (N: 0.35-5.5 uIU/ml). 99m Technitium thyroid scan showed increased homogenous tracer uptake. A diagnosis of Graves' disease complicated by thyroid associated ophthalmopathy (TAO) and pancytopenia was made. Patient was started on carbimazole (30 mg/day). Follow-up at 6 months revealed improvement of Graves' disease, both clinically and biochemically, associated with marked recovery in haematological parameters: Hb-11.5 g/dl; TLC-6100/cmm: N-73%; L-26% and platelet – 188000/cmm. **Discussion:** Usually marrow depression in Graves' disease is treatment - related due to anti-thyroid drugs which may cause agranulocytosis. The index patient developed pancytopenia prior to administration of carbimazole. The causal effect of thyrotoxicosis in pancytopenia is best exemplified by the normalization of blood counts following reversal of thyrotoxic state. The mechanism may be shared autoimmune mechanism leading to reduced life span of blood cells or disturbances in maturation and differentiation of the pluripotent stem cells. Routine hematologic evaluation should be performed before administration of anti-thyroid drugs to differentiate pancytopenia related to Graves' disease itself from the marrow depression induced by these drugs.

Keywords: Graves' disease, pancytopenia

Transverse testicular ectopia: A case report

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Transverse Testicular ectopia (TTE) is an interesting though very uncommon anatomical anomaly of gonads. It is characterized by decent of both testes through single inguinal canal and towards the same hemiscrotum. TTE also known as transverse testicular ectopia, testicular pseudoduplication, unilateral double testis and transverse aberrant testicular maldescent. We report a 32-year old male had registered to our outpatient department for the evaluation of infertility. He was married 7 years back and has been living with wife since his marriage. His wife has normal menstrual cycle and has no history of endocrine disease and other chronic disease. On physical examination, the right hemiscrotum was well developed but right testis was not palpable. The left testis was

in left hemiscrotum with normal in size and consistency. There was another lump on the posterosuperior position of left scrotum with very similar feeling of normal testis. He had complete inguinal hernia on the left side. Serum total testosterone value was 659.57 ng/dl. His serum LH, FSH, TSH, Prolactin values were also within normal range. There was azoospermia in the first semen analysis. Repeated semen analysis, 3 months later, revealed severe oligospermia. The karyotype of the patient is 46, XY with no Y chromosome micro deletions. Scrotal ultrasound with Color Doppler revealed that one testis was in left hemiscrotum and other was also in left hemiscrotum near to left superficial inguinal ring. TTE is a rare anomaly whose pathogenesis remains unclear. The diagnosis should be considered when unilateral hernia and concurrent cryptorchidism of the contralateral side are present. In suspected cases, ultrasonographic evaluation and laparoscopy may be helpful in diagnosing this condition before surgery. Transseptal orchiopexy is recommended to manage TTE.

Keywords: Hemiscrotum, oligospermia, testis

GH insensitivity syndrome: A case report

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Introduction: GH Insensitivity Syndrome (GHIS), Laron syndrome, is a rare autosomal recessive condition associated with postnatal growth failure leading to extreme short stature, midfacial hypoplasia, truncal obesity, and hypoglycemia. Patients have raised GH levels, associated with deficiency of IGF-I and IGF binding protein-3 (IGFBP-3). These features commonly result from GH receptor (GHR) dysfunction and consequent failure of signal transduction pathways. **Case Report:** We report the case of a 7-year-old girl who was presented for evaluation of short stature. She belongs to a consanguineous Muslim family. Her antenatal and postnatal period was uneventful. Her motor, verbal and social mile stones were normal. On examination her height and weight were <5th centile with height age 1½ years weight age 1 years and bone age 4 years. Mean parental height was 151.5 cms. Her routine investigations were within normal limits. Her Prolactin, Cortisol and Thyroid functions were normal. GH stimulation test was done, at baseline >40 ng/dl

at 60, 90 and 120 minutes it was 38 ng/dl, 37.8 ng/dl and >40 ng/dl respectively. An IGF-I generation test did not increase IGF-I levels (baseline insulin-like growth factor 1 levels, 37 µg/L; and at 12 and 84 hours 63 µg/L and 44 µg/L, respectively). In view of these, the diagnosis of primary growth hormone insensitivity syndrome was made, and recombinant insulin-like growth factor 1 therapy was advised. **Conclusion:** Primary growth hormone resistance or growth hormone insensitivity syndrome, also known as Laron syndrome, is a hereditary disease caused by deletions or different types of mutations in the growth hormone receptor gene or by post-receptor defects. This disorder is characterized by a clinical appearance of severe growth hormone deficiency with high levels of circulating growth hormone in contrast to low serum insulin-like growth factor 1 values.

Key words: Growth hormone receptor, Laron syndrome, short stature

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Expression profile of NFKB1 gene in the patients of type II diabetes with and without hypertriglyceridemia

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Objectives and Aim of the Study: To evaluate and compare the mRNA expression of NFKB1 gene (p50) in the patients of Type II Diabetes mellitus (T2DM) with and without hypertriglyceridemia. **Materials and Methods:** There were two groups for this pilot study GI: T2DM patients with normal triglycerides (TG <150 mg/dl) and GII: T2DM patients with raised triglycerides (TG >200 mg/dl). Twenty two patients were recruited for this study, in each group, after taking the informed consent. The gene expression was measured in the peripheral blood samples of these patients, with the help of real time PCR (Rotorgene

Q). To study the mRNA expression NFKB1 gene RNA was isolated using Tri-Reagent BD as per the manufacturer's protocol. This was followed by cDNA synthesis using a kit (MBI Fermentas) as per the manufacturer's protocol. The relative expression was analysed by qPCR using dye (Syto9, Invitrogen) based chemistry. Specific primers were used for NFKB1 gene while B2M and 18s was used as an internal control. Fold change in the expression was calculated using delta delta Ct method. **Results:** The mRNA expression of NFKB1 gene was increased (3.3 fold, B2M as reference, 6.4 fold, 18s as reference) in the patients of T2DM with hypertriglyceridemia when compared with those patients without hypertriglyceridemia. **Conclusion:** NFKB1 gene codes for the p50 subunit that is the part of NF- κ B (p65/p50 heterodimer) which is pro-inflammatory. P50 can also act as a homodimer (p50/p50) and is anti-inflammatory. Probably this increase in the p50 expression is a protective response, to prevent damage to other organs, in the patients with T2DM with hypertriglyceridemia.

Keywords: Anti-inflammatory, diabetes, p50 subunit, triglycerides

A study of health seeking behavior in families of children with Type 1 diabetes

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Objectives: Importance of HSB is increasing being recognized in understanding patient compliance, adequacy of followup, and seeking of alternative therapies (AT), which impact glycemic control. We looked at HSB of T1D caregivers. **Methods:** 56 families: Child's T1D duration >1 y, were interviewed: 49 coming to a private clinic, 7 in government hospitals. SES was low in 20, upper/middle ("non-poor") in 36. **Results:** After diagnosis, 24/56 (43%) had consulted 2-10 (mean 3.3) doctors - 6/20 (30%) poor families, 18/36 (50%) non-poor. Conversely 11: 7 poor (35%) and 4/36 (11%) non-poor families consulted no doctor for 1-3 y (mean 1.25 y) after diagnosis. Reasons given: "nothing new to learn, can manage dose adjustment ourselves":

8; "did not know we were supposed to follow up": 2; "shifted out of Delhi, couldn't find pediatric endocrinologist": 1. During this gap, there were 3 admissions for hyperglycemia; and 5 episodes of severe hypoglycemia managed at home. AT was tried by 35/56 (62%): Ayurveda by 8, Homeopathy 10, Naturopathy/Home remedies 17 [bitter gourd, neem juice, fenugreek, jamun]: 40% AT triers were poor, 60% non-poor. Reasons given: Own beliefs, experiences of other diabetics, television, internet, social groups, magazines and seminars. Reasons for choosing medical provider: Doctor treating or referred to during admission: 26; own financial status: 11, distance: 7, their experience and level of satisfaction with doctor: 12. Of clinic patients, 25/49 have regular followup, 16 irregular, and 8 had no visits in the past year. SES-wise, 18/36 (50%) non-poor, 7/20 (35%) poor families have regular followup. **Conclusions:** Doctor shopping, erratic followup, trying AT, are common problems, and need to be proactively discussed with families to find solutions. HSB is only partly determined by SES: Non-poor families did somewhat more doctor shopping; poor families had more irregular followup.

Keywords: Alternative therapy, health seeking behaviour, type 1 diabetes

Laron syndrome: A case series

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Introduction: Patients with Growth Hormone (GH) insensitivity (AKA Laron Syndrome) have been reported from Ecuador, Mediterranean region & India. We present here the clinical & biochemical profile of 2 children with Laron Syndrome from costal Karnataka. Materials & Methods: Two children with short stature (<3 S.D) were evaluated and diagnosed as Laron syndrome based on

clinical features & biochemical profile suggestive of GH resistance. Clonidine stimulation test was performed as GH stimulation test. **Results and Discussion:** Age of presentation was 4 & 12 years. Both were considerably short height for age percentile (<3 S.D). Baseline evaluation, thyroid function tests & 08 AM serum cortisol level were normal. Bone age was significantly delayed. One had characteristic facies of GH insensitivity. Both had low IGF-1 level with high basal & clonidine stimulated GH level. **Conclusion:** Laron Syndrome should be suspected in children with clinical features of GH deficiency/insensitivity, high GH level & low IGF-1. These children are in state of GH resistance & need IGF-1 therapy.

Keywords: Growth hormone, IGF-1, insensitivity, Laron

Abstracts

Saponin activation of peroxisome proliferator-activated receptor gamma (PPAR γ) a step-ahead of thiazolidenediones, metformin in diabetes treatment: *In silico* studies

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In silico studies revealed saponins as potent activators of PPAR γ with more binding interactions than thiazolidenediones (TZDs) and metformin. Hence saponins may be potent lead compounds for the treatment of diabetes mellitus.

Key words: Drug development, lead compound, molecular docking, phytochemicals

A study on assessment of prevalence and etiology of short stature in a tertiary care centre in India

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Objective: Short stature is defined as subnormal height relative to other children of the same sex and age, taking family into consideration. This prospective study was designed in order to determine the etiologies of short stature with especial concern on the prevalence of growth hormone deficiency. **Materials and Methods:** We studied 45 subjects (25 boys and 20 girls) aged 4-18 years (mean,

12.8 ± 3.8) with short stature. The decision to investigate the growth hormone axis was made with the knowledge that other explanations for growth failure have been excluded by documentation of a normal full blood count, ESR, renal function, and measurement of serum thyroxine concentration. In some female subjects, a karyotype was performed to exclude Turner's syndrome and caeliac disease screen was also performed in select patients. Bone age was determined in all subjects. **Results:** Normal variants of growth including constitutional growth delay and growth hormone deficiency were identified as the most common causes of growth failure in this study. Growth problems were more common in boys than in girls (15:1). Among the short subjects, 23.4% had classic growth hormone deficiency (GHD). Boys outnumbered girls 1.8:1. **Conclusion:** We conclude that (1) most children with short stature will not have an endocrine disorder, but in endocrine referral centers, the frequency of GHD is higher than in general clinics and (2) GHD appears to be more common in boys.

Clinical profile of lymphocytic hypophysitis: A case series

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Introduction: Lymphocytic hypophysitis is a rare inflammatory/autoimmune disorder predominantly occurring in women in pregnancy and postpartum state which is characterized by destruction and lymphocytic infiltration of the pituitary gland resulting in a pituitary mass lesion and/or various degrees of hypopituitarism. **Aim:** The aim of this study was to find out clinical profile of the disease, so that unnecessary surgery can be avoided. **Materials and Methods:** We studied 2 male and 8 female patients who had reported to a tertiary care centre in the past 1 year. One lady conceived on treatment. The patients were aged between 25-45 years. **Observation:** Out of 10 patients, 4 females presented with headache, vomiting and visual disturbances,

3 females presented with polyuria, polydipsia and secondary amenorrhea, 1 female presented with hyponatremia, visual disturbance and polyuria, 1 male presented with recurrent hyponatremia and 1 male presented with muscle cramps, generalised weakness, headache and vomiting. Evaluation showed low pituitary hormone levels. MRI head showed intensely enhancing mass involving the pituitary gland with stalk thickening. Two cases were diagnosed postoperatively. All the patients were managed with hormone replacements and followed up regularly which showed significant reduction in the pituitary size.

Conclusion: The common clinical features include headache, visual disturbances, symptoms of hypopituitarism and diabetes insipidus. Lymphocytic hypophysitis is a difficult and challenging diagnosis to make. Inflammatory process of the hypophysis can be misdiagnosed because the clinical and radiological features mimic sellar or parasellar tumours. The characteristic clinical profile and neuroimaging should be recognized so that surgery and consequent permanent hypopituitarism can be avoided.

Keywords: Hypopituitarism, lymphocytic hypophysitis

Evaluation of mRNA expression of Nrf-2 and NQO-1 genes in the young patients of metabolic syndrome

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Aim of Study: Metabolic syndrome (MS) is a chronic inflammatory state and is characterized by oxidative stress. This study aims to evaluate the expression of antioxidant genes i.e. nuclear factor erythroid 2-related factor 2 (Nrf-2) and NAD (P) H:quinine oxidoreductase-1 (NQO1) in young patients of MS. **Materials and Methods:** Participants were recruited from the undergraduate medical students of the parent institute. Patients (n = 15) of MS were diagnosed on the basis of NCEP-ATP III criteria. The mRNA expression of Nrf-2 and NQO-1 genes was measured in whole blood samples of patients as well as healthy controls (n = 15), with the help of real time PCR.

The relative expression was analysed by qPCR using dye (Syt09, Invitrogen) based chemistry. Specific primers were used for Nrf-2 and NQO-1 genes while B2M and β -Actin was used as an internal control. Fold change in the expression was calculated using delta delta Ct method. **Results:** Mean age in control group was 19.7 years and in patient group was 20.6 years. The expression of both Nrf-2 and NQO-1 was increased in the patients. Keeping B2M as normalizer, expression of Nrf-2 was 3.2 times and NQO-1 was 3.4 times higher in patients. Keeping β -Actin as normalizer, expression of Nrf-2 was found to be 2.3 times and NQO-1 was 2.4 times more in patients of MS. **Conclusions:** Nrf-2, a transcription factor is a key regulator of antioxidant genes. Various antioxidant genes including NQO-1 are its downstream targets. The results of our study indicate that expression of master regulator (Nrf-2) as well as the antioxidant gene (NQO-1) is increased in young patients of MS. The increased expression of antioxidant enzymes indicate that the protective mechanism in the young patients to counter oxidative damage seen in MS may be mediated through increased expression of antioxidant enzymes.

Keywords: Nrf-2, NQO-1, metabolic syndrome

A study on the association of MEN1 and AIP gene variations with sporadic anterior pituitary adenoma

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Objective: Molecular screening of MEN 1 and AIP genes in sporadic Anterior Pituitary Adenoma (APA). **Materials and Methods:** A total of 50 clinically diagnosed APA patients from the outpatient department of Endocrinology and Metabolism and healthy individuals from general population were recruited. Detailed clinical and family history was noted and 5ml blood samples collected. Genomic DNA was subjected to PCR amplification of *MEN1* and *AIP*, followed by direct sequencing. Results were compared with reference sequences in public databases and *in-silico* prediction of functional effects of variations was done using Mutationt@ster and Human Splicing Finder (HSF). **Results:** Of the 50 patients (22 corticotropinoma,

17 somatotropinoma, 7 prolactinoma, 1 thyrotropinoma, 3 silent adenoma), 31 were females and 19 males with mean age at onset of symptoms 26 ± 12 years. Magnetic Resonance Imaging revealed 35 macroadenoma and 15 microadenoma patients. Genetic changes in either *MEN1* or *AIP* were found in 44 patients while 5 patients showed changes in both the genes. *MEN1* screening identified variations L404L (1 patient), novel intronic variations c.913-79T>A (2 patients) and c.784-129T>A (1 patient), reported intronic variation c.913-42G>C (2 patients) and SNP rs669976 (16 patients). These changes were not found in the controls. SNPs rs654440 (40% cases; 62% controls) and rs2071313 (46% cases; 80% controls) were also identified. *AIP* screening revealed novel intronic splice site variation c.100-6C>A (1 patient), SNPs rs2276020 (2 patients) and rs4084113 (7 patients). Variations c.913-42G>C and c.100-6C>A were predicted to be disease causing by Mutationt@ster and HSF. **Conclusions:** The *MEN1* and *AIP* variations in sporadic APA were identified in introns compared to exonic variations reported in familial pituitary adenoma. Variations at the intron-exon boundary seem to alter splicing and thereby affect the final transcript which may have a role in disease causation.

Keywords: Genetics, MEN1, mutation, sporadic

Mayer-Rokitansky-Kuster-Hauser-Syndrome II

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Mayer-Rokitansky-Kuster-Hauser (MRKH) syndrome is a rare disorder that affects one in 4500 females.^[1,2] It accounts for approximately 15% patients with primary amenorrhea and is also the second commonest cause. Patients with MRKH syndrome usually express a normal 46, XX karyotype.^[2] MRKH syndrome is usually present in the form of primary amenorrhea and abnormalities of internal genitalia, namely the absence of uterus and upper 2/3rd of vagina.^[1] MRKH females usually have a small vaginal pouch.^[3] These patients usually appear to have normal secondary sexual characteristics. Outer vaginal appearance, breast size and pubic hair growth are normal in most cases.^[2] Two types of MRKH syndrome have been described

referred to as Type I and Type II. Type I MRKH syndrome occurs in an estimated 44% of MRKH patients and is described as a female presenting with mullerian agenesis and a short vaginal pouch. Patients with Type I do not present congenital complications.^[1,4] Type II MRKH syndrome is estimated to present in 56% of cases, with Type I characteristics as well as with congenital abnormalities. These can include renal, skeletal, hearing and cardiac complications.^[4,5] All women with MRKH syndrome have increased levels of psychological distress. The etiology is thought to be polygenic, multifactorial, genes such as the HOXA7, HOXA9-13, HOXD9-13 and WNT4 genes have been considered as possible offenders.^[1] The normal external appearance of MRKH syndrome patients makes it difficult to diagnose until puberty, typically diagnosed in mid adolescence. The average age of diagnosis is between 15-20 yrs although occasionally a girl may be diagnosed at birth or during childhood because of other health problems. Diagnosis of this syndrome is usually performed by means of ultrasound and magnetic resonance imaging.^[6]

Keywords: Karyotype, mullerian agenesis, polygenic

Interplay between Apo AV protein, triglycerides, inflammation and oxidative stress in type 2 diabetes

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Objectives: Diabetes and hypertriglyceridemia are very closely associated. The objective of this study was to understand the relation between the two as well as pathophysiology of increased risk of atherosclerosis in diabetes. The aim of this study is to evaluate role of Apo A-V in causing hypertriglyceridemia in type 2 Diabetes (T2DM) and its relation with inflammation and oxidative stress. **Materials and Methods:** Known cases of T2DM were categorised based on NCEP ATP III criteria into Group I (TG \leq 150 mg/dl) and Group II (TG \geq 200 mg/dl). Apart from routine biochemical investigations serum levels of Apo A-V protein, IL-6, free fatty acids and MDA were estimated. **Results:** Serum Apo A-V protein levels were found

to be significantly lower ($p = 0.04$) in the Group 2 and MDA was higher ($p = 0.049$). Though serum IL-6 and FFA levels were to be higher in Group 2 the difference was not statistically significant ($p = 0.338$ and 0.291 respectively). MDA correlated positively with TG levels ($p = 0.000$) and negatively with HDL ($p = 0.000$). However Apo A-V protein levels did not correlate with either TG levels or IL-6 and MDA. **Discussion:** Significant lower values of Apo A-V in the Group with hypertriglyceridemia proves its role in modulation TG levels. However in our study, its independent effect on TG metabolism appears to be minimal. Significantly higher levels of MDA, a marker of oxidative stress, in patients with hypertriglyceridemia and its strong correlation with TG shows that TGs contributes to the oxidative stress in T2DM. In addition higher FFA and IL-6 levels in these patients also indicate that TGs contributes to underlying inflammation. Thus oxidative stress and inflammation which may be an important pathophysiological mechanism behind vascular and other complications associated with the hypertriglyceridemia in T2DM.

Keywords: Apo A-V protein, hypertriglyceridemia, oxidative stress, type 2 diabetes

Obesity significantly predicts abnormal blood glucose: Results of Apollo Sugar Pan India Diabetes Surveillance Campaign

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Objective: Present study assessed the role of high body mass index (BMI) in predicting abnormal blood sugar in subjects screened in a mass community surveillance campaign. **Methods:** It is a cross sectional study where participants from community were interviewed and tested for RBG across various cities of India. Subjects were interviewed using a structured questionnaire where various demographics and disease details were collected if applicable. Study subjects were classified based on BMI according to the guidelines laid down by Indian Council of Medical Research,

India. BMI of <23, 23-25 and >25 Kg/m² as normal, overweight and obese respectively. Abnormal blood sugar is considered as a person having random blood glucose >180 mg/dL at the time of screening. **Results:** A total of 27,056 subjects were recruited during community surveillance campaign. Mean age, BMI and RBG were found to be 45.4 years, 25.6 Kg/m² and 132.2 mg/dL. Prevalence of overweight and obesity were found to be 21.4% and 53.9%. 13.3% (n = 3,595) subjects were found to have abnormal blood glucose (RBG >180 mg/dL). Prevalence of abnormal RBG is highest in obese subjects (14.9%) followed by overweight (13.4%) and normal and underweight subjects (9.8%). Binary logistic regression analysis revealed that higher BMI as a significant ($P < 0.01$) predictor of abnormal RBG (Odds ratio, 1.05 (95% CI, 1.04-1.06)). **Conclusion:** The present study revealed high burden of obesity in India and also found obesity as a significant predictor of abnormal sugar levels. This study reiterates the fact that obesity and hyperglycemia as co-existing and need to be managed using multi-dimensional treatment approach.

Keywords: Blood glucose, diabetes, obesity

Prevalence, trends and implications of association of nonalcoholic fatty liver disease in type 2 diabetes: Study from Western India (FATTYDIAB study)

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Background and Aims: NAFLD is closely associated with type 2 diabetes, an integral component of metabolic syndrome. **Materials and Methods:** We conducted an initial phase of the long term, prospective, observational FATTYDIAB study in the Western Indian patients, evaluating the physical, biochemical and liver ultrasonography parameters for NAFLD in 200 T2DM confirmed patients, males (n = 144), females (n = 56); mean age 52.7 ± 9.1 years (range 32-80). **Results:** Stratified 3 age tertile pattern reflects increased prevalence of NAFLD (82%) in economically productive age group (<60 years). 71.5% (n = 143) had grade 1 (mild) to grade

2 (moderate) fatty liver. Bivariate correlation for NAFLD with changes in biochemical parameters were FPG; R = 0.064 (p = 0.368), PPG; R = 0.076 (p = 0.288), HbA1c; R = 0.145 (p = 0.040), SGOT; R = 0.181 (p = 0.010), SGPT; R = 0.162 (p = 0.022) and serum bilirubin; R = 0.069 (p = 0.331). Linear positive trends were evident for HbA1c with different grades of fatty liver ($R^2 = 0.021$, F = 4.22; p = 0.040). Progression of HbA1c with NAFLD was Grade 0; 8.0 (7.6-8.5), Grade 1; 8.6 (8.3-9.0), Grade 2; 8.7 (7.8-9.5) and Grade 3; 9.2 (7.5-11.0); Ptrend = 0.108. The physical and biochemical parameters revealed distinct patterns of dyslipidemia (low HDL and high triglycerides), blood pressure (mean systolic 133 mm hg) and BMI (mean 27). **Conclusion:** Epidemiological trends clearly demonstrate that the predominant patterns in the economically productive age group. The glycaemic markers (fasting, post prandial glucose and HbA1c) are strongly correlated for prediction of NAFLD. However, the association of glycemic markers for progression of NAFLD was not statistically significant. An early aggressive intervention with a customised pharmacological approach to address the co-morbidities in these 'thin-fat' Indians is needed to improve clinical outcomes in type 2 diabetics with NAFLD.

Keywords: Diabetes, fatty liver

Extent of glycemic excursions in patients with fairly controlled type 2 DM with diabetic kidney disease, using continuous glucose monitoring system

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Objectives and Aim of Study: To evaluate the extent of glycemic excursions in diabetic kidney disease with well-controlled glycemia and to make a comparative evaluation among the effects of glimepiride, vildagliptin and insulin on glycemic variability. **Materials and Methods:** Thirty patients of T2 DM and diabetic kidney disease were taken whose HbA1C was less than 8%, fasting plasma glucose less than 150 mg/dL, two hour post prandial plasma glucose less than 200 mg/dL, eGFR- between 15 to 59 ml/min/1.73 m². Exclusion criteria were pregnancy, non diabetic kidney disease, decompensated heart failure, liver failure and systemic infections. Patients were categorised into three groups, on glimepiride (n = 10),

on vildagliptin (n = 10) and on basal bolus insulin (n = 10). Dose calculation of the drugs was based upon renal and glycemic status. Patients were under standard management as per recent ADA guideline. Patients underwent CGM for 72 hours and the results were analysed. **Results:** Post dinner CBG was found to be significantly higher in the glimepiride (228 ± 37.66) cohort than vildagliptin (196 ± 40.43) cohort ($p = 0.043$) and the predinner CBG was significantly higher in the insulin (130 ± 45.08) cohort than vildagliptin (92.89 ± 26.06) cohort ($p = 0.047$). No significant difference in daytime as well as nocturnal hypoglycemia was noted among the three arms. Other parameters did not reach a statistical significance in our study, though we found numerical differences in the study parameters between the three groups. **Conclusion:** CGMS can reveal episodes of glycemic instability in a diabetic patient categorized as having stable glycemia by HbA1c, FPG and PPPG. Insulin, Glimepiride and Vildagliptin did not differ markedly in reducing glycemic variability in our study. Strict implementation of lifestyle modification and glycemic control can influence the extent of glycemic variability, which may have influenced the results. Small sample size was also a limiting factor in our study. However, CGMS proved to be a reliable tool to monitor the details of blood glucose change in diabetic kidney disease.

Keywords: CGMS, diabetic kidney disease, glycemic variability

Epidemiology of glucocorticoid induced diabetes in hematological disorders in a tertiary care centre in India

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Objectives: Glucocorticoids are widely used in hematological disorders and can cause hyperglycemia with worse outcomes. Since there is a paucity of data in India, we undertook a pilot epidemiological study to assess the incidence of glucocorticoid induced diabetes mellitus in hematological disorders. **Methods:** Patients diagnosed with hematological disorders, newly initiated with glucocorticoids were included in a short term [4 weeks] prospective longitudinal study. Patients [13-65 years] receiving all type of glucocorticoid regimens namely prednisolone, methyl

prednisolone and dexamethasone, in standard hematology protocols were included. Patients with past history of diabetes were excluded. Standard 75 g OGTT, serum insulin, HOMA IR was performed on day 1 before initiation of glucocorticoids and on day 7 and day 28. **Results:** Out of 43 patients [24 males and 19 females], around 44% [n = 19] were found to have DM [group A], around 16% [n = 7] developed intermediate hyperglycemia [group B] and around 40% [n = 17] were euglycemic [group C]. Across groups A, B, C, parameters like age, blood pressure, BMI, waist hip ratio, eGFR, there was no statistical difference. Baseline HbA1C, HOMA-IR at baseline and on day 28 in group A, was significant compared to groups B and C. The sepsis rate was high; 5/19 patients in group A compared to 3/24 in group B and C. Two out of five patients died in group A of sepsis. **Conclusion:** The incidence of glucocorticoid induced diabetes mellitus in our study was high around 44%, with females having a higher incidence. One fourth of hyperglycemia group patients developed sepsis with high mortality rate. Baseline HbA1C and higher HOMA-IR, predicted development of glucocorticoid induced diabetes.

Keywords: Glucocorticoids, HOMA, hyperglycemia

Role of PDA in shared decision making in treatment of T2DM: A novel concept for diabetes management in India

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Introduction: The patient is key decision maker in acceptance of particular pharmacotherapy and solely responsible for adherence to the treatment prescribed by diabetologist. The Patient decision aid (PDA) designed by multidisciplinary steering committee has proven to be an important tool for, Shared decision making (SDM) process which has been defined as: “an approach where clinicians and patients share the best available evidence when faced with task of making decisions, and where patients are supported to consider options, to achieve informed preferences.” SDM helps patients acquire essential knowledge to make informed decisions according to their personal values and preferences in treating chronic disease like diabetes. It

substantially and significantly improved knowledge, decisional self-efficacy, decisional conflict among diverse group of T2DM patients as shown in global studies. **Concept and Tools:** Janssen supported development of evidence-based PDA to support the choice of antihyperglycemic agent when metformin use alone does not achieve glycemic control. Six important domains were identified for choosing an additional treatment: 1) degree of glycemic response, 2) avoiding weight gain, 3) risk of hypoglycemia and other adverse events, 4) avoidance of injections, 5) convenience of dose administration and blood glucose monitoring and 6) cost of therapy. This PDA received highest International Patient Decision Aids Standards global score to date. **Indian Context:** This PDA tool seems to have more practical and logistic relevance in countries like India where maximum patients pay out of pocket for healthcare services. **Conclusions:** This poster will introduce the concept of novel PDA for subjects with T2DM for whom first line treatment with metformin is no longer effective. The PDA will assist SDM process helping patient to acquire essential knowledge to make informed decisions under guidance of healthcare provider. This may contribute in decreasing disease burden and making right choice of individual therapy to improve adherence and outcomes.

Keywords: Diabetes, patient decision aid, shared decision making

Association of GCK, HNF1A and KCNJ11 gene polymorphisms in gestational diabetes mellitus in the eastern Indian population

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Aims and Hypothesis: A significant amount of pregnant women develop gestational diabetes mellitus (GDM) during their pregnancies and the prevalence has increased considerably during the last decade. GDM is a heterogeneous disorder characterized by intolerance to carbohydrates and hyperglycemia in varied degrees of intensity, with onset of first diagnosis during pregnancy. This work is focusing on genes, common to both type 2 diabetes and gestational diabetes.

Methods: DNA was extracted from peripheral blood leukocyte using salting out method. Genotyping of 30G>A in GCK, Ala 98 Val in HNF1A and Glu 23 Lys in KCNJ11 genes were performed in 77 non diabetic control pregnant women and 58 GDM subjects using PCR coupled restriction fragment length polymorphism analysis. **Results:** GCK-30G>A allele frequency in GDM (18.1%) was increased compare to non-diabetic control pregnant women (14.8%) (odds ratio [OR] 1.28 [95% CI 1.02-1.35]), where HNF1A Ala 98 Val polymorphism was not associated with GDM but Leu 27 polymorphism in GDM (36.3%) compare with non-diabetic control pregnant women (33.01%) shows borderline significance (odds ratio [OR] 1.16 [95% CI 1.001-1.34]). In case of KCNJ11 gene Glu 23 Lys polymorphism is associated with GDM (42.2%) compare to normal pregnancy (38.3%) (odds ratio [OR] 1.17[95% CI 1.02-1.35]). **Conclusion:** The 30G>A polymorphism in GCK, Leu 27 polymorphism in HNF1A and Glu 23 Lys polymorphism in KCNJ11 gene are seems to increase the risk of GDM in Eastern Indian Population.

Keywords: GCK, gestational diabetes mellitus, HNF1A, KCNJ11, single nucleotide polymorphism

Electronic survey on teneligliptin - Insights on efficacy of teneligliptin in Indian setting

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Background: Dipeptidyl Peptidase-4 inhibitor (DPP-4i) is a promising class of drug to manage type 2 diabetes mellitus (T2DM). Teneligliptin, a DPP-4i has various advantages like reduced risk of hypoglycaemia, beta cell preservation, cardiac safety and reduced risk of weight gain compared to other anti-diabetic drugs. However, not much is known about its efficacy in Indian setting. Hence we conducted a survey to understand real life experience of Indian doctors regarding the efficacy of teneligliptin. **Materials and Methods:** An online electronic survey was conducted to gain insights on efficacy of teneligliptin in India. A survey questionnaire containing 9 questions was open online for two months. Doctors practicing in India and prescribing the molecule

teneligliptin to T2DM patients were eligible to participate in the survey. R-software was used for data analysis. **Results:** A total of 683 doctors (18 States and Union Territories) from all over India participated in this survey. Efficacy of teneligliptin was rated as excellent by 34% and good by 61% of doctors. It was prescribed as first add-on therapy by 34% of doctors. All doctors considered teneligliptin in T2DM with hypertension and dyslipidaemia. Also, 62% prescribed it in T2DM with mild hepatic impairment. 77% of doctors agreed and 14% of the doctors strongly agreed that no dose adjustment was required in mild, moderate and severe renal failure for teneligliptin. When compared with other DPP-4i, it was rated as good by 42% and excellent by 14% doctors. **Conclusion:** Teneligliptin was widely prescribed and considered as first add-on therapy with 20mg being the preferred dose by Indian doctors. Overall efficacy of teneligliptin was found to be good in T2DM patients with comorbid hepatic conditions, renal conditions and also when compared to other DPP-4i. Therefore this low cost gliptin is a good alternative to other costly gliptins in developing countries like India.

Keywords: Dipeptidyl peptidase-4 inhibitor, DPP4 inhibitor, DPP-4i, teneligliptin