including normal lactate, lipase and troponin. The patient was managed with an insulin drip and discharged on subcutaneous insulin (Lantus 45 units/day, Aspart 13 units with meals) and metformin. The patient re-introduced carbohydrates into his diet after meeting with the nutritionist. Eight weeks later, the HbA1c decreased to 6.6% and insulin was significantly reduced to Lantus 25 units/day. Sixteen weeks after discharge, the HbA1c further declined to 5.1% and Lantus was reduced to 10 units/day. Beta cell function at that time was preserved as evidenced by c-peptide 1.82 ng/mL. Insulin therapy was discontinued and the patient was closely monitored for urinary ketones and recurrence of hyperglycemia, neither which have developed. **Conclusion:** This is a unique case of DKA precipitated by a keto/intermittent fasting diet, without the use of SGLT2 inhibitor. Interestingly, previous metabolic studies show that nutritional ketosis typically generates low levels of serum ketones without a clinically significant anion gap metabolic acidosis. With negative beta cell autoantibodies and preserved beta cell function, this presentation is also consistent with ketosis-prone diabetes type 2B. It is possible that nutritional ketosis triggered the onset of KPD, although the mechanism remains unclear particularly since it is known that lipotoxicity is not pathogenic in the development of KPD. **References:** 1. Bueno NB et al. *Br J Nutr*. 2013;110(7):1178-1187. 2. Cahill GF Jr. *Annu Rev Nutr*. 2006;26:1-22. 3. Gaba R et al. *Expert Rev Endocrinol Metab*. 2019;14(1):43-48.

Genetics and Development (including Gene Regulation)

GENETICS AND DEVELOPMENT AND NON-STEROID HORMONE SIGNALING I

Identification of IGSF1 Ligands

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SUN-LB130

Immunoglobulin superfamily, member 1 (*IGSF1*), is an X-linked, type 1 transmembrane glycoprotein that is highly expressed in the anterior pituitary gland and testes. Mutations in the *IGSF1* gene cause congenital central hypothyroidism, variable hypoprolactinemia, growth hormone dysregulation, and macroorchidism. *Igsf1* knockout mice exhibit reduced pituitary TRH receptor (*Trhr1*) expression with an associated impairment in TRH-stimulated TSH secretion. The mechanism through which IGSF1 loss leads to reductions in *Trhr1* levels is unresolved, at least in part because IGSF1's cellular functions are unknown. The mature form of the IGSF1 protein consists of seven extracellular Ig loops, a single transmembrane domain containing a positively charged arginine, and a short intracellular carboxy-tail devoid of known functional motifs. Recently, IGSF1 was argued to be a member of the leukocyte receptor cluster (LRC) family. LRC proteins act as cell surface receptors for soluble or membrane-bound proteins. We therefore hypothesized that IGSF1 is a cell surface receptor for a presently undescribed ligand that regulates *Trhr1* expression in pituitary thyrotrope cells. To identify candidate IGSF1 ligands, we implemented a new ligand trapping method, Ecto-Fc MS. We fused the extracellular (Ecto) domain of IGSF1 to the fragment crystallizable (Fc) region of human IgG, creating an Ecto-Fc fusion protein. Secreted IGSF1-Fc was purified and used as a ligand trap for bait proteins extracted from rat testes. The protein complexes were affinity purified with protein A beads, trypsin digested into peptides, subjected to orthogonal high-pH fractionation, and identified by tandem LC-MS/MS. More than 700 proteins were enriched in IGSF1-Fc preparations compared to an Fc-only negative control. Several secreted ligands and plasma-membrane proteins were identified, many of which are also expressed in pituitary thyrotrope cells. Identifying the ligand or ligands will enable us to determine IGSF1 function, and may lead to the discovery of novel causes of central hypothyroidism and macroorchidism.

Pediatric Endocrinology

PEDIATRIC GROWTH AND ADRENAL DISORDERS

Is There a Need to Use Gadolinium Contrast for Pituitary MRI in the Evaluation of Pediatric Short Stature and Growth Hormone Deficiency?

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Is There a Need to Use Gadolinium Contrast for Pituitary MRI in the Evaluation of Pediatric Short Stature and Growth Hormone Deficiency?

Short stature is a common concern that necessitates pediatric endocrinology evaluation. Growth hormone (GH) deficiency is often included as an etiology. Brain and pituitary Magnetic Resonance Imaging (MRI) with gadolinium-based contrast agents (GBCAs) is the imaging modality of choice in assessing patients with GH deficiency. Given the significant strides made in MRI technology that allow improved spatial and contrast resolution, the necessity of using contrast material when obtaining brain and pituitary MRI in cases of short stature and isolated GH deficiency should be reassessed. We preformed a retrospective review of otherwise healthy patients with short stature and/or GH deficiency who underwent brain and pituitary MRI without and with contrast, to assess the benefit of contrast administration.

Introduction: Short stature is a common concern that necessitates pediatric endocrinology evaluation. The etiologies of short stature are diverse. GH deficiency is often included as an etiology although it accounts for only 1-2% of short stature cases. The prevalence of GH deficiency is reported to be ~ 1:3500. The vast majority of GH deficiency cases are idiopathic in nature with only 20% due to organic causes. The organic causes of GH deficiency include congenital central nervous system (CNS) anomalies, tumors and other pathologic conditions that involve the pituitary-hypothalamic region. As a result, the radiological assessment of the hypothalamic-pituitary region is considered standard of care for evaluating patients with GH deficiency. Although brain and pituitary MRI is the imaging modality of choice in assessing patients with GH deficiency, its yield in cases of isolated GH deficiency is

very low. In a study of 40 otherwise normal patients with isolated GH deficiency, 35 (87.5%) had normal brain MRIs. The abnormal findings of brain MRI in the minority of isolated GH deficiency cases included pituitary hypoplasia, pituitary stalk agenesis, lack of the normal T1-weighted pituitary hyperintensity in the posterior part of the sella turcica, and the presence of a high-intensity signal at the infundibular level representing ectopic neurohypophysis. Traditionally, these brain and pituitary MRI images are obtained with the use of contrast material (gadolinium). The main purpose of using contrast material is for the evaluation of pituitary microadenomas. Given the fact that significant strides made in MRI technology and pituitary microadenomas are not appeared to be associated with GH deficiency, the necessity of using contrast material when obtaining brain and pituitary MRI in cases of short stature and isolated GH deficiency should be reassessed. GBCAs have been shown to deposit in different tissues including the kidneys and the brain. The risk increases with repeated doses. The clinical significance of this deposition is unclear at this time but warrants caution especially in pediatric population who have a longer expected lifespan to manifest any delayed effects. Allergic reactions and gastrointestinal symptoms in pediatric patients can occur with GBCA administration, although the incidence is low. Using contrast material also increases the total cost of the MRI study and prolongs the time needed to complete it. Moreover, in order to use contrast material, intravenous venous (IV) access is required which causes discomfort and additional stress to children and their families.

Therefore, we performed a retrospective review of otherwise healthy patients with short stature and/or growth hormone deficiency who underwent brain and pituitary MRI without and with contrast, to assess whether contrast administration led to diagnoses that would have otherwise been missed and/or impacted the patient's clinical course.***Objectives:*** - To compare the diagnostic yield of non-contrast MRI with pre and post-contrast MRI of the brain and pituitary in evaluation of pediatric patients with short stature and/or growth hormone deficiency.- A secondary objective is to measure the size of the pituitary gland and correlates it with peak growth hormone levels (using insulin/argenine).

Methodology: We included patients who underwent brain/pituitary MRI with/without contrast performed at our institution between Jan 2013-Dec 2018 who have short stature/GH deficiency. We excluded patients with known diagnosis of other pituitary hormone deficiencies prior to obtaining MRI studies, genetic and neurological disorders, known tumors/malignancies of any type, or renal failure. Two pediatric neuroradiologists independently reviewed the brain and pituitary MRI of these patients (each read 50% of the cohort) blinded to the clinical data and diagnoses. Each radiologist initially reviewed only the non-contrast portions of the studies, and subsequently, the same radiologist reviewed the entire study, including pre- and post-contrast portions in a separate session. The two sessions were 6 weeks apart to avoid recall bias. Several imaging findings including size and morphology of pituitary gland, presence of congenital anomalies or focal lesions and any associated intracranial findings systematically recorded, and subsequently analyzed.

Hypotheses: 1.The incidence of finding congenital pituitary cysts is the same when obtaining brain/pituitary MRI imaging using gadolinium contrast versus when not using contrast in patients with short stature and or isolate GH deficiency.

2.The incidence of discovering abnormal infundibulum is the same when obtaining brain/pituitary MRI imaging using gadolinium contrast versus when not using contrast in patients with short stature and or isolate GH deficiency.

3.Small pituitary size correlate with GH deficiency.

Results: -We identified 327 patients with short stature/GH deficiency from Jan 2013-Dec 2018-224 (68.5%) are males and 103 (31.5%) are females. -The mean age at the time of imaging is 10 years and the median is 11 years. -161 (49.24%) have height z-score < -2.25 and 166 (50.76%) have height z-score > -2.25.-82 (25.07%) have IGF1 z-score for age < -2, 102 (31.19%) have z-score ≥-2 to ≤ -1, 141 (43.12%) have z-score > -1 and 2 (0.62%) have no level done.-63 (19.27%) have GH peak <5, 87 (26.61%) have GH peak 5-7.99, 53 (16.21%) have GH peak 8-9.99, 30 (9.17%) have GH peak > 10 and 94 (28.75%) did not undergo GH provocative testing. -The kappa coefficient for pars intermedia cyst on pre vs. post contrast imaging is 0.74 and 0.55 for the infundibulum on pre vs. post contrast imaging. -The mean pituitary height for patients with IGF z-score < -2 is 3.9 mm, 4 mm for z-score ≥- 2 to ≤ -1 and 4.3 mm for z-score > -1-The mean pituitary height for patients with peak GH < 5 is 3.8 mm, 4.2 mm for peak 5-7.99, 4.3 mm for peak 8-9.99 and 4.4 mm for peak > 10.

Conclusion: This question has not been answered or even raised in the literature. Our findings suggest that the there is no added benefit to use gadolinium when obtaining brain/pituitary MRI for the evaluation of GH deficiency/short stature. Furthermore, it seems that there is an association between the pituitary height and the GH status of the cohort which is in line with previous published studies.

Diabetes Mellitus and Glucose Metabolism

GESTATIONAL DIABETES, DIABETES IN PREGNANCY, AND IN UTERO EXPOSURES

Faster Acting Insulin Aspart in Patients With Gestational Diabetes Mellitus - an Early Experience From India

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Aims: This study was undertaken to assess the effectiveness and safety of faster acting insulin aspart in patients with gestational diabetes. Though faster acting insulin aspart is approved to be used in pregnancy by regulatory bodies like USFDA, EMA and DCGI (India), no data is published till date on its usage in pregnancy. **Settings and Design:** An open-label, nonrandomized, and observational study conducted at single centre at Kolkata, India. **Subjects and Methods:** A total of 37 patients with gestational diabetes mellitus