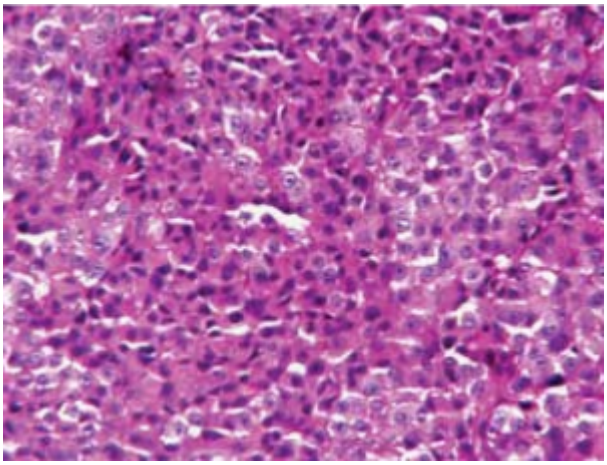
Crooke's cell adenoma



Crooke's cell adenomas are a rare type of pituitary neoplasm. They produce adrenocorticotropic hormone causing Cushing's disease or may be endocrinologically silent [1].

The 2017 World Health Organization classification of tumors of the pituitary gland, in addition to hormone immunohistochemistry, recognizes the role of other immunohistochemical markers including but not limited to pituitary transcription factors. Recognizing this novel approach, the fourth edition of the WHO classification has abandoned the concept of “a hormone-producing pituitary neuroendocrine tumor” and adopted a pituitary adenohypophyseal cell lineage designation of the adenomas with subsequent categorization of histological variants according to hormone content and specific histological and immunohistochemical features. This new classification does not require a routine ultrastructural examination of these tumors. The new definition of the Null cell adenoma requires the demonstration of immunonegativity for pituitary transcription factors and adenohypophyseal hormones Moreover, the term of atypical pituitary neuroendocrine tumor is no longer recommended. In addition to the accurate tumor subtyping, assessment of the tumor proliferative potential by mitotic count and Ki-67 index, and other clinical parameters such as tumor invasion, is strongly recommended in individual cases for consideration of clinically aggressive adenomas. This classification also recognizes some subtypes of pituitary neuroendocrine tumors as “high-risk pituitary neuroendocrine tumors” due to the clinical aggressive behavior; these include the sparsely granulated somatotroph adenoma, the lactotroph adenoma in men, the Crooke's cell adenoma, the silent corticotroph adenoma, and the newly introduced plurihormonal Pit-1-positive adenoma (previously known as silent subtype III pituitary neuroendocrine tumor). An additional novel aspect of the new WHO classification was also the definition of the spectrum of thyroid transcription factor-1 expressing pituitary tumors of the posterior lobe as representing a morphological spectrum of a single nosological entity. These tumors include the pituicytoma, the spindle cell oncocytoma, the granular cell tumor of the neurohypophysis, and the sellar ependymoma [2].

Treatment

Due to their rarity, they present great difficulties in assessing treatment, and clinical management. Neurosurgeons and physicians dealing with pituitary neuroendocrine tumors diagnosed as Crooke's cell adenomas have to be aware of their potential clinical aggressiveness to plan strict follow-up of patients and eventual multimodality treatment [3].

CCA is associated with a high incidence of low expression of methyl guanine methyl transferase (MGMT), suggesting that temozolomide (TMZ) treatment might be effective for this tumor type [4].

Outcome

These tumors are usually invasive, may exhibit aggressive clinical behavior, and often recur with a low success of cure after reoperation and/or radiotherapy. Due to their rarity, they present great difficulties in assessing prognosis, treatment, and clinical management. Neurosurgeons and physicians dealing with pituitary neuroendocrine tumors diagnosed as Crooke's cell adenomas have to be aware of their potential clinical aggressiveness to plan strict follow-up of patients and eventual multimodality treatment [5].

Case series

27 females and 9 males were 18 to 81 years of age (mean 46 years). At presentation, Cushing's disease was evident in 22/34 (65%); 81% were macroadenomas and 72% were invasive. All were initially treated by transsphenoidal resection. Twenty-five patients were followed for more than 1 year (mean 6.7 years). Of these, 15 (60%) developed recurrent tumor, and 6 (24%) had multiple recurrences. Lastly, 3 of these 25 patients (12%) died of tumor: 1 after multiple local recurrences and 2 from pituitary carcinoma. Compared with typical corticotroph adenomas, CCAs are aggressive. Most are functional adenomas occurring in middle-aged women and are invasive macroadenomas prone to recurrence. Morbidity and mortality rates are substantial. CCAs represent a distinct entity that should be separated from corticotroph adenomas without Crooke's hyaline change [6].

Case reports

Crooke's cell adenoma case reports.

References

[1], [3], [5]
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