Crooke's cell adenoma case reports

A 56-year-old man with recurrent pituitary neuroendocrine tumor and complicated neurosurgical history. Imaging follow-up showed a suprasellar mass with progressive growth into the posterior fossa. Surgical management via retrosigmoid craniectomy was performed, and histopathology elucidated Crooke's cells.

Crooke's cell adenoma is recognized by its local aggressiveness and high recurrence rates. They tend to be locally invasive, though, posterior fossa invasion has not been reported to date. They aimed to contribute to the arsenal of differential diagnosis of similar pituitary tumor cases [1].

The case of a 56-year-old woman with Cushing's disease caused by a pituitary CCA is presented. At the age of 38 years, the patient presented to the hospital with polyuria and a visual field defect. MRI and laboratory studies showed a 4.5-cm-diameter pituitary tumor with plasma adrenocorticotropic hormone (ACTH) and serum cortisol levels of more than 500 pg/mL and 40 µg/dL, respectively. At 39 years of age, the patient underwent a craniotomy, and her plasma ACTH and cortisol levels decreased to less than 200 pg/mL and 10 µg/dL, respectively; however, these hormone levels increased gradually to 3,940 pg/mL and 70 µg/dL, respectively, by the time the patient was 56 years old. Histopathological re-examination of the previously resected specimen showed that the pituitary tumor was MGMT-negative CCA. TMZ treatment after the second operation decreased the plasma ACTH levels from 600-800 pg/mL to 70-300 pg/mL. No signs of recurrence were observed in the seven years following these treatments with added prophylactic radiation therapy. These clinical findings suggest that TMZ treatment to patients with CCA accompanied with elevated ACTH may be good indication to induce lowering ACTH levels and tumor shrinkage [2].

A 15-year-old boy who was investigated for delayed puberty (A1P2G1, bilateral testicular volumes of 3 mL each). There was no clinical or laboratory evidence suggestive of chronic illness, and the initial clinical impression was constitutional delay in puberty. Subsequently, MRI scan of the brain revealed the presence of a mixed cystic and solid pituitary lesion slightly displacing the optic chiasma. The lesion was removed by transphenoidal surgery and the biopsy confirmed the lesion to be pituitary neuroendocrine tumor. Furthermore, the adenoma cells also had Crooke's hyaline changes and were intensely positive for ACTH. However there was no clinical/biochemical evidence of ACTH excess. There was a spontaneous pubertal progression twelve months after the surgery (A2P4G4, with bilateral testicular volume of 8 mL). Crooke's cell adenoma is an extremely rare and aggressive variant of corticotroph adenoma that can uncommonly present as a silent corticotroph adenoma in adults. We report for the first time Crooke's cell adenoma in an adolescent boy presenting with delayed puberty.

Constitutional delay of growth and puberty (CDGP) is a diagnosis of exclusion; hence a systematic and careful review should be undertaken while assessing boys with delayed puberty.Crooke's cell adenomas are a group of corticotroph adenomas that can rarely present in childhood and adolescence with delayed puberty.Crooke's cell adenomas can be clinically silent but are potentially aggressive tumours that require careful monitoring [3].

1)

Cortez GM, Monteiro A, Agnoletto G, Bit-Ivan EN, Sauvageau E, Hanel RA. Aggressive Pituitary Tumor

with Crooke's Cells and Invasion of the Posterior Fossa. World Neurosurg. 2020 Mar 4. pii: S1878-8750(20)30412-5. doi: 10.1016/j.wneu.2020.02.137. [Epub ahead of print] PubMed PMID: 32145418.

2)

Tanaka S, Yamamoto M, Morita M, Takeno A, Kanazawa I, Yamaguchi T, Yamada S, Inoshita N, Oki Y, Kurosaki M, Sugimoto T. Successful reduction of ACTH secretion in a case of intractable Cushing's disease with pituitary Crooke's cell adenoma by combined modality therapy including temozolomide. Endocr J. 2019 May 25. doi: 10.1507/endocrj.EJ18-0547. [Epub ahead of print] PubMed PMID: 31130573.

3)

Giri D, Roncaroli F, Sinha A, Didi M, Senniappan S. Silent Crooke's cell corticotroph adenoma of the pituitary gland presenting as delayed puberty. Endocrinol Diabetes Metab Case Rep. 2017 Mar 31;2017. pii: 16-0153. doi: 10.1530/EDM-16-0153. eCollection 2017. PubMed PMID: 28458905; PubMed Central PMCID: PMC5404707.