positively correlated with increased left ventricular internal diameter in diastole (LVIDd), R^2=0.596, F=10.323, p<0.001. BMI and insulin resistance were selected as significant independent determinants of IVSd, produced R2=0.655, F=29.441, p<0.001. Due to wide range of disease duration, 17 pediatric and 19 adult patients were analyzed separately. In the adult subgroup (age at study ≥18 years), BMI correlated with IVSd (r=0.707, p=0.003), LVPWd (r=0.592, p=0.020) and LVIDd (r=0.571, p=0.026). In the pediatric subgroup (age at study <18 years), no correlation between cardiac parameters and BMI was observed. Only LVIDd correlated with disease duration (r=0.645, p<0.001). All cardiac functions were within the normal range, indicating no association with functional impairments. We conclude that cardiac remodeling in patients with childhood-onset craniopharyngioma correlated with the degree of hypothalamic obesity, disease duration, sex hormone replacement therapy, male gender and insulin resistance. As echocardiography has limited sensitivity in patients with obesity, further research on more sensitive techniques for cardiac diagnostics in craniopharyngioma patients is warranted.

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Cerebral Infarction in Childhood-Onset Craniopharyngioma Patients - Results of KRANIOPHARYNGEOM 2007

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Purpose: Cerebral infarction (CI) represents a vascular complication following treatment of suprasellar tumors. Risk factors for CI, incidence rate, and long-term prognosis are unknown for patients with childhood-onset craniopharyngioma (CP). **Methods:** MRI of 242 CP patients, recruited 2007-2019 in KRANIOPHARYNGEOM 2007, were reviewed for CI. Risk factors for CI and outcome after CI were analyzed. **Results:** Twenty-eight of 242 patients (11%) presented with CI based on reference assessment of MRI. One CI occurred before initial surgery and one case of CI after release of pressure via intracystic catheter. 26 of 28 CI were detected after CP resecting surgical procedures at a median postoperative interval of one day (range: 0.5-53 days). Surgical intraoperative vascular lesions were documented in 7 cases with CI. There was a trend (p=0.069) towards higher initial presurgical tumor volume in CI patients (21.7 cm^3, range: 0.01-187.6 cm^3) compared with non-CI patients (15.5 cm^3, range: 0.01-286.3 cm^3). The CI rate was lower in cases operated via transsphenoidal approach (4%) when compared with transcranial approach (13%). CP patient load of neurosurgical centers as a potential measure of surgical expertise was not associated with CI. In 12 irradiated patients, CI occurred before irradiation in all cases. Multivariate analyses showed that hydrocephalus and gross-total resection (GTR) at the time of primary diagnosis/surgery were independent risk factors for CI. Two-years progression-free survival rate was lower (p=0.023) after CI (0.310±0.095) when compared with the subgroup of patients without CI (0.604±0.034). After CI, quality of life (PEDQOL) and functional capacity (FMH) were impaired when compared with patients without CI. **Conclusions:** CI occurs in about 11% of CP cases mainly after surgery. Degree of resection and increased intracranial pressure are risk factors, which should be considered in the planning of surgical procedures for prevention of CI.

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Changes in Quality of Life After Long-Term Biochemical Control of Acromegaly

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Acromegaly results in impaired quality of life (QoL), which improves but does not normalize after biochemical control of growth hormone (GH) excess. There are few data regarding long-term QoL in patients with sustained biochemical control of acromegaly. We hypothesized that QoL would continue to improve over time but remain poor. We studied 2 cohorts with biochemically controlled (normal IGF-1 level) acromegaly. MED (n=42) underwent surgery but required somatostatin analog (n=30) or GH receptor antagonist monotherapy (n=12); n=16 had undergone radiation. SURG (n=24) were in remission after surgery ± radiation (n=10). GH stimulation testing was performed in all SURG; n=11 had GH deficiency (GHD). QoL was assessed at 2 timepoints by the 36-Item-Short-Form Health Survey (SF-36) (MED, SURG), Acromegaly Quality of Life Questionnaire (AcroQoL) (MED), Gastrointestinal Quality of Life Index (GIQLI) (MED), Symptom Questionnaire (SQ) (SURG), and QoL-Assessment of GHD in Adults (AGHDA) (SURG). Time between timepoints 1 and 2 was 5.4 ± 1.0 vs 13.6 ± 1.2 years (MED vs SURG, p<0.001), and mean duration of biochemical control for MED vs SURG at timepoint 2 was 14.8 ± 6.6 vs 20.8 ± 8.2 years (p<0.001). At timepoint 2, mean (± SD) age (61 ± 12 years), mean BMI (30 ± 7 kg/m^2), sex (68% female), and hypopituitarism (64% with ≥1 pituitary hormone deficiency) were similar between MED and SURG; mean IGF-1 index (IGF-1 level/mean normal range) was 1.00 ± 0.37 for MED vs 0.78 ± 0.40 for SURG (p=0.08); 79% of MED remained on medication. In MED, there was no change in SF-36 scores between timepoints, but all AcroQoL subscales and 2 GIQLI domains (Physical State, Emotions) improved, even after controlling for age, BMI, radiation treatment, and hypopituitarism. Results

were similar in the 79% who remained on medication at timepoint 2. In SURG, QoL scores worsened on the SF-36 Pain domain and Physical Health Summary Score and SQ Depression and Somatic subscales (p≤0.01) but did not remain significant after controlling for age, BMI, radiation treatment, GHD, and adrenal insufficiency. After controlling for those variables, QoL by AGHDA worsened (p=0.02). At timepoint 2, % scoring in the lowest quartile (<25%) of normal for age on the SF-36 was similar between MED and SURG: 57% scored <25% of normal on ≥1 SF-36 domain and 29% scored <25% of normal on ≥4 of 8 domains. GHD in SURG was associated with poorer SF-36 scores at timepoint 2 (6 domains and Mental Health Summary Score; p<0.05). Radiation treatment did not predict poorer SF-36 scores. In conclusion, an average of 15 to 20 years after biochemical control of acromegaly by surgery ± radiation ± pharmacologic treatment, QoL remained low in many patients. QoL was poorer in patients with GHD than without but overall did not differ between those on and off pharmacologic therapy. Our data suggest that a history of acromegaly and development of GHD, but not medical treatment, are detrimental to QoL.

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Characteristics of Pituitary Tumors Including Non-Functioning Tumors - a Tertiary Care Center Experience

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Introduction: Pituitary tumors compromise 10-20% of intracranial tumors. Non-functioning pituitary adenomas (NFPAs) are benign neoplasms which constitutes about 1/3rd of the pituitary tumors. There is few data on the characteristics of non-functioning tumors comparing with functioning tumors. Wide spread availability of MRI has eased the diagnosis of non-functioning tumors and early diagnosis. **Objectives:** To study the characteristics of pituitary tumors and the incidence of non-functioning tumors and compare with functioning tumors presenting to a tertiary care center. MethodsA retrospective study including 146 individuals with pituitary tumor were included from 2014 to 2020. **Results:** The study included 62(42.5%) male and 84(57.5%) female. The mean age was 41.97 + 13.93 years in males and 39.88 + 16.12 years in females. The mean duration of symptoms prior to presentation was 7.52 + 7.12 months and 10.37 + 11.60 months in males and females respectively. Macroadenoma (size >1cm) incidence was more with 55(88.7%) in males and 58(69%) in females. More number of males (87.1%) underwent surgery when compared to females (64.3%) (p – 0.002). There was more number of suprasellar and invasion of pituitary tumors seen in males compared to females(P- <0.01). There was no significant difference between various parameters like TSH, T4, LH, FSH, prolactin, Electrolytes, cortisol, ACTH, GH and IGF1 between males and females(p- NS). Seventy percent (103) of them were non-functioning tumors. Functioning tumors included 7(4.8%) acromegaly, 8(5.5%) cushings disease, 2(1.4%) gonadotropinoma, 24(16.4%) prolactinoma and 2(1.4%) posterior fossa tumor. Mean age in non- functioning tumors was 43.74 + 15.5 years. Mean diameter of tumor in non-functioning tumors was 21.04 + 11.54 cm when compared to functioning tumors (17.03 + 10.33 cm)(p-0.61). Most of the patients with non-functioning tumors who underwent surgery received post operatively hydrocortisone and levothyroxine when compared to patients with functioning tumors(p < 0.01). There was no significant difference in terms of gender, suprasellar extension, invasion and pituitary hormones(p-NS). ConclusionMost of the pituitary tumors in our study were macroadenomas with more number of males undergoing surgery as most of them had suprasellar extension and invasion. Non-functioning tumors should be followed up regularly as most of them required hydrocortisone and levothyroxine post-operatively.

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Characterization of Gonadotroph Pituitary Adenomas Based on the Recent 2017 WHO Pituitary Tumor Classification

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Introduction: More than 20% of pituitary adenomas are nonfunctional, the majority of which are of gonadotroph origin. Whereas previously, immunohistochemistry of pituitary hormones was used to classify adenoma subtypes, in 2017 the World Health Organization (WHO) reclassified pituitary adenomas using transcription factor expression in addition to immunohistochemistry. With this change, clinically nonfunctional gonadotroph adenomas can be distinguished among: (1) those staining for the transcription factor SF-1 and gonadotropins FSH and/or LH (FSH/LH+), (2) those that stain for SF-1 but not for FSH or LH (FSH/LH- SF1+), and (3) true null cell adenomas. It is unclear whether these three subgroups behave similarly clinically, or if they have distinct manifestations or outcomes. Our aim was to characterize these subgroups in regard to tumor size, recurrence and pituitary insufficiency.
Methods: In a retrospective chart review, 71 patients from 2017-2020 who presented to the hospital for transsphenoidal resection of clinically nonfunctioning pituitary adenomas were reviewed. All patients with pituitary adenomas that stained positive for SF-1 and negative for T-PIT and PIT-1, and tumors that were negative for all three transcription factors were evaluated. Those lacking clinical data were excluded. Clinical characteristics examined include: demographics, tumor size, invasion of cavernous sinus, and hormone deficiencies.
Results: Of the 71 pituitary tumors, 45% (n=32) stained positive for the beta subunit FSH and/or LH (FSH/LH+) and SF-1, 44% (n=31) stained for SF-1 with negative pituitary hormone stains (FSH/LH- SF1+), and 11% (n=8)