Mixed Gangliocytoma-Pituitary Adenoma: A Case Report and Literature Review

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Abstract
Mixed Gangliocytoma-Pituitary Adenoma (MGPA) was very rare. This article reported a case of a 49-year-old female patient with intermittent headache with blurred vision. MRI was the preferred examination, and the diagnosis depended on pathological examination. Immunohistochemistry showed that both adenomatous cells and ganglionic cells were nuclear-positive for PIT1. Adenomatous cells were positive for CK AE1/AE3 and synaptophysin. The treatment of this neoplasm was surgery and the prognosis was associated with larger tumor size and invasion behavior.

Keywords: Gangliocytoma; Pituitary adenoma; Pathology; Image; Treatment

Introduction
Gangliocytoma in sellar region was very rare, and more than half of cases were associated with pituitary adenoma [1-3]. The symptoms include visual disturbance, headache and increased hormone levels [1-3]. Because the clinical and imaging was similar to pituitary adenoma, a differential diagnosis between gangliocytoma and adenoma was difficult to make preoperatively and was instead generally based on postoperative pathologic findings [1-3]. Transsphenoidal surgery was commonly performed, and total resection was recommended when possible [1-3]. We reported a case of mixed gangliocytoma-pituitary adenoma.

Case Presentation
A 49-year-old female patient suffered from intermittent headache with blurred vision for two years. She visited to our neurosurgery department and denied other systemic diseases. MRI showed a mass measuring 3.5 x 1.8 x
1.5 cm in the pituitary fossa with cavernous sinus invasion. Preoperative growth hormone level was 0.09 ng/mL and IGF-1 level was 141.29 ng/mL (normal value: 87-195 ng/mL). PRL serum level was elevated at 13.16 ng/mL (normal value: 3.0-11.7 ng/mL). Serum LH and FSH level were decreased at 1.06 mIU/mL (normal value: 11-50 mIU/mL) and 1.43 mIU/mL (normal value: 26-133 mIU/mL), respectively. ACTH was within normal range. Under impression of pituitary adenoma, transsphenoidal surgery was performed. The specimen consisted of multiple grayish white tissue fragments. Microscopically, it showed a tumor composed of pituitary adenoma admixed with ganglionic cells. The adenomatous component consisted of small uniform cells with eosinophilic cytoplasm. The ganglionic component showed polyhedral, occasionally binucleated neurons, with prominent fibrillary neuropils in the stroma. Immunohistochemically, both adenomatous cells and ganglionic cells were nuclear-positive for PIT1. Adenomatous cells were positive for CK AE1/AE3 and synaptophysin. Mixed Gangliocytoma-Pituitary Adenoma (MGPA) was diagnosed (Figure 1).

![Figure 1: Brain MRI revealed a sellar lesion with hypointensity on sagittal T1-weighted imaging (A) and hyperintensity on sagittal T2-weighted imaging (B). Histopathologically, two distinct mixed neoplastic cell populations (right: adenoma and left: ganglionic cells) are noted (C). The ganglionic cells have decentralized nuclei containing prominent nucleoli and abundant cytoplasm (D). The adenomatous component are small monomorphic cells with oval nuclei and eosinophilic cytoplasm (E). Nuclear PIT1 immunoreactivity is observed in both adenomatous cells and ganglionic cells (F, focus on ganglionic cells). Adenomatous cells express synaptophysin (G).](https://example.com/image)

**Discussion**

A literature review revealed a wide range of age at diagnosis of MGPA with an average age of 44 years; over 3/4 of patients are female [1,2]. The histopathological features were more likely to support the theory that MGPA originated from the neuronal transdifferentiation of adenomatous cells [1,2]. In these cases, both adenomatous...
and ganglionic components expressed PIT1 [1,2]. Due to the limited number of cases, the effect of neuronal components on the prognosis of MGPAs was not yet known [2]. The clinical and neuroimaging features of sellar MGPAs were non-specific, and invasion into the cavernous sinus is common [3]. Transsphenoidal complete surgical resection can be curative and recurrence was rare [3]. The larger tumor size and invasion behavior had poor prognosis [4].

Our patient is followed up for 36 months after transsphenoidal resection, and her general condition is good. It is a very rare case, with less than 200 cases previously reported in the literature [2]. We present this case to share the clinical experience in image, pathologic diagnosis and treatment.

References


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