meglitinides was negative. Serum beta-hydroxybutyrate was 0.1 mmol/L with a 1.6 mmol/L rise in serum glucose post 1 mg glucagon administration. Computed tomography (CT) of the abdomen showed a 13 X 11 X 15 mm exophytic lesion at the superior aspect of the pancreatic body and another exophytic projection measuring 9 X 8 X 6 mm arising from the tail. In view of possible multifocal insulinoma, a ^{68}Ga-DOTATATE scan was performed and it showed an intensely DOTATATE-avid exophytic nodule arising from the pancreatic body and a second indeterminate DOTATATE-avid nodule close to the pancreatic tail. In addition, there was diffuse DOTATATE uptake in the tail of pancreas.
She underwent enucleation of pancreatic body nodule and spleen-saving distal pancreatectomy as the pancreatic tail nodule was not seen intra-operatively. Histology showed an insulinoma; a well-differentiated neuroendocrine tumour (Grade 1, pT1 N0 Mx) that was positively stained for synaptophysin, CD56, insulin, SSTR2 and SSTR5. The pancreatic tail nodule and distal pancreatectomy specimen showed islet cell hyperplasia; the pancreatic parenchyma showed multiple foci of well-circumscribed nests of bland islet cells with similar morphology to those seen in the insulinoma. She did not have further hypoglycaemia episodes post-operatively.
Concomitant presence of fasting and postprandial hypoglycaemia may suggest underlying dual pathology. Clinical and biochemical differentiation between insulinoma and islet cell hyperplasia is difficult. Therefore, imaging for diagnosis and precise preoperative localisation is important for successful resection of suspected lesions. ^{68}Ga-DOTATATE scan can be as useful as ^{68}Ga-DOTANOC and ^{68}Ga-DOTATOC scan and is better than CT scan in localising not only insulinoma but also islet cell hyperplasia. In this case, islet cell hyperplasia-induced hyperinsulinemic hypoglycaemia may have persisted if distal pancreatectomy was not performed.
Conclusion
Adult-onset endogenous hyperinsulinemia hypoglycaemia can be caused by concurrent insulinoma and islet cell hyperplasia. ^{68}Ga-DOTATATE scan may be a useful, non-invasive investigation, especially in cases where CT imaging suggests multifocal disease.

Thyroid

HPT-AXIS AND THYROID HORMONE ACTION

Delayed TSH Elevation in Small for Gestational Age Infants: A Need for Second Screening?

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SAT-453

The incidence of CH with a delayed TSH elevation was higher in ELBW and VLBW infants compared with infants weighing ≥1500 grams. Second screening should be considered in preterm neonates, low birth weight (LBW) and very low-birth weight (VLBW) neonates, ill and preterm newborns admitted to NICU, specimen collection within the first 24 hours of life, and multiple births (particularly same-sex twins). Purpose of this study was to determine incidence of delayed TSH elevation with or without congenital hypothyroidism in SGA infants and to Investigate necessity for second screening. Retrospective analysis was performed. 66 SGA newborns with 34-40 weeks' gestation born at Keimyung University Dongsan Medical Center from 2015 to 2018 were enrolled. Primary screening was performed 48 hours - 7 days after birth. Second screening including venous TSH and venous free T4 at postnatal 8-40 days. Exclusion criteria were infants with congenital hypothyroidism at primary screening (NBS), descendants of mothers with immune thyroid disease, congenital malformations, renal, hepatic, and metabolic diseases, history of steroid or dopamine usage. Initial NBS were collected onto pre-printed filter at the age of 2-7 days by heel prick. (normal TSH < 10 mIU/L). Second sample was obtained at the age of 8-49 days by venous sampling (normal TSH < 5 mIU/L). TSH and free T4 were measured on venous samples with Cobas 8000 e801 (electrochemiluminescence, Roche, Diagnostics, Basel, Switzerland) using standard methods.
Incidence of delayed TSH elevation was 27% (18/66). Of them number of transient hyperthyrotropinemia was 13. Mean TSH at initial elevation was 7.56 mIU/L and median age at initial TSH elevation was 18.6 days. Median age at resolution of TSH elevation was 41.5 days. Number of hypothyroidism undergoing l-thyroxine medication was 5. Mean TSH at initial elevation was 22.1 mIU/L. Median age at initial TSH elevation was 14 days. Mean peak TSH was 23.4 mIU/L.
The presence of delayed TSH elevation was not related to very low birth weight. SGA infants might be at a risk of delayed TSH elevation. Considering 2nd screening test within 1 month. Further study with more SGA infants are needed. Limitation of this study was relative small number of patients and iodine status was not considered

Bone and Mineral Metabolism

CLINICAL ASPECTS OF OSTEOPOROSIS AND VITAMIN D ACTION

Fracture Site in High-Energy Trauma Is Associated with Osteoporosis Risk.

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MON-377

Background: In our recent studies, we noted that patients with history of high energy fractures commonly have underlying endocrine abnormalities and low bone mineral density (BMD). In this expanded patient population, we aimed to investigate whether the fracture site can better predict the risk of abnormal BMD.
Methods: We prospectively enrolled adult patients of both genders, with any history of high energy fracture. We measured serum PTH, vitamin-D and calcium and we performed BMD measurements with a DEXA scan. We split our subjects' BMD, based on the lowest T- or Z-score in "Normal" (≥-0.9), "low bone mass" (LBM) (-1.0 to -2.4)

and "Osteoporosis" (OST) (≤-2.5). We classified our patients according to fracture site, in vertebral, humeral, hip, tibial, malleolar-carpal, radial-ulnar and others, including rib fractures. Ratios were compared with χ^2 test, and continuous variables with one-way ANOVA.

Results: We enrolled 444 consecutive subjects with 543 fractures. n=315 (71.0%) subjects had low BMD: OST 25.9% and LBM 45.1%. Among subjects <50 years of age, 43.1% had LBM and 9.2% OST, while in those >50, 46.3% had LBM and 36.6% OST (p<0.0001). The cohort's mean lowest T/Z score was -1.6±1.2. Subjects with >1 fracture had more frequently low T/Z score (p=0.015). History of vertebral fractures provided the lowest mean T/Z score overall (-2.4±1.1), in females (-2.5±0.9) and subjects >50 (-2.5±1.1). The same holds true for hip fractures in males (-1.9±1.2) and subjects <50 (-2.1±1.4). Subjects with vertebral fractures had the lowest Hip (-1.7±1.2) and Spine (-2.3±1.2) T/Z scores, while those with tibial fractures had the lowest Radius T/Z score (-1.8±1.3). History of vertebral fractures was associated with the highest rate of OST (65.9%) in our overall population, males (50%), females (67.5%), subjects >50 (70.0%), while subjects with history of tibial fractures had the highest rate of normal BMD (46.2%), in males (80%) and females (50.4%), and those <50 (75.0%). Vitamin-D deficiency was present in 81.4% of all subjects. PTH was significantly higher in patients with OST compared to LBM or normal BMD (p=0.0006).

Discussion: Patients with history of high energy fractures need to be screened with DEXA scan early, as they have high likelihood to suffer from osteoporosis.

Pediatric Endocrinology

PEDIATRIC OBESITY, THYROID, AND CANCER

The Effect of Body Mass Index on the Peak Growth Hormone Level After Growth Hormone Stimulation Test in Children with Short Stature

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MON-113

Objective: The aim of this study is to evaluate the effect of body mass index (BMI) on peak growth hormone (GH) response after GH stimulation test in children with short stature.

Methods: Data was obtained from retrospective review of medical records who visited the pediatric endocrinology at St. Vincent hospital of catholic university for short stature from January 2010 to June 2019. We studied 115 children (aged 3-17 years old) whose height was less than 3percentile for one's age and sex and who underwent GH stimulation test {GH deficiency (GHD) = 47, Idiopathic short stature (ISS) = 68)}. Peak GH response was stimulated by dopamine (n=111), clonidine (n=7), glucagon (n=19), insulin (n=56) and arginine (n=32). Birth weight, parental height, chronologic age, bone age, height SDS (standard deviation score), weight SDS, BMI SDS hemoglobin, fT4, T3 TSH, cortisol, ACTH, GH, IGF-1 SDS, IGF-BP3 SDS and peak stimulated GH were analyzed.

Results: In the characteristics of subject, weight SDS and BMI SDS in GHD group were increased than ISS group (p<0.000, p=0.000). Free T4 was decreased in GHD group than ISS group (p=0.012). In total group, BMI SDS was associated negatively with peak GH level stimulated by dopamine (r=-0.419, p<0.000), insulin (r=-0.271, p=0.044) and arginine (r=-0.368, p=0.038), but did not showed correlation with peak GH level stimulated by glucagon. In GHD group, BMI SDS showed negative correlation with peak GH level using dopamine (r=-0.356, p=0.015) and arginine (r=-0.509, p=0.022). In ISS group, BMI SDS was correlated negatively with peak GH using dopamine (r=-0.330, p=0.007). In multivariate regression analysis of GHD group, weight SDS and BMI SDS were the only two significant predictors of peak GH response in stimulation test stimulated by dopamine (ß=-0.576, p=0.015) and arginine (ß=-0.097, p=0.022). In ISS group, only mother's height (ß=0.474, p=0.000) and TSH (ß=-2.251, p<0.000) were demonstrated statistically significant predictors of peak GH stimulated by dopamine in multivariate regression analysis. In case of using insulin as a stimulant in ISS group, there is nothing which has statistical significance as a predictor of peak GH response in multivariate regression analysis.

Conclusion: BMI was associated negatively with peak GH response after GH stimulation test in children with short stature, especially in GHD group.

Adrenal

ADRENAL - TUMORS

Adrenocortical Carcinoma - A Tertiary Center's Recent 5-Year Experience

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SAT-180

BACKGROUND: Adrenocortical carcinoma (ACC) is a rare endocrine malignancy with poor prognosis. The aim of