Pituitary Metastasis from Carcinoma of the Urinary Bladder Mimicking Pituitary Apoplexy

—Case Report—

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Abstract

A 70-year-old male presented with pituitary metastasis from transitional cell carcinoma of the urinary bladder manifesting as sudden headache, transient unconsciousness, and visual disturbance mimicking apoplexy of pituitary adenoma. Computed tomography showed a suprasellar tumor with intratumoral and intraventricular hemorrhage. Magnetic resonance imaging demonstrated an intra- and suprasellar mass lesion mimicking pituitary adenoma. Diabetes insipidus developed soon after. The tumor was subtotally removed. Histological examination revealed transitional cell carcinoma. An intratumoral hemorrhage may be associated with a pituitary metastasis if the patient presents with symptoms such as pituitary apoplexy.

Key words: pituitary metastasis, pituitary apoplexy, transitional cell carcinoma, urinary bladder, intratumoral hemorrhage

Introduction

Pituitary metastasis commonly occurs in patients with pulmonary or mammary carcinoma on autopsy, but rarely manifests as symptoms of the pituitary gland or parasellar region.^{6,13)} Neurosurgical treatment is unusual because the patients have already metastases in various organs before the pituitary metastasis is identified.^{2,9)} We describe an unusual case of pituitary metastasis from carcinoma of the urinary bladder manifesting as intratumoral hemorrhage mimicking pituitary apoplexy.

Case Report

A 70-year-old diabetic male had been followed up for 4 months after a radical cystectomy for transitional cell carcinoma of the urinary bladder. He was referred to our department with sudden onset of headache and transient unconsciousness on May 22, 1997. He was lethargic and disorientated.

Neurological examination disclosed neck stiffness

and bilateral visual disturbance (count fingers) without defects in his visual field. Computed tomography showed a suprasellar isointense mass with intratumoral and intraventricular hemorrhages (Fig. 1). Magnetic resonance imaging demonstrated

Fig. 1 Computed tomography scans showing a suprasellar mass which including intratumoral hematoma (left) associated with intraventricular hemorrhage (right).

Fig. 2 T₁-weighted magnetic resonance images without (left) and with (center, right) meglumine gadopentetate, demonstrating the intra- and suprasellar mass lesion mildly enhanced by meglumine gadopentetate.

a well-circumscribed mass lesion in the intra- and suprasellar regions (Fig. 2 left). The lesion was mildly enhanced by intravenous injection of meglumine gadopentetate (Magnevist®; Schering AG, Berlin, Germany) (Fig. 2 center, right). Cerebral angiography showed no abnormality. The results of endocrinological testing were as follows: adrenocorticotrophic hormone, 73 pg/ml (normal 9–52 ng/ml); cortisol, 15.6 µg/dl (normal 4–18.3 µg/dl); follicle stimulating hormone, 0.9 mIU/ml (normal 1.8–13.6 mIU/ml); luteinizing hormone, 0.4 mIU/ml (normal 1.1–8.8 mIU/ml); growth hormone, 2.26 ng/ml (normal 0.66–3.68 ng/ml); prolactin, 22 ng/ml (normal 1.5–9.7 ng/ml); thyroid stimulating hormone, 0.28 µU/ml (normal 0.3–4.0 µU/ml); not significantly responded to insulin-induced hypoglycemia, and intravenous injection of thyrotropin releasing hormone (0.5 mg/body) and luteinizing hormone releasing hormone (0.1 mg/body). Diabetes insipidus was also detected with 6400 ml of urine per day and the specific gravity of urine as low as 1.003 on May 24. The sudden onset, radiological findings, and laboratory data suggested pituitary adenoma associated with hemorrhagic apoplexy. An increase of fasting blood sugar to 400 mg/dl required insulin control before surgical treatment.

Surgical exploration was performed through a transsphenoidal approach on June 11, and a mixture of necrotic tissue and old hematoma was obtained without tumor tissue. His visual acuity was improved, but disorientation was continued. The second operation was postponed until July 3, as an abdominal-wall abscess under the cystectomy operative scar required treatment. The tumor was

Fig. 3 Photomicrograph of the tumor specimen showing solid nests of polymorphous tumor cells with large, bizarre nuclei arranged in disorder. Many mitoses and marked nuclear hyperchromatism are seen. HE stain, ×200.

subtotally extirpated through a frontobasal interhemispheric and transtuberulum sellar approach. The pinkish gray-colored tumor occupying intra- and suprasellar regions bleed readily during piecemeal removal. The pituitary gland was compressed posteriorly in the sella.

Histological examination of the specimen revealed the characteristic features of transitional cell carcinoma with high grade malignancy. Solid nests of polymorphous tumor cells with large, bizarre nuclei were arranged in disorder. Many mitoses and marked nuclear hyperchromatism were noted (Fig.

3).

His family refused irradiation. He gradually showed aggravation of unconsciousness and died on October 15, 1997. Autopsy was not permitted.

Discussion

Pituitary adenoma and pituitary metastatic tumor both occur in the intra- and parasellar regions. Although pituitary metastases are easily diagnosed due to the occurrence of systemic metastases, differentiation between adenoma and metastatic tumor is particularly difficult if the patient has a solitary sellar tumor. Most pituitary metastases are identified after the age of 50 years, which is a less common age for adenomas.⁷⁾ Pituitary metastases at autopsy have been associated with carcinoma of the breast (66.0%), the lung (13.2%), and the stomach (7.5%) in female patients, and with carcinoma of the lung (62.9%), the prostate (8.6%), and the urinary bladder (5.7%) in male patients.¹³⁾ Metastatic brain tumor from bladder carcinoma accounted for 0.6% of all brain metastases,³⁾ most commonly in cerebellum, frontal lobe, and temporal lobe.^{12,15)} Patients with pituitary metastases are usually asymptomatic except for diabetes insipidus (71%) and oculomotor nerve palsy (15%), because the metastasis mainly involves the posterior lobe of the pituitary gland via the portal vessels.^{5-7,15)} In contrast, pituitary adenoma causes diabetes insipidus and oculomotor nerve palsy in less than 2% of patients.⁷⁾

The final diagnosis in the present case was based on occurrence of diabetes insipidus. However, the preoperative diagnosis of pituitary apoplexy was misled by the symptoms of sudden headache, unconsciousness, and visual disturbance and the radiological findings of intratumoral hemorrhage. Pituitary apoplexy is a characteristic symptom of pituitary adenoma caused by hemorrhage and/or necrosis of the tumor.^{8,14)} Subarachnoid hemorrhage due to ruptured aneurysm is one of the most important diseases in the differential diagnosis, so early cerebral angiography is recommended. Evacuation of intratumoral hematoma through a transsphenoidal approach relieving the optic chiasm and diencephalon of the hematoma compression should be performed as soon as possible. Tumor tissue is usually obtained by the surgical approach, but some surgical specimens (31 of 93 cases) do not allow for histological evaluation of pituitary tumors,¹⁴⁾ such as the first exploration in the present case.

Metastatic brain tumors bleed occasionally and cause symptomatic intracerebral hemorrhage.^{1,10)} A large autopsy study found 47 (1.4%) out of 3426

patients who died of systemic cancer exhibited symptomatic intracerebral hemorrhage due to intratumoral bleeding.^{4,11)} Pituitary metastases are common at autopsy, whereas the typical symptoms of pituitary apoplexy caused by hemorrhage in the pituitary adenoma occurred in only 0.6% of large series of operated adenomas.⁸⁾ Therefore, patients with pituitary metastases may manifest symptoms of intratumoral hemorrhage, just as patients with pituitary adenoma present with pituitary apoplexy.

Intratumoral hemorrhage may be associated with pituitary metastasis if the patient presents with symptoms such as pituitary apoplexy.

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