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Abstracts of Free Papers

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The use of Inferior Petrosal Sinus Sampling (IPSS) without CRH stimulation in the Diagnostic Evaluation of ACTH dependent Cushing Syndrome (CS): Sri Lankan Experience

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Background

Differentiation between Cushing disease (CD) and ectopic ACTH syndrome (EAS) is challenging due to overlapping biochemical features and poor sensitivity of pituitary MRI in the detection of CD. IPSS with CRH stimulation is the gold standard method to evaluate ACTH dependent CS. In centres with suitable expertise, it has a sensitivity of 97% and specificity of 100% for diagnosing CD (1). However, CRH is expensive and therefore it is not used in South Asian region.

Objective

To assess the efficacy of IPSS without CRH stimulation in the evaluation of ACTH dependent CS.

Methods

This study was a retrospective analytical study conducted at the National Hospital of Sri Lanka. IPSS (with measurement of basal state ACTH gradient) was performed in ten patients with biochemically proven ACTH

dependent CS. These patients had either normal pituitary or pituitary microadenoma less than 6 mm in size. The efficacy of IPSS was assessed by comparing catheter study results with histopathological diagnosis which included nine cases of CD and one case of EAS. A basal state Inferior petrosal sinus: Peripheral vein (IPS:PV) ACTH gradient of at least 2 was considered diagnostic of CD.

Results

The results of IPSS are shown in Table 1. A basal state IPS:PV ACTH gradient of at least 2 was observed in eight out of nine patients with histologically proven CD (sensitivity 88.8%). Average basal state ACTH gradient was 6.43 (range 1.20 - 19.53). IPSS without CRH stimulation could correctly exclude pituitary source of ACTH secretion in the patient with EAS (Basal IPS: PV ACTH gradient <2). Neurological complications were not observed during or after the procedure.

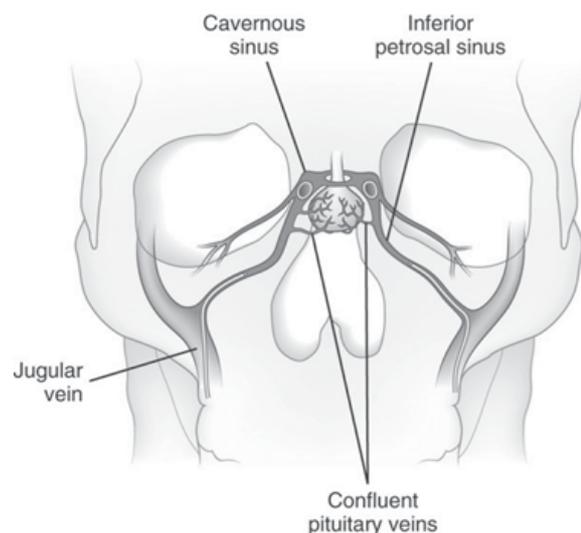


Figure 1. Anatomy of the venous drainage of the pituitary gland (2).

Table 1. IPSS Results

Case	Histological Diagnosis	ACTH (pg/ml)		
		IPS (Dominant side)	Peripheral Vein	IPS/PV Gradient
1	CD	1680	86	19.53
2	CD	1550	122	12.70
3	CD	657	81	8.11
4	CD	436	84	5.19
5	CD	237	48	4.94
6	CD	32	15	2.13
7	CD	44	21	2.10
8	CD	92	45	2.04
9	EAS	50	45	1.11
10	CD	89	74	1.20

Conclusion

In places where CRH is not available, IPSS with measurement of basal ACTH gradient appears to be effective in differentiating CD from EAS.

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Modified Ferriman-Gallwey score, Serum Testosterone level and Free Androgen Index, in assessment of Hyperandrogenism in subjects with Polycystic Ovary Syndrome

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Background

Many clinical and biochemical criteria are used to assess hyperandrogenism in subjects with Polycystic Ovary Syndrome (PCOS).

Objectives

To evaluate effectiveness of Modified Ferriman-Gallwey score (FG Score- hirsutism), serum total testosterone, and free androgen index (FAI), in the assessment of hyperandrogenism.

Methods

A case control study was conducted on 100 women aged 20- 45 years (mean age=30). Confirmed cases with PCOS were age matched for controls from healthy volunteers. Recommended cut-offs used; FG >8, testosterone (T) >3.5 nmol/L, and FAI >5. (Specific cutoffs for South Asians not been defined). Receiver operating characteristics (ROC) curves were drawn to compare diagnostic power of each parametre.

Results

N= 50 cases, 50 controls. Cases versus. Controls had significantly greater FG score, testosterone and FAI: median FG=10 versus. 3 (p= 0.00), mean T 2.762±1.78 versus.1.045±0.40(p= 0.00), mean FAI 7.31±7.55 versus.3.64±4.87 (p= 0.01); 76% cases and 4% controls had FG score > 8, 8.30% cases had elevated T with none among controls, 43.3% cases and 14.7% controls had FAI >5. The diagnostic power of T was greater than that of FAI in subjects with FG score >8. In ROC curve, area under the curve (AUC) for T and FAI were 0.832 and 0.766 respectively. T had 27% sensitivity and 97.5% specificity at cut-off 3.5 and FAI had 50% sensitivity and 87.5% specificity at cut-off of 5, in Sri Lankan PCOS subjects.

Conclusions

The clinical assessment by FG score detects hyperandrogenism in PCOS subjects more frequently compared to biochemical tests, testosterone and FAI. A higher detection rate was observed in controls when FAI was used as the indicator, suggesting a possible influence from changes in SHBG concentration. Total testosterone had greater diagnostic power than FAI.

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Prevalence and types of lipid abnormalities in patients with newly diagnosed type 2 diabetes mellitus: A clinic based prospective study

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Objective

The objective of this study was to determine the prevalence and types of lipid abnormalities in patients with newly diagnosed type 2 diabetes mellitus in Sri Lanka.

Method

370 consecutive newly diagnosed patients with type 2 diabetes mellitus above 18 years referred to diabetes clinic at Teaching Hospital, Peradeniya from 1st of October 2009 to 30th September 2010 were enrolled. Height, weight, blood pressure, overnight fasting lipid profile and HbA1c were determined in all patients at first clinic visit.

Results

There were 234 (63.2%) females and 136 (36.8%) males. The mean age (\pm SD) of the population was 50.1 \pm 11.7 yrs. The commonest lipid abnormality was hypercholesterolemia, observed in 61.5% of the patients followed by high LDL observed in 51% of the patients. 39.5% of the patients had hypertriglyceridaemia while 26% patients had low HDL. Overall prevalence of any of these lipid abnormalities was 84%. Although prevalence of low HDL was significantly higher in females than males (51.7% vs. 16.1%; $P < 0.001$), there were no differences in prevalence of hypercholesterolaemia, high LDL and hypertriglyceridaemia in females and males. The prevalence of hypercholesterolaemia, high LDL, hypertriglyceridaemia and low HDL was significantly associated with central obesity. There was no significant correlation between the

fasting lipid levels with patient's age, BMI, blood pressure and HbA1c levels. The mean for total cholesterol was 213.2 \pm 49.6, for triglyceride 148.0 \pm 67.5, for LDL 136.3 \pm 46.4, and for HDL 48.6 \pm 7.9 mg/dl.

Conclusion

Even at the time of diagnosis, the prevalence of lipid abnormalities is very high in our diabetes population. The commonest lipid abnormalities observed in this population are low HDL level followed by hypercholesterolaemia.

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Acromegaly: Outcome of management at National Hospital of Sri Lanka

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Introduction

Many of the treatment modalities recommended for acromegaly are either too expensive or not available in Sri Lanka. There is a dearth of treatment and outcome data in Sri Lankan patients.

Objectives

The purpose of this study was to describe the demographic factors, presentation and comorbidities in acromegaly patients, and to analyze the treatment modalities used and the respective outcomes which include remission, recurrence and mortality among patients with acromegaly.

Methods

This was a descriptive cross sectional study conducted among 72 acromegaly patients attending endocrinology clinic and pituitary clinic at National Hospital of Sri Lanka between January 2012 and June 2013. Pituitary adenomas were classified based on Hardy's classifications. A remission criteria of nadir growth hormone level < 1 mU/L after oral glucose tolerance test (OGTT) or less than 5 mU/L in a five point GH Day curve was used.

Results

54.1% were females. The mean age of the patients at the time of presentation was 39.52 (SD \pm 12.8) years and the

mean duration of symptoms on presentation was 3.28 years (SD \pm 2.7). The commonest presentations were changes in facial appearance and increase in shoe and ring sizes (88%). 81.8% had tumour grade II and above. 14.2% had prolactin cosecreting with GH. 86.1% underwent TSS. 37.5% of patients with grade I tumour and 33.3% of patients with grade II tumour achieved remission following TSS. None of the patients with tumour grade III or above achieved remission following TSS. EBRT was effective in 20% in achieving remission. Medical therapy (either cabergoline or bromocriptine) as bridging/primary therapy achieved remission in only 20.8%. Irrespective of the mode of treatment no recurrence was noted in the patients who achieved remission. The mortality in this case series was 2.7%.

Conclusions

TSS remains the treatment of choice in acromegaly, though in grade III and IV tumours the success was limited. As most of the recommended options are very costly or unavailable in Sri Lanka, alternative treatment options generally used are EBRT or medical therapy (cabergoline/bromocriptine) which have limited efficacy.

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Adrenal carcinoma with synchronous liver metastasis: A rare cause for Cushing's syndrome

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Introduction

Adrenal carcinomas are uncommon. The incidence is approximately 0.6-1.67 cases per million persons per year. Females are more likely to get functional carcinomas. In the literature some reports suggest an increased predilection for the left adrenal. Approximately 60% of adrenal carcinomas will be functional with typical Cushingoid symptoms. Females will have features of androgen excess in addition. Most common sites for metastases are the lungs, liver, bone, and lymph nodes. The overall 5-year survival rate is approximately 20-35%.

Case report

Thirty four year old previously healthy female presented with clinical features of Cushing's syndrome and androgen excess with ankle oedema, which is atypical for the clinical picture. She was found to have hypertension with

hypokalaemic alkalosis and diabetes on admission. She had hepatomegaly, L/S retroperitoneal mass, mild ascites and bilateral ankle oedema. On investigations, she had biochemical evidence of ACTH independent Cushing's syndrome and androgen excess. Mineralocorticoid axis was not investigated in detail. She was found to have L/S adrenal carcinoma with liver metastasis in USS abdomen and CT abdomen.

She was started on ketoconazole and debulking surgery was planned followed by chemotherapy. But while awaiting surgery she developed acute liver failure and died within 2 weeks from diagnosis.

Conclusion

Metastatic adrenal carcinoma is a very rare cause of Cushing's syndrome. It is an extremely virulent malignancy leading to severe morbidity and poor survival. We are left with very few treatment options for palliation. Early suspicion and recognition of disease would direct the patient for early surgery to achieve maximum survival benefit.

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Association between Body Mass Index, Waist Hip Ratio, Impaired glucose tolerance and Acanthosis nigricans in Sri Lankan subjects with PCOS

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Introduction

Though Acanthosis nigricans (AN) is not a clinical criterion in diagnosis of Polycystic Ovary Syndrome (PCOS), it is considered an indicator of higher metabolic risk in South Asian women.

Objectives

Our aim was to find the association between Body Mass Index (BMI), Waist Hip Ratio (WHR), impaired glucose tolerance (IGT) and Acanthosis Nigricans in Sri Lankan subjects with PCOS.

Methods

Retrospective data analysis of 157 consecutive South Asian women diagnosed with PCOS in a specialized

endocrine clinic in Colombo. After a detailed history and physical examination, anthropometric measurements were taken and a 75 g Oral Glucose Tolerance Test (OGTT) was performed. Subjects were categorized into two groups depending on the presence or absence of AN.

Results

The mean age, BMI, and WHR of the total study population were 25.2 years, 26.24kg/m², and 0.88 respectively. Type 2 diabetes mellitus was found in 5.1% and 17.8% had IGT. Of these 157 subjects, 104 (66.24%) had AN.

BMI > 23 Kg/m² was found in 84.6% subjects with AN and 41.5% subjects without AN. Mean BMI of the AN present and absent groups were 27.7 kg/m² and 23.3kg/m² respectively. Mean WHR were 0.896 and 0.849 in AN present and absent groups. 65.4% of patients with AN and 52.8% patients without AN had a WHR above the cutoff value. In subjects with AN, following the 75 g OGTT 6.8% were diagnosed to have type 2 diabetes mellitus and 22.1% had IGT. In the group without AN these percentages were 1.9% and 9.4% respectively. The subjects with AN had significantly higher BMI, WHR and abnormal glucose tolerance (AGT) compared to those without AN. AN, by logistic regression analysis, was found to be an independent predictor for AGT, with an odds ratio of 3.176 (95% confidence interval= 1.229-8.209).

Conclusion and recommendations

Presence of AN suggests a severe end of the spectrum of PCOS with higher BMI, WHR and higher risk of AGT in South Asians. AN is an independent predictor of AGT. It is therefore recommended to use this clinical indicator in the risk assessment of subjects with PCOS in south Asia.

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The use of Internal Jugular venous sampling (IJVS) as an alternative to Inferior Petrosal Sinus Sampling (IPSS) in the Diagnostic Evaluation of ACTH dependent Cushing Syndrome (CS): Sri Lankan Experience

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Background

IPSS is the gold standard method to evaluate ACTH dependent CS. However, IPSS is not widely available, because it is technically demanding and requires an experienced interventional radiologist. In contrast, IJVS is technically easier and may be safer, because the catheters are not advanced as far. Therefore, IJVS may become an alternative to IPSS in centers without suitable expertise, if this investigation has good sensitivity and specificity to detect Cushing disease (CD). One study which included 65 patients demonstrated that IJVS with CRH stimulation had a sensitivity of 83% for diagnosing CD (1). However, no data available on the efficacy of IJVS without CRH stimulation in the evaluation of ACTH dependent CS.

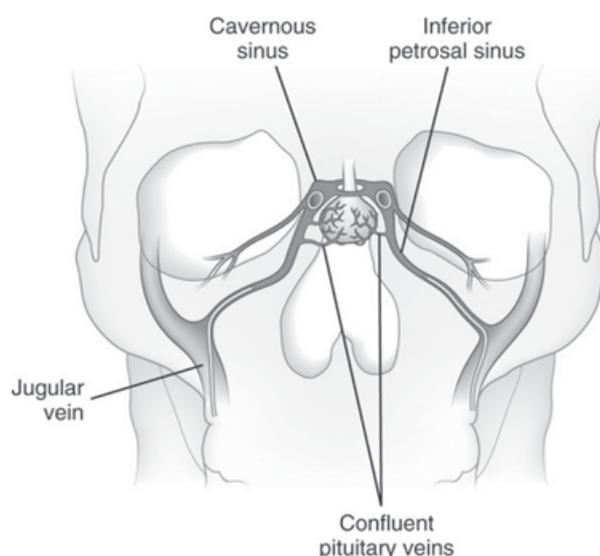


Figure 1. Anatomy of the venous drainage of the pituitary gland (2).

Objective

To compare the efficacy of IJVS with IPSS in the evaluation of ACTH dependent CS.

Methods

This study was a retrospective analytical study conducted at the National Hospital of Sri Lanka. Both IPSS and IJVS (with measurement of basal state ACTH gradient) were performed sequentially in ten patients with biochemically proven ACTH dependent CS. These patients had either normal pituitary or pituitary microadenoma less than 6 mm

Table 1. Catheter study results (IPSS and IJVS)

Case	Histological Diagnosis	ACTH (pg/ml)		ACTH Gradient	
		IPS (Dominant side)	IJS (Dominant side)	IPS/PV Gradient	IJS/PV Gradient
1	CD	1680	401	19.53	4.66
2	CD	1550	667	12.70	5.47
3	CD	657	1009	8.11	12.45
4	CD	436	190	5.19	2.26
5	CD	237	99	4.94	2.06
6	CD	32	30	2.13	2.00
7	CD	44	46	2.10	2.19
8	CD	92	10	2.04	0.22
9	EAS	50	50	1.11	1.11
10	CD	89	80	1.20	1.08

in size. The efficacy of IJVS and IPSS were assessed by comparing catheter study results with histopathological diagnosis which included nine cases of CD and one case of EAS. A basal state central (either IPS or IJV) to peripheral vein (PV) ACTH gradient of at least 2 was considered diagnostic of CD.

Results

The catheter study results were shown in Table 1. Out of nine patients with histologically proven CD, IJVS and IPSS correctly identified CD in seven and eight cases respectively. In this study, IJVS has slightly lower sensitivity (77.7%) in the localization of CD when compared with IPSS (88.8%).

Also, the average IJS/PV ACTH gradient (3.6) was lower when compared with that of IPS/PV (6.43). The dilution of blood in IJV due to drainage of other veins may be the explanation for this finding.

Both IPSS and IJVS could correctly exclude pituitary source of excess ACTH secretion in the patient with EAS (specificity 100%).

Conclusion

Centers without suitable expertise may choose to use the simpler IJVS and refer patients for IPSS when the results are negative. However, further large scale studies are necessary to assess the efficacy of IJVS without CRH stimulation in the evaluation of ACTH dependent CS.

References

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Drug compliance among patient with diabetes in Sri Lankan setting

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Objective

Compliance to drug treatment is essential in order to achieve the optimum outcome in chronic illnesses, diabetes being no exception. Our objectives were to assess the drug compliance and the factors that influence the drug compliance among patients with diabetes, in different clinical settings.

Methods

247 patients with type 2 diabetes treated in 3 different clinical settings; hospital diabetes clinic, hospital general

medical clinics and general practitioners (GPs), were recruited for the study. Data were collected using an interviewer administered questionnaire.

Results

Out of 247 patients, 201 (81.3%) patients attended the clinic regularly. Good adherence to treatment was reported in 38.4% (n=95) and 61.6% (152) had poor compliance out of which 7.2% (n=18) never adhered to treatment. Education level did not have a statistically significant association with good compliance ($p=0.613$). Diabetic clinic follow up patients had better compliance (47.1%) than patients attending the hospital medical clinics (37.0%) and the private sector clinics (23.5%). Out of the patients who had poor compliance (n=152, 61.5%), 151 patients (99.3%) took lower dose of medication than recommended, 123 (80.9%) didn't take medication on time and 122 (80.2%) didn't understand the instructions clearly. Out of the 32 patients who were on insulin, 24 (75%) had always been compliant with treatment and only 2 (0.6%) were never compliant.

Conclusions

Drug compliance is poor in diabetic patients. However, this could be improved by giving clear instructions and motivating the patient. Limitation of this study was that we didn't measure the blood sugar control in patients.

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Surgical aspects of thyroid and pancreatic disease

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Background

Majority of endocrine surgeries performed in a general surgical department, are related to the thyroid gland and pancreas. Even though thyroid gland enlargement is common, risk factors, aetiology, prevalence of malignancy, histological stage and benign disease related local data are not well documented.

Objectives

We looked into the data of thyroid and pancreatic surgery to identify common presentations of patients, mode of surgical management, histology and stage of neoplasm.

Methods

We analyzed data of thyroid and pancreatic surgery performed in professorial surgery department in Colombo south teaching hospital from January 2012 to April 2013 with regard to types of thyroid and pancreatic surgeries and the histology.

Results

Total of 81 patient records of thyroidectomy revealed 52% had total thyroidectomy and 48% had hemithyroidectomy and the commonest indication for surgery was for cosmetic reasons. Histology revealed benign disease in 21%, out of which 33% were hyperplastic nodules and 16% were multinodular goitres.

Malignant disease was evident in 79% of specimens which included papillary carcinoma 76%, follicular carcinoma 18%, and follicular carcinoma with micropapillary carcinoma in 6%. Majority of malignant tumours were T2 according to TNM staging system.

Total number of 12 pancreatic surgeries were analyzed and 67% was pancreaticoduodenectomy and 25% was distal pancreatectomy. Most of the pancreatic surgeries were done for malignant disease. Histology of malignant neoplasms revealed a majority of adenocarcinoma.

Conclusions

Nationwide data collection is necessary to identify the patterns and to study the aetiological factors of malignant and benign disease related to thyroid and pancreas.

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Effects of long-term metformin on neuro-physiological parameters, clinical parameters and vitamin B₁₂ levels

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Introduction

Prevalence of type 2 diabetes (T2DM) is increasing worldwide. Most patients with T2DM are treated with metformin. Metformin is associated with vitamin B₁₂ deficiency. Long-term metformin use could cause/exacerbate existing peripheral neuropathy.

Objectives

To assess serum vitamin B₁₂ levels in patients on long-term metformin and correlate treatment parameters, clinical neuro-cognitive and neurophysiological parameters.

Methods

Patients with diabetic neuropathy symptoms, on metformin for >2 years, attending medical clinics of National Hospital, Sri Lanka were studied using an interviewer-administered questionnaire, modified diabetic neuropathy symptom score (m-DNS: ≥1-indicative of neuropathy) and examination score (m-DNE: >3-indicative of neuropathy), mini mental state examination (MMSE: <21-indicative of poor cognitive functions), HbA_{1c} and serum vitamin B₁₂ levels (reference range: 200-950 pg/ml). Nerve conduction studies assessed amplitude and velocity of lower limb peripheral nerves. Data were analyzed using SPSS v20.0.

Results

Mean age was 62.52±7.52 (mean±SD) years (n=31, males=8; females=23). Mean duration of diabetes and metformin treatment were 11.10±7.39 and 9.26±6.66 years respectively. m-DNS (2.87±1.06) had positive correlations with metformin daily dose (1346.77±621.41mg) (rs=0.537, p=0.002) and HbA_{1c} levels (6.29±1.63%) (rs=0.434, p=0.015). Vitamin B₁₂ levels (537.45±248.06pg/ml) were in the normal range and did not correlate with treatment parameters, m-DNS, m-DNE (6.77±2.92) or MMSE (27.13±3.66). Vitamin B₁₂ levels correlated only with amplitude of right peroneal compound motor action potential at ankle (n=25, rs=0.429, p=0.032).

Conclusions

Symptom scoring could be an indicator of metformin-related peripheral neuropathy and poor glycaemic control. Patients on long-term metformin had serum B₁₂ levels within normal range and inconclusive nerve conduction findings. Future studies should aim to collect data from larger samples focusing on factors which contribute to B₁₂ level in patients on long-term metformin.

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Sleeve gastrectomy: Preliminary results from a prospective database

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Background

Over the last decade laparoscopic sleeve gastrectomy (LSG) has emerged as an increasingly utilized procedure for weight loss. Apart from weight loss it can also have an impact on the obesity related comorbidities such as diabetes, hypertension and fatty liver disease.

Objectives

To determine the impact of LSG on weight loss, obesity comorbidities (diabetes, hypertension and fatty liver disease) and operative morbidity.

Methods

We performed a retrospective review of a prospectively collected database. 15 consecutive patients underwent LSG, between October 2012 and May 2013. Data including patient demographics, preoperative body mass index (BMI), pre and postoperative comorbidities, complications, and weight loss at 1,2,3 and 6 months, were recorded and analyzed.

Results

This series comprised 14 females and 01 male with a mean age of 49 (range: 31-62) years. Their mean weight was 89.1 kg (range: 73-114), and mean preoperative BMI was 36.98 kg/m² (range: 29.4-49.12). 12 patients were diabetic (80%), one patient was pre-diabetic, 8 had hypertension (53%), while 12 had fatty liver disease (80%). The mean weight loss was 9.1%, 13.1%, 16.1% and 20.4% at 1, 2, 3 and 6 months respectively while the mean BMI decreased to 33.64, 32.14, 31.03 and 28.75 kg/m² at 1, 2, 3 and 6 months respectively. Of the 12 diabetics 10 (83%) were off all anti-diabetic medication including insulin by 4 months, while the remaining two were on metformin only. 63% of the hypertensives were off all antihypertensives by 6 months, while 100% of the patients with fatty liver disease improved during this period. One patient had to undergo splenectomy during the LSG and subsequently developed a gastro-cutaneous fistula which was repaired. One patient developed trocar site infection, while one had to undergo endoscopic dilatation of a stricture.

Conclusions

LSG is an effective surgical procedure for the morbidly obese, showing marked improvement in not only weight but also obesity associated comorbidities, shortly following surgery.

Comparison of biochemical hyperandrogenism in lean and obese South Asians with polycystic ovary syndrome

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Background

Hyperandrogenism in PCOS has diverse clinical manifestations, with obesity linked to its severe forms.

Objectives

To compare differences in clinical and biochemical hyperandrogenism among lean and overweight patients with PCOS.

Methods

Retrospective data analysis of a consecutive cohort of South Asian women diagnosed with PCOS in a specialized endocrine clinic in Colombo. They were subdivided into two groups based on their Body Mass Index (BMI) >23 Kg/m². Serum total testosterone and SHBG levels were measured and Free Androgen Index (FAI) was calculated.

Results

N= 108. Overweight/obese (n=54) and lean PCOS group (n=54) with mean age 24.6 ± 4.8 years versus. 24.5±4.7; mean BMI 28.7±5.7 kg/m² versus. 21.1 ± 1.5 kg/m² (p=0.00) respectively. Mean serum testosterone (T) 2.72 versus. 2.18 nmo/l (p=0.04). T >3.5 nmol/L occurred in 32 % of overweight PCOS versus. 21.15% of lean PCOS patients (p = 0.000). High FAI (>5) was found in 46.6% versus. 12.5% based on BMI (p = 0.043). Logistic regression analysis found BMI to be an independent predictor of elevated T with an odds ratio of 2.984 (95% CI = 2.045 - 3.922).

Conclusion

Lean and overweight PCOS subjects have significant difference in testosterone and FAI. BMI is an independent predictor of elevated testosterone levels. Therefore, it is important to consider the BMI in the management of hyperandrogenism in South Asian subjects with PCOS.

Clinical presentation and postoperative outcome in Cushing's syndrome: A Sri Lankan perspective

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Objective

To analyse the clinical presentation and postoperative outcome in patients with Cushing's syndrome.

Methods

A retrospective case note analysis of 25 patients with biochemically confirmed Cushing's syndrome in a tertiary care centre.

Results

Among 25 patients 96% (n=24) were females and 4% (n=1) were males. Mean age of presentation was 37.6 years. Weight gain (92%) was the commonest presenting feature and dorsocervical fat pad (88%) was the commonest clinical sign. Easy bruising, facial plethora, proximal myopathy and purple striae, which are more discriminatory were found in, 24%, 68%, 84% and 20% respectively. MRI pituitary demonstrated a macroadenoma in 24% (n=6), microadenoma in 48% (n=12) and no tumour in 28% (n=7). Bilateral inferior petrosal sinus sampling (BIPSS) was performed in those without a tumour and showed a ratio of >2 in 6 patients (85.7%) and <2 in one patient who was diagnosed as ectopic ACTH producing Cushing's syndrome. Two patients (8%) had undergone bilateral adrenalectomy and 22 (88%) patients undergone transsphenoidal hypophysectomy (TSS). Post operative cure (48 hours 0900 h serum cortisol level <50 nmol/l) was achieved in one patient who did not have a visible pituitary adenoma. 55.5% patients with a microadenoma achieved postoperative remission of hypercortisolism and 44.4% underwent radiotherapy for persistent hyper-cortisolism. In patients with macroadenoma postoperative cure and remission rates were zero and 4 underwent radiotherapy.

Conclusions

Weight gain is the commonest presenting clinical feature in Cushing's syndrome and discriminatory features of

Cushing's syndrome, facial plethora easy bruising and purple striae are seen less commonly in our population. In patients with microadenoma or no tumour postoperative remission rates are satisfactory but less compared to western data. In patients with macroadenoma both cure rates and remission rates are low following TSS.

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Association of physical activity with body mass index (BMI), waist circumference (WC) and visceral fat percentage among the health staff in a tertiary care setting

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Objective

To study the relationship of physical activity with body mass index (BMI), waist circumference (WC), body fat percentage and visceral fat percentage among the health staff.

Method

A descriptive study was carried out among the health staff in a tertiary care setting. Four hundred fifty two study participants were recruited representing all categories in hospital setting. An interviewer administered questionnaire was used to assess the demographic and medical history and the physical activity of the respondents. IPAQ (International Physical Activity Questionnaire) short form which was validated and translated in to Sinhala was used. Body fat and visceral fat percentages were estimated using bioelectrical impedance analysis (BIA) method and body weight, height and waist circumference were measured using WHO protocols.

Results

Half of the study population is engaged with low physical activity level (51.3%), more male staff is engaged with moderate and high physical activity (27.3% and 29.2%) compared to females (23.4% and 21%). The difference of physical activity between males and females is statistically significant ($t=2.42$ $p<0.05$). Majority of obese staff involve in low physical activity (57.1%) and

association is significant ($\chi^2=6.8$ $df=1$ $p<0.01$). There is a very poor correlation of waist circumference ($r=-0.035$ $p>0.05$) and visceral fat percentage ($r=-0.031$ $p>0.05$) with physical activity. On the other hand there is a significant inverse correlation of body fat percentage and physical activity ($r=-0.1$ $p<0.05$).

Conclusion

Females are involved in less physical activity and BMI and body fat percentages are good predictors of physical activity.

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Is ethnicity among Sri Lankan patients with diabetes, a risk factor for metabolic syndrome?

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Background

Metabolic syndrome (MetS) is associated with increased cardiovascular morbidity and mortality. Different ethnic groups in Sri Lanka have diverse cultural beliefs and dietary habits.

Objective

The aim of this study was to assess the prevalence of metabolic syndrome and the main parameters of metabolic syndrome among the patients with diabetes in different ethnic groups.

Methods

A prospective cross sectional study was carried out between May 2012 and December 2012, at the diabetes clinic of the National Hospital of Sri Lanka (NHSL). Consecutive patients with recent onset type 2 diabetes (less than 12 months) were enrolled into the study on their booking visit. Data obtained included use of antihypertensive and lipid lowering drugs, anthropometric indices, blood pressure and fasting serum lipids.

Results

391 subjects (109 males, 282 females) were included in the study. The prevalence of MetS according to the International Diabetes Federation criteria was 63.7%. Metabolic syndrome prevalence in Sinhalese, Tamil and Muslim patients were 59%, 65% and 81% respectively. There was a significant association between ethnic group and prevalence of Met S ($p<0.05$) and compared to Sinhalese patients, other two ethnic groups (Tamil and Sri

Lankan Moors) had higher prevalence of MetS ($p < 0.05$). Out of individual risk factors for metabolic syndrome, only the abnormal waist circumference had a significant relationship with the ethnic groups ($p < 0.05$).

Conclusion

There were significant differences with the prevalence of metabolic syndrome among the 3 main ethnic groups in Sri Lanka. Genetics and the differences in the lifestyle of these different ethnic groups are very likely to be the reasons for it.

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Effect of addition of sitagliptin in patients with failure of traditional oral hypoglycaemic agents: A Sri Lankan experience

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Objectives

Sitagliptin, a novel Oral Hypoglycaemic Agent (OHA) belonging to DPP-4 inhibitor class has been proven to be effective as monotherapy or add-on therapy in treating patients with poor glycaemic control. The aim of this study was to evaluate the effect of sitagliptin as an add-on therapy for patients with failure of traditional OHAs (metformin and sulfonylurea with or without a glitazone) in achieving glycaemic control in Sri Lankan setting.

Methods

This clinical audit was conducted at a private sector consultation. All patients who were commenced on sitagliptin due to unsatisfactory glycaemic control (HbA1C $> 7\%$) despite being on at least two conventional OHAs were evaluated. Data were collected both retrospectively and prospectively. Data of 105 patients are presented in this preliminary study. Data were analysed using SPSS version 16.0

Results

In 105 patients (mean age 55.72 (± 11.58) years, males 54.8%, mean duration of diabetes 12.21 (± 6.36) years) mean fasting plasma glucose (FPG) at baseline, 03, 06 and 09 months were 167.79 (± 43.57) mg/dL, 126.18 (± 31.12) mg/dL, 131.74 (± 33.92) mg/dL and 128.66 (± 27.86) mg/dL

respectively. Mean HbA1c at baseline, 03, 06 and 09 months were 9.05 (± 1.27) %, 7.66 (± 0.91) %, 7.67 (± 1.05) % and 7.46 (± 0.82) % respectively. A statistically significant difference was observed in both mean FBG and mean HbA1c levels at 03, 06 and 09 months when compared to baseline values ($p < 0.001$ at each occasion). Effect on body weight did not show a significant difference at all 03 time points ($p = 0.26$, $p = 0.37$, $p = 0.38$).

Conclusions

Addition of sitagliptin to OHAs significantly improves HbA1c and FBG and the effects are sustainable for 09 months. There was no significant weight gain despite improvement of glycaemic control.

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Vitamin D deficiency in Sri Lankan women: is there an epidemic?

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Objectives

Vitamin D deficiency is increasingly recognized as a problem in South Asians. This has not been previously assessed in Sri Lankans. We aimed to determine the vitamin D status among women presenting with body pain not specific of any known aetiology such as arthritis or spondylosis.

Methods

Vitamin D status was assessed in females attending a private sector out-patient consultation with self reported non-specific bodily pain. Symptom severity was graded in a 10-point visual analog scale. Quality of life was assessed using SF-8 questionnaire.

Results

Among 26 participants (mean age 55.67 (± 13.22) years) mean vitamin D level was 24.548 (± 11.57) ng/mL. 17 (38.6%) and 19 (43.2%) participants had vitamin D deficiency and insufficiency respectively. Only 8 participants (18.2%) had sufficient levels of vitamin D. However vitamin D status correlated poorly with symptom severity and SF-8 score.

Conclusions

Vitamin D deficiency is very common in women with non specific bodily pains. Whether this is a normal phenomenon in all women as well as men needs further studies.

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An audit on Growth Hormone Day Curves

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Introduction

The success of therapy of growth hormone(GH)-producing tumours is assessed preferably by serum Insulin-like growth factor-1. It correlates with the mean GH level in five serial samples collected during daytime (GH Day Curve-GHDC). Adequate therapeutic control is denoted by satisfying two criteria following a GHDC.

1. Mean value <5 mIU/L.
2. Two individual values <1 mIU/L1.

Objectives

1. Assess the variability of GH levels in subjects undergoing GHDC.
2. Explore the possibility of using one GH assay on pooled serum as a screening test.

Methods

Results of 83 GHDC performed at the National Hospital using an immuno-radiometric assay within 20 months, were analysed retrospectively. Agreeability of the GH level in a pooled sample made up of equal aliquots of each specimen with that of the mean GH value of the Day Curve was also looked at.

Results

1. 21(25%) satisfied both criteria, indicating adequate control.
2. 19 (23%) satisfied only criterion 1.
3. 43 (52%) did not satisfy either criterion.
4. None satisfied only criterion 2.

Variability expressed as the difference between the highest and lowest values over the mean was <1 in 81% and >2 in only 3%.

Conclusion

Individual results of GHDC showed little variability. Only those measuring <5mU/L in a pooled sample require further analysis of individual samples to confirm conformity with criterion 2. Those >5mU/L reflect inadequate control.

Reference

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Morbidity pattern of adrenocortical tumours presenting to a tertiary care paediatric center and a specialized cancer unit

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Introduction

Adrenocortical tumours are rare in childhood and adolescence. Patients can present with features of excess hormones of adrenal origin (cortisol, androgens and aldosterone). The prognostic significance of tumour size, capsular invasion and histological grade are debatable.

Objectives

1. To assess the morbidity pattern of children presenting with adrenocortical carcinoma.
2. To study the clinical presentation of adrenocortical carcinoma.

Methods

We retrospectively analyzed patients presenting to a paediatric tertiary care center and a specialized cancer unit with histologically proven adrenocortical tumours during past 7yrs. Age of onset, clinical presentation, pre and post operative adrenal hormone levels, outcome and survival were analyzed.

Results

9 patients fulfilled our inclusion criteria and all were adrenocortical carcinomas with a median presenting age

of 2 yr 8 m (range, 2 mths-8 yr). One presented with isolated virilizing symptoms leading to central precocious puberty and needed GnRH therapy. 6 had Cushinoid symptoms and 3 had both cushinoid symptoms and virilisation. Three patients with Cushinoid symptoms also had hypertension, out of which one had hypertensive encephalopathy. Six patients had complete surgical resection while 2 had residual disease. These two needed adjuvant chemotherapy and both died within 6 months after surgery. Four patients who had complete surgical excision had their endocrine abnormalities reversed clinically and biochemically (cortisol and adrenal androgens) within six months during a median follow up of two years (range, 2 mths – 5yrs).

Conclusion

Adrenocortical tumours can present with various endocrine abnormalities and complete surgical resection can reverse most of these changes. The continued follow up in a specialised unit is needed.

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Growth hormone therapy for short stature in adolescents, experience in University Medical Clinic, NHSL

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Objectives

Though growth hormone therapy is used for treatment of growth hormone deficiency (GHD) of children in Sri Lanka, its use in adolescents is not common. Our aim was to assess the response to growth hormone in adolescents with GHD in our setting presenting with short stature.

Methods

This was an observational study carried out at University Medical Clinic of NHSL. Adolescents presenting with short stature over a period of 2.7 years were investigated with IGF-1, Insulin tolerance test (ITT), bone age and commenced on growth hormone therapy. They were monitored with anthropometric measurements, IGF-1 and observed for side effects.

Results

Among the 21 adolescents, 15 were males (71.4%). Mean age, height, weight at presentation were 15.0 (10.4-19.1) years, 138.6 (+ 7.6) cm and 38.4 (+13.0) kg respectively. Patients were followed up for 1.3 (+0.8) years.

Low IGF-1 was found in 16 (76.1%). IGF1 was normal in 4 Turner patients (n=5). Failed ITT was found in 13 (81.3%; n=16) and was discontinued in one due to hypoglycaemia. Mean growth velocities were 7.7 (+4.4) cm/year and 9.1 (+2.0) cm/year for patients who failed and passed ITT respectively. In those with failed ITT, no significant correlation was found between age, bone age at commencement of therapy and growth velocity.

Girls with Turner syndrome (n=5) showed a mean height velocity of 5.9 cm/year following GHT.

Side effects were complained by 3 (14.9%) patients which were diabetes mellitus (n=2) and carpal tunnel syndrome (n=1).

Conclusion

GHT is usually a safe treatment and is useful in achieving satisfactory height gain in adolescents with short stature.

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Evaluation of the accuracy of glucometers currently used in Sri Lanka

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Introduction and objectives

Self monitoring of blood glucose using a glucometer has been shown to be effective in improving glycaemic control in diabetic patients. However, the studies done in other countries have shown a significant variability with the accuracy of glucometers. Although the glucometers are being used in our clinical practice, there is limited data regarding the accuracy of these meters in our clinical setup. This study aimed to assess the accuracy of commonly used glucometers in Sri Lanka.

Methods

Commonly used glucometers were identified (N=8, A-H). Healthy volunteers and patients admitted to the National Hospital of Sri Lanka were selected by convenient sampling (n=50, 34 patients, 16 healthy volunteers) after informed consent.

A venous sample (VS) of blood glucose from each subject was analyzed using a standardized method and taken as the reference point. Concurrent finger-prick (FP) values were determined using all glucometers ensuring uniformity.

Results

The range of glucose measurements was 69 – 448 mg/dl. Mean difference (mg/dl) between VS and FP values for glucometers with 95% Confidence Interval and P values according to ascending order were F 1.78 (-6.48,+10.04), P=0.667; A 6.96 (-11.66,-2.25), P=0.005; C 7.92 (+1.43,+14.40), P=0.018; E 10.20 (-17.19, -3.20), P=0.005; H 13.66 (-20.40, -9.91), P<0.001; D 13.84 (-18.51, -9.16), P<0.001; B 17.42 (-23.78, -11.05), P<0.001; G 18.16 (-25.07, -11.24), P<0.001; Highest concordance with American Diabetes Association (ADA) recommendation of less than 5% bias was seen in 'F' and lowest in 'G'. None of the glucometers manage to achieve the ISO recommendation but highest concordance was seen in 'E' and lowest in 'B'.

Conclusions

A statistically significant difference between VS and FP values were noted in the majority of glucometers. The concordance with ADA recommendation seems unsatisfactory in majority.

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Aldosterone secreting adrenocortical carcinoma

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Introduction

Adrenocortical carcinomas (ACC) are uncommon. The incidence is approximately 0.6-1.67 cases per million

persons per year. It occurs in 2 major peaks, in the first decade of life and again in the fourth to fifth decades. Functional tumours are more common in children, while non functional tumours are more common in adults.

Nonfunctional tumors account for approximately 40% of patients with ACC and typically present with fever, weight loss, abdominal pain, back pain and abdominal fullness, or symptoms related to metastases.

The hormonally active variants of ACC constitute approximately 60% of cases. Approximately 30-40% of adult patients present with the typical features of Cushing syndrome, while 20-30% present with virilization syndromes. In children, however, more than 80% present with virilization syndromes.

Other modes of presentation include profound weakness, hypertension, and/or ileus from hypokalemia related to hyperaldosteronism.

Case report

A 30 year old lady presented with generalized body weakness and high blood pressure. Examination showed right upper abdominal mass and no features suggestive of hormonal excess or deficiency and investigations revealed persistently low potassium levels. Imaging studies showed a large right adrenal mass. Her 24 hour urinary VMA levels (twice), overnight dexamethasone suppression test and other basic investigations were normal. Her aldosterone level was very high. The aldosterone/renin ratio was significantly very high (1875). There was no evidence of metastasis.

She had undergone surgery and histopathology report showed a high grade tumour with necrosis, capsular and vascular invasion suggestive of adrenocortical carcinoma. Regional LNs were present and pathologically staged as PT 3. (tumour of any size, locally invasive but not involving adjacent organs).

We are waiting for the Ki 67 and other specific staining reports. Postoperatively, her blood pressure and serum electrolytes were normal without any drugs and aldosterone level became normal. She is under care of oncologist now and they plan to start local chemo and /or radiotherapy in near future.

Discussion

Eventhough adrenocortical carcinoma is rare, clinicians should think of it as a differential diagnosis when a hypertensive patient presents with hypokalaemia and a suprarenal mass. Primary hyperaldosteronism associated with ACC is very rare (2.5%) and this is the first reported case of aldosterone secreting ACC in Sri Lanka.

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Prevalence of colonic polyps among patients with acromegaly

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Background

Patients with acromegaly are reported to have a higher prevalence of colorectal adenoma, which is a pre-malignant condition. It has been recommended that patients with acromegaly should undergo colonoscopic surveillance to detect these lesions early.

Objectives

Our objective was to evaluate the prevalence of colonic polyps in patients with acromegaly.

Methods

This was a descriptive cross sectional study conducted in the Endocrinology and Pituitary clinics at National Hospital of Sri Lanka between January 2012 and June 2013. From a total of 72 patients with acromegaly, 33 patients (13 males and 20 females), who underwent colonoscopy were enrolled for analysis. Age group of this sample was 29 to 71 years. None of these patients had previous or family history of colonic neoplasm or colonic surgery.

Results

The mean age of the patients at diagnosis was 40.12 (SD±11.9) years and average lag time between symptomatology and diagnosis of acromegaly in these patients were 3.5 (SD ± 2.8) years. The basal mean plasma GH was 57.91 mU/L (SD±53.74) and on imaging 28 (84.84%) had macroadenomas.

Colonoscopic examination was complete to the cecum in 23 patients (69.69%), to the splenic flexure in eight patients (24.24%) and to hepatic flexure in the remaining two patients (6.06%). Colonoscopy findings were abnormal in 11 (33.33%) patients. Five patients with acromegaly had polyps in their colonoscopy in which two of them had tubular adenoma with low grade dysplasia. The group of acromegalic patients with and without polyps did not differ significantly in age 39.8±13.3 years vs 39.71 ±11.34 years, (P= 0.326), in duration of disease 2.8 ±2.0 years vs 3.6±3.0

years, (P=0.544) or in circulating basal GH levels (77.13 ±64.91mU/L vs 42.61±42.70 mU/L, P= 0.134). Diabetes did not influence the prevalence of colonic polyps in acromegaly. Having polyps was statistically significantly higher among male sex than female sex (P<0.05), but a conclusion cannot be made due to small sample size. Four out of the 5 acromegalic patients who had polyps had active disease when the colonoscopy was performed.

Conclusion

Despite lower prevalence of colonic polyps (15%) compared to studies from west we still found premalignant lesions in 2 patients (6.06%).

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Hypoglycaemia: A descriptive study of causes...

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Objectives

Hypoglycaemia is a feared experience for diabetic patients due to the disturbing symptoms which reduces compliance with drugs and also contributes to the increased morbidity and mortality. Identifying the cause of hypoglycaemia is pivotal for optimal glycaemic control. We intended to describe common causes and risk factors for hypoglycaemia among Sri Lankan diabetic patients.

Methods

An audit was conducted using a structured, interviewer administered questionnaire among 1000 diabetic patients attending a private sector clinic using consecutive sampling. Hypoglycaemic episodes during the preceding month were inquired and severity was graded on clinical features and capillary blood glucose levels.

Results

In 1000 patients (mean age 54.97 (+12.48) years), males 58.6%, mean duration of diabetes 10.61 (+8.10) years, mean

FBS and HbA1c were 134.55 mg/dL (+50.19) and 7.82% (+1.71) respectively. Prevalence of hypoglycaemia was 26.1% (mild 20.7%, moderate 3.9%, severe 1.5%). Sudden change in the diet (quantity, composition or timing) was noticed in 46.7%, increased medicine dosage in 16.9% and unaccustomed exercise in 15.7% were the commonest causes. A cause was not recognized in 16.3%. In this study, 16.9% of patients recognized non prescribed native food as the probable cause for hypoglycaemic episode (Thebu 52.3%, Karawila 54.5%, Kothalahimbutu 11.4%, Madatiya kola 4.5%, Kowakka 6.8%).

Conclusions

Hypoglycaemia is common among diabetic patients. Patients need advice to maintain a regular routine of diet and exercise. Consumption of non-prescribed native food should be specifically looked into as a probable cause for hypoglycaemia.

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A study to compare the effects of a new generic product of methimazole with carbimazole on biochemical parameters in Graves' hyperthyroidism

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Objectives

Carbimazole (CBZ) and methimazole (MTZ) are proven to be effective in achieving euthyroidism in patients with Graves' hyperthyroidism. The aim of this prospective randomized clinical trial was to establish non-inferiority of the biochemical and clinical effects of a locally manufactured methimazole which was introduced to Sri Lanka recently, in comparison to carbimazole. Preliminary data are presented in this on-going study.

Methods

Patients (n=15) who were clinically and biochemically diagnosed with Graves' hyperthyroidism were randomized to receive MTZ (n=6) and CBZ (n=9). Biochemical and clinical parameters were monitored at 0,4,8 and 12 weeks. Drug doses were titrated according to a standard protocol. Results were analyzed using independent sample t-test using SPSS version 16.0.

Results

There was no statistically significant difference in mean baseline FT4 levels between MTZ and CBZ groups ($p>0.05$). In both groups, there was a significant reduction in mean FT4 levels at 04 weeks and at 12 weeks compared to the baseline FT4 levels ($p<0.01$). At 04 weeks and 12 weeks of treatment, mean reductions of FT4 levels in MTZ group were 2.05 ng/dL (± 0.734) and 3.177 ng/dL (± 0.58) vs 2.155 ng/dL (± 1.19) and 2.59 ng/dL (± 0.837) in the CBZ group at corresponding time points respectively. There was no statistically significant difference in the two groups at 04 and 12 weeks ($p=0.399$ and $p=0.137$ respectively). Adverse drug events were not reported in either group.

Conclusions

MTZ and CBZ are both effective and MTZ is non-inferior to CBZ in reducing the hyperthyroxinaemia in patients with Graves' disease.

Abbreviations - FT4- free T4, FT3- free T3, TSH- Thyroid stimulating hormone.

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Body fat and visceral fat percentages as predictors of cardiovascular risk and obesity

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Objectives

To stratify the cardiovascular risk and study the relationship with body fat percentages, and to study the relationship between body mass index (BMI) waist circumference (WC), body fat percentage and visceral fat percentage among health staff.

Methods

A cross sectional study carried out among the health staff in a tertiary care setting. 452 study participants were screened among all categories of health staff. Body fat and visceral fat percentages were estimated using bioelectrical impedance analysis (BIA) method. Cardiovascular risk was calculated using Framingham's cardiovascular risk score.

Results

According to the BMI, 35.4% (n=57), 8.7% (n=14) males and 41.9% (n=122), 15.5% (n=45) females were overweight and obese. Based on body fat percentage obesity was 63.4% (n=102) and 65.6% (n=191) among males and females respectively. Central obesity was 23% (n=37) and 62.2% (n=168) according to the WC among males and females respectively. In females BMI showed the strongest correlation with visceral fat percentage ($r=0.846$, $p<0.001$)

than WC ($r=0.722$, $p<0.001$) and body fat percentage ($r=0.558$, $p<0.001$). In males although correlations with BMI was weak, WC ($r=0.2$, $p<0.01$) showed the strongest correlation with BMI compared to body fat percentage ($r=0.191$, $p<0.01$) and visceral fat percentage ($r=0.16$, $p<0.01$). Ten year cardiovascular risk was $>10\%$ in 7.69% (n=9) males and 4.54% (n=9) females. In females cardiovascular risk showed significant correlation with BMI, visceral fat and body fat percentages ($r=0.208$, 0.295 , 0.293 , $p<0.01$). In males significant correlation was seen with visceral fat percentage ($r=0.238$, $p<0.01$).

Conclusions

Obesity prevalence is higher among studied health staff compared to normal population. BMI is a good predictor of visceral obesity in females while WC is the best predictor in males. Eventhough it is weak, cardiovascular risk showed significant correlation with visceral fat percentage.