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CASE REPORT
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Pituitary Gland Metastasis of Endometrial Cancer: A Case Report

ABSTRACT

Tumor metastasis to the pituitary gland is very rare. Breast and lung cancers are the most common neoplasms reported to metastasize to the pituitary gland. Pituitary metastasis of endometrial carcinoma is extremely rare. Most of the pituitary metastasis are asymptomatic and therefore can be easily overlooked in imaging studies. Polyuria and polydipsia due to diabetes insipidus are the most common symptoms in these patients. Patients may also present with visual impairment and symptoms of panhypopituitarism. In this case report, we share a case presented with sudden onset of diabetes insipidus, as well as ophthalmoplegia, and diagnosed as pituitary metastasis of endometrium adenocarcinoma in imaging studies.

Keywords: Diabetes insipitus, endometrial carcinoma, metastasis, pituitary gland

Introduction

Tumor metastasis to the pituitary gland constitutes only 1% of all pituitary lesions.[1] Metastatic pituitary tumors mostly originate from the breast and lung, and moreover, metastasis from all parts of the body to the pituitary is reported.[1-3] Most of the patients with pituitary metastasis are asymptomatic and diagnosed incidentally on imaging. Since metastatic tumors are mainly located in the posterior pituitary, polyuria and polydipsia due to diabetes insipidus are the most common symptoms in these patients. Visual impairment and symptoms of panhypopituitarism are also reported in these patients.[1] Diagnosis of pituitary metastasis is more common in elderly patients, who have disseminated disease that usually indicates a poor prognosis. Endometrial cancer (EC) is the fourth most common malignancy in women and the most frequent gynecological tumor in especially developed countries.[4] Endometrial cancer typically metastasizes the pelvis, peritoneum, lungs, and bones. Pituitary is an unusual site for metastasis,[5] and hence, to the best of our knowledge, there are 6 cases in the literature.[1,2,6] In this study, we present a case with pituitary metastasis of endometrial serous cell cancer, who was diagnosed with imaging modalities. Written informed consent was obtained from the patient who participated in this study.

Case Presentation

A 71-year-old female who was being followed up for the management of metastatic endometrial carcinoma presented with a 1-week history of loss of appetite and nausea. When questioned, she also reported headache, mild polyuria, and progressive deterioration of vision in both eyes.

She had been diagnosed with endometrial serous carcinoma in 2017. Then, she had undergone total hysterectomy, bilateral salpingo-oophorectomy, bilateral pelvic and para-aortic lymph node dissection, and omentectomy. Just after 6 cycles of paclitaxel-carboplatin, 18F-f luorodeoxyglucose (FDG) positron emission tomographic/computed tomography (PET/CT) revealed liver and bone metastasis. She received 6 cycles of bevacizumab and doxorubicin, and she did not progress until her follow-up visit in June 2019.

On admission, her physical examination was normal except for the low blood pressure and right palpebral ptosis. Her ophthalmological examination showed bitemporal hemianopsia and deterioration of vision. There was mild hypernatremia on her initial laboratory evaluation and she also had a low urine density. Since she had presented polyuria, mild hypernatremia, and visual changes, a contrast-enhanced cranial magnetic resonance imaging (MRI) was performed. Her initial cranial MRI revealed a 17 × 17 mm contrast-enhanced sellar tumor

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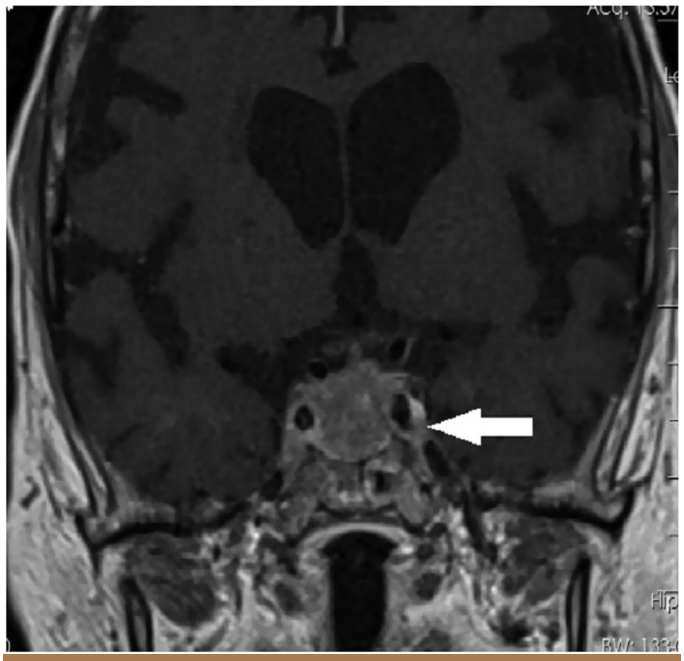

Figure 1. 17 × 17 mm contrast-enhanced sellar mass with cavernous sinus infiltration.

with cavernous sinus infiltration, brain edema, and diffuse cerebellar atrophy (Figure 1). An 18F-FDG-PET-CT also confirmed pituitary metastasis (Figure 2). Apart from FDG uptake in the pituitary, intense FDG uptake which was consistent with metastasis was observed in the left gastric and peripancreatic region, upper abdomen, both adrenal regions, the liver, the mediastinum, the left lower paratracheal, aortopulmonary area, and in many bones. Pituitary function tests demonstrated panhypopituitarism. Hypernatremia, low urine density, and osmolality were compatible with diabetes insipidus (DI). Laboratory values of the patient were as follows: glucose level: 95 mg/dL (70-140 mg/dL), creatine: 0.63 mg/dL (0.5-1.2 mg/dL), sodium: 151 mmol/L (135-146 mmol/L), alanine aminotransferease (ALT): 116 U/L (0-55 U/L), cortisol: 1.3 µg/dL (3.7-9.4 µg/dL), thyroid stimulating hormone (TSH): 0.02 mU/L (0.35-4.94 mU/L), free thyroxine (T4): 0.56 ng/dL (0.7-1.48 ng/dL), postmenopausal phase follicle stimulating hormone (FSH): 0.42 U/L (26.72-133.41 U/L), postmenopausal phase estradiol (E2) < 20 ng/L (10-28 ng/L), insulin-like growth factor (IGF)-1: 15 µg/L (35.1-216 µg/L), prolactin: 2.91 µg/L (5.18-26.53 µg/L), growth hormone: <0.05 µg/L (0-10 µg/L), urine osmolality: 227 mosm/kg (300-900 mosm/kg), and urine density: 1003 (1005-1025). She was immediately treated with steroids, levothyroxine, and desmopressin after the diagnosis. In subsequent days, her sodium levels were back to normal and her urine output was decreased. Unfortunately, the patient died a week later due to an extensive tumor burden. An autopsy was not performed.

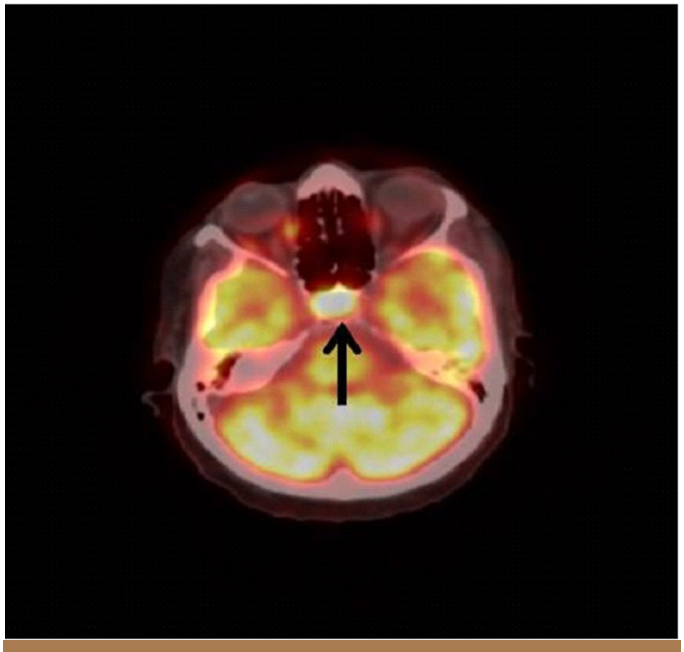

Figure 2. Increased 18F-FDG uptake in seller region. 18F-FDG, 18F-fluorodeoxyglucose.

Discussion

The pituitary gland is an uncommon location for metastasis and accounts for approximately 1% of pituitary tumors as reported in a large autopsy series.[1] However, pituitary metastasis could be more common than previously thought in patients with a history of cancer.[7] Various tumors are reported to metastasize to the pituitary in which lung and breast are the most common. Pituitary metastasis of endometrial adenocarcinoma is even rarer, and the case report and literature review published in 2020 by Du et al[6] refers to this disease. In addition to this study, 3 case reports were defined in previous studies.[8-10] However, in 2 previously published reviews, 5 pituitary metastases due to endometrium carcinoma were reported.[1,2] To the best of our knowledge, our case is the seventh case within the literature.

Different presentations of pituitary metastasis are reported though most of them are asymptomatic. Diabetes insipidus, hypopituitarism, headache, retro-orbital pain, visual defects, and ophthalmoplegia are the most common presentations that can be seen in only 7% of patients.[2] Diabetes insipidus is more frequent finding in pituitary metastasis than in pituitary adenoma, thus can be a useful feature in differentiating pituitary adenoma from pituitary metastasis. Anterior pituitary deficiency is reported in approximately one-third of the cases, in which central hypothyroidism and low cortisol levels are identified frequently.[11] Our patient presented with symptoms of hypocortisolism along with DI and visual defects, which fit the patterns reported in the literature. Non-specific symptoms related to hypocortisolism such as fatigue and nausea were the first presenting symptoms of our case. In addition, polyuria and visual deterioration were detected while questioning further. These findings highlight the importance of awareness of possible pituitary processes in malignant patients presenting with these symptoms.

The lack of specific clinical symptoms makes it difficult to distinguish a differential diagnosis of metastasis and other more common benign lesions. Most of the patients described in the literature are diagnosed with sellar imaging combined with the appropriate clinical scenario and symptoms.[11] Pituitary adenomas and metastases are nearly indistinguishable on neuroimaging. In most cases, pituitary gland metastasis was evaluated as pituitary adenoma due to the lack of specific radiological findings. Pituitary metastases are usually isointense on T1-weighted images with usually high intensity on T2-weighted images. However, neuroradiological findings

of metastasis in the pituitary gland are less specific for a diagnosis than clinical presentations. Thickening of the pituitary stalk, sclerosis of the surrounding sella turcica, and invasion of the cavernous sinus may indicate a secondary lesion.[12] The diagnosis of pituitary metastasis in our case was based on radiological imaging techniques which are the invasion of the cavernous sinus and internal carotid artery, as well as the involvement of 18F-FDG-PET-CT. Functional imaging with PET-FDG is a preferred alternative and valuable imaging method for diagnosing pituitary metastasis. It may also help to evaluate the current status and other possible metastatic sites and also to focus on the management of primary tumor. Considering the presentations of the patient, MRI and PET-FDG findings were the most appropriate diagnosis for the pituitary metastasis of endometrial carcinoma. There was no need for a histological evaluation.

Spontaneous hemorrhagic infarction of a pituitary tumor (pituitary apoplexy) should be considered in the differential diagnosis. Pituitary apoplexy often presents with severe headache, visual impairment, and changes in consciousness. Our patient had anorexia and weight loss. When the patient was questioned, it was learned that he had headache, polyuria, and progressive visual impairment. Our patient's headache was not serious and there was no consciousness disorder. There was no evidence of infarct on MRI, and 18F-FDG-PET-CT was consistent with pituitary metastasis.

Conclusion

In conclusion, we present a case with sellar mass, ophthalmoplegia, headaches, hypopituitarism, mild diabetes insipidus, and known history of malignancy; imaging studies revealed pituitary metastasis. Sudden onset of diabetes insipidus and ophthalmoplegia in a patient with a known history of malignancy should raise the suspicion of pituitary metastasis.

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

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Declaration of Interests: The authors declare that they have no competing interest.

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References

1. Komninos J , Vlassopoulou V, Protopapa D, et al. Tumors metastatic to the pituitary gland: case report and literature review. *J Clin Endocrinol Metab*. 2004;89(2):574-580. [CrossRef]
2. He W, Chen F, Dalm B, Kirby PA, Greenlee JD. Metastatic involvement of the pituitary gland: a systematic review with pooled individual patient data analysis. *Pituitary*. 2015;18(1):159-168. [CrossRef]
3. Ng S, Fomekong F, Delabar V, et al. Current status and treatment modalities in metastases to the pituitary: A systematic review. *J Neurooncol*. 2020;146(2):219-227. [CrossRef]
4. Amant F, Moerman P, Neven P, Timmerman D, Van Limbergen E, Vergote I. Endometrial cancer. *Lancet*. 2005;366(9484):491-505. [CrossRef]
5. Kurra V, Krajewski KM, Jagannathan J, Giardino A, Berlin S, Ramaiya N. Typical and atypical metastatic sites of recurrent endometrial carcinoma. *Cancer Imaging*. 2013;13:113-122. [CrossRef]
6. Du H, Jia A, Ren Y, et al. Endometrial adenocarcinoma metastatic to the pituitary gland: a case report and literature review. *J Int Med Res*. 2020;48(6):300060520924512. [CrossRef]
7. Saeger W, Lüdecke DK, Buchfelder M, Fahlbusch R, Quabbe HJ, Petersenn S. Pathohistological classification of pituitary tumors: 10 years of experience with the German Pituitary Tumor Registry. *Eur J Endocrinol*. 2007;156(2):203-216. [CrossRef]
8. Lieschke GJ, Tress B, Chambers D. Endometrial adenocarcinoma presenting as pituitary apoplexy. *Aust N Z J Med*. 1990;20(1):81-84. [CrossRef]
9. Max MB, Deck MD, Rottenberg DA. Deck MD and Rottenberg DA. Pituitary metastasis: incidence in cancer patients and clinical differentiation from pituitary adenoma. *Neurology*. 1981;31(8):998-1002. [CrossRef]
10. Thomas JE, Yoss RE. The parasellar syndrome: problems in determining etiology. *Mayo Clin Proc*. 1970;45(9):617-623.
11. Shimon I. Metastatic spread to the pituitary. *Neuroendocrinology*. 2020;110(9-10):805-808. [CrossRef]
12. Fassett DR, Couldwell WT. Metastases to the pituitary gland. *Neurosurg Focus*. 2004;16(4):E8. [CrossRef]