Giant pituitary neuroendocrine tumor

- A rare case of giant infrasellar craniopharyngioma with extensive invasion of the pterygopalatine fossa: A case report and literature review
- Clinico-pathological and molecular characteristics of pediatric-juvenile pituitary neuroendocrine tumors (PitNETs): A mono-institutional series
- Comprehensive Classification of Surgically Resected Pituitary Neuroendocrine Tumors: Updates From a Single-Institution Experience Based on the WHO 5th Edition
- Indications and outcomes of the extended endoscopic endonasal approach for the removal of "unconventional" suprasellar pituitary neuroendocrine tumors
- Fungal Sinusitis Spreading to the Sellar Region Mimicking a Pituitary Tumor: Case Report and Literature Review
- Endoscopic Endonasal Excision of Giant Pituitary Neuroendocrine Tumor with Subarachnoid extension
- Reassessing the role of the p.(Arg304Gln) missense AIP variant in pituitary tumorigenesis
- Good response rates and predictors during the first year of cabergoline treatment in large invasive prolactinomas

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Epidemiology

Giant pituitary neuroendocrine tumors comprise about 6-10% of all pituitary tumors.

It is estimated that 5% of pituitary neuroendocrine tumor become invasive and may grow to gigantic sizes (>4 cm in diameter).

They are mostly clinically non-functioning adenomas and occur predominantly in males [1)].

Types

see also Giant somatotroph adenoma.

Clinical

The presenting symptoms are usually secondary to compression of neighboring structures, but also due to partial or total hypopituitarism. Functioning pituitary neuroendocrine tumors give rise to specific symptoms of hormonal hypersecretion.

Treatment

The use of dopamine agonists is considered a first-line treatment in patients with giant

macroprolactinomas. Somatostatin analogs can also be used as primary treatment in cases of growth hormone and thyrotropin producing giant adenomas, although remission of the disease is not achieved in the vast majority of these patients.

The intrinsic complexity of these tumors requires the use of different therapies in a combined or sequential way. A multimodal approach and a therapeutic strategy involving a multidisciplinary team of expert professionals form the basis of the therapeutic success in these patients [2].

The main goal of surgical treatment of giant pituitary neuroendocrine tumor is maximum possible tumor extirpation with minimal side effects, which can be achieved by careful preoperative planning of operative approach, based on directions of tumor extensions and invasiveness. Maximal surgical removal of giant adenomas offers best chances to control tumor growth when followed with adjuvant medical and radiation therapies [3].

While the use of endoscopic approaches has become increasingly accepted in the resection of pituitary neuroendocrine tumors, limited evidence exists regarding the success of this technique for patients with large and giant pituitary neuroendocrine tumors.

Major blood supply of giant pituitary neuroendocrine tumors originates from branches of the infraclinoidal portion of the internal carotid artery, different from normal anterior pituitary gland. Surgical route should depend not only on tumor shape and extension but on feeding systems [4].

The main goal of surgical treatment of giant pituitary neuroendocrine tumor is maximum possible tumor extirpation with minimal side effects, which can be achieved by careful preoperative planning of operative approach, based on directions of tumor extensions and invasiveness. Maximal surgical removal of giant adenomas offers best chances to control tumor growth when followed with adjuvant medical and radiation therapies [5].

In cases of progressive enlargement of residual lesions, a second endoscopic debulking of the tumor may be considered for control of the disease [6].

Outcome

Giant pituitary neuroendocrine tumors carry higher surgical risks despite recent advances in microsurgical and/or endoscopic surgery, and postoperative acute catastrophic changes without major vessel disturbance are still extremely difficult to predict, may manifest as postoperative pituitary apoplexy, and are associated with very poor outcomes.

Resection of both large and giant pituitary neuroendocrine tumors by microscopic transsphenoidal surgery may be safe and effective surgical technique with low morbidity and mortality [7].

Case series

Giant pituitary neuroendocrine tumor case series.

Case reports

A 21-year old male, who required urgent surgery because of progressive visual disturbance due to giant pituitary neuroendocrine tumor. On brain MRI with contrast, it was revealed an extra-axial tumor extending anteriorly over planum sphenoidal with the greatest diameter was 5.34 cm. A transcranial approach was chosen to resect the tumor. Near-total removal of the tumor was achieved without damaging the vital neurovascular structure. The visual acuity was improved and no significant postoperative complication. Pathology examination revealed pituitary neuroendocrine tumor.

Transcranial surgery for pituitary neuroendocrine tumor is still an armamentarium in neurosurgical practice, especially in the COVID-19 pandemic to provide a safer surgical approach [8].

References

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