A data of baseline, growth hormone (GH), Insulin-like growth factor-1 (IGF-1) level, Hemoglobin A1C (HbA1C), fasting blood glucose (FBG), and random blood glucose (RBS) levels were reviewed before and after the intervention (surgery/medical therapy). Normal glucose tolerance (NGT), impaired fasting glucose (IFG), impaired glucose tolerance (IGT), and diabetes mellitus (DM) were defined based on the 2003 ADA criteria. Patients were grouped into normoglycemic (NGT) and dysglycemic (IFG, IGT, and DM) based on FBS, RBS, and HbA1C.

Results: Major risk factors for dysglycemia included age (15-45 years), male sex (33.70%), obesity (45.7%), and macroadenoma (76%). Both mean GH levels (58.29 vs. 54.36 ng/dl) and IGF-1 levels (862.98 vs. 824.32 ng/dl) were higher among the normoglycemic than dysglycemia. Pre-surgery, NGT, IFG, IGT, IFG, and IGT combined and DM were found in 48.31, 5.61, 1.1, 5.61, and 39.32 % of the subjects, respectively. Post-surgery, HbA1C improved in 79.5%, deteriorated in 6.8%, and remained the same in 13.6%. Similarly, it improved in 67.4.7% post-medical therapy. Both FBS and RBS improved post-surgery and medical therapy. Further, the number of anti-diabetic drugs used also decreased post-surgery.

Conclusion: Dysglycemia is more common among patients with acromegaly as compared to the general population and tends to be poorly controlled in untreated acromegaly. Glycemic control improves significantly after the surgery and medical therapy.

Keywords: Acromegaly, Diabetes Mellitus, Transsphenoidal surgery

Neuroendocrinology and Pituitary

PITUITARY TUMORS

Safety and Efficacy of Pegvisomant in Pediatric Growth Hormone Excess

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Objective: Pediatric growth hormone excess (GHE) and gigantism are mainly managed by pituitary surgery. However, a large percentage of patients require further medical management. Data for the pediatric population are scares and decisions are usually based on adult published data. We have initiated a study to investigate the efficacy and safety of pegvisomant in children and adolescents with GHE. MethodsThe study is registered in ClinicalTrials.gov (Identifier: NCT03882034, An open-label phase 3 study of the safety and efficacy of pegvisomant in children with growth hormone excess). Eligible patients must be children or adolescents (age: 24 months -18 years) with GHE with persistent disease after surgical or radiation therapy. The patients will receive pegvisomant via subcutaneous daily injection for one year and outcomes will be measured at baseline and at the end of the study. The main measure of efficacy is the change of IGF-1 from baseline to the end of the study. The main measure of safety is the description of side effects over the duration of the study. ConclusionsWe will collect data on the safety and efficacy of medical treatment for pediatric patients with GHE.

Neuroendocrinology and Pituitary

PITUITARY TUMORS

Somatotroph Adenomas have a Predilection to Invade the Cavernous Sinus and Resection of the Medial Wall of the Cavernous Sinus Offers the Highest Potential for Biochemical Remission in Acromegaly

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Recurrence and remission rates vary widely among different histological subtypes of pituitary adenoma. Invasion of the medial wall of the cavernous sinus is a known mechanism that may account for such failed clinical outcomes as its removal has long been considered unattainable. The use of modern endoscopic techniques allows for direct intraoperative evaluation of invasion and resection of the medial wall of the cavernous sinus with low morbidity when performed by highly experienced surgeons. In this retrospective study we evaluated 105 consecutive primary pituitary adenomas operated by a single surgeon including 28 corticotroph, 27 gonadotroph, 24 somatotroph, 15 lactotroph, 5 null-cell, 5 plurihormonal, and 1 dual adenoma; 53 caused hypersecretory syndromes, specifically acromegaly (30), hyperprolactinemia (15) and Cushing's disease (8). In each case, we performed meticulous intraoperative inspection of the medial wall with its surgical removal when invasion was suspected, regardless of functional status. Medial wall resection was performed in 46% of pituitary adenomas, and 38/48 walls confirmed pathologic evidence of invasion rendering a positive predictive value of intraoperative evaluation of medial wall invasion of 79%. Furthermore, we show for the first time that the rate of medial wall invasion among pathological subtypes is dramatically different. Somatotroph tumors invaded the medial wall much more often than other adenoma subtypes, 83% intraoperatively and 71% histologically, followed by plurihormonal tumors (40%) and gonadotrophs (33%), both with intraoperative positive predictive value of 100%. The least likely to invade were corticotroph, at a rate of 32% intraoperatively and 21% histologically, and null-cell adenomas at 0%. Removal of the medial wall caused no permanent morbidity with no carotid artery injuries and 2 patients with transient diplopia. We report that resecting the medial wall of the cavernous sinus in acromegaly offers the highest potential for biochemical remission with average postoperative day 1 GH levels at 0.96 ug/l and early surgical remission rates at 90% (100% with adjuvant therapy) based on normalization of IGF-1 levels 3 to 6 months after surgery; these results are significantly better than previously reported but longer follow-up is required for definitive conclusions. Our findings may explain the failed biochemical remission rates seen in acromegaly and illustrate the relevance of advanced surgical techniques for successful outcomes in pituitary surgery.