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Case Report

Pituitary metastasis of lung carcinoma presenting as diabetes insipidus: Case report

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ABSTRACT

Metastasis to Pituitary gland is an extremely rare condition. Patients are usually asymptomatic and imaging studies often miss the lesion. Pituitary metastases so far reported are largely from autopsies done for unrelated reasons. Here, we describe a case of pituitary metastasis, presented with diabetes insipidis, underwent surgery for removal of pituitary tumor and diagnosed as metastatic lung cancer using immunohistochemical studies.

1. Introduction

Metastasis to Pituitary gland is an extremely rare condition. It was first reported in 1857 by Ludwig Benjamin and next in 1913 by Harvey Cushing.[1] Since, patients are usually asymptomatic and imaging studies often miss the lesion, detection of pituitary metastasis is difficult. Only 7% of the pituitary metastasis were found to be symptomatic. Although, cases of both anterior and posterior pituitary metastasis are reported, they are more likely to be involving posterior pituitary with Diabetes Insipidus being the common presentation.[2,3] The reason for metastatic tumors finding predilection for posterior pituitary over anterior pituitary remains unknown. Pituitary metastases so far reported are largely from autopsies done for unrelated reasons.[4–9] In this report, we describe a case presented with diabetes insipidis, underwent surgery for removal of pituitary tumor and diagnosed as metastatic lung cancer using immunohistochemical studies.

2. Case Report

42-year-old patient presented with complaints of polyuria and polydipsia. Patient also complained of blurring of vision, increased feeling of lethargy and poor appetite. Imaging studies showed a supraseller tumour and surgical resection of the tumour was carried out.

Grossly, tumour was received as greywhite fragments measuring about 3 cm in aggregate and was subjected entirely for processing. Microscopically, tumour showed moderately differentiated glandular component, closely packed together displaying stratification of enlarged, hyperchromatic nuclei are vesicular nuclei with prominent nucleoli within them. A back-to-back arrangement of the glands with enlarged, hyperchromatic nuclei noted. A diagnosis of malignant adenocarcinoma component, compatible with metastaic deposits was made (Figures 1 and 2). Further immunohistochemical studies with Synaptophysin, Napsin A, KI 67, TTF1 and CK 7 were suggested to figure out the primary lesion.

Metastaic glandular component shows diffuse intense nuclear positivity for TTF-1. Strong membarne positivity is seen for Napsin-A. Synaptophysin is focally positive for the galndualr component. CK7 shows diffuse cytoplasmic

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positivity. Ki67 shows proliferative index of 30%. The triple positivity noticed for TTF1, Napsin A and CK7 is indicative of a primary adenocaricnoma of the lung (Figures 3, 4 and 5). There is evidence of focal neuroendocrine differntiation of the tumour, as seen by positivity for Synaptophysin.

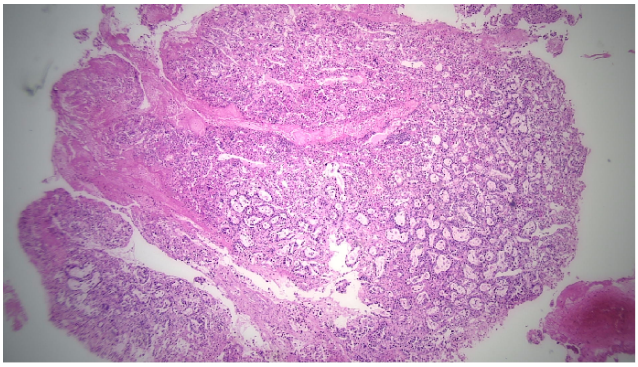

Fig. 1: H&E, 10X

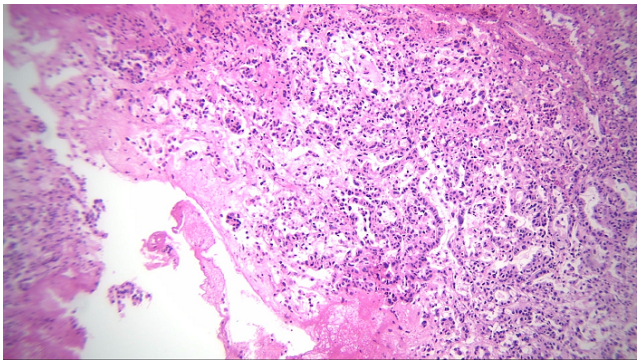

Fig. 2: H&E, 40X

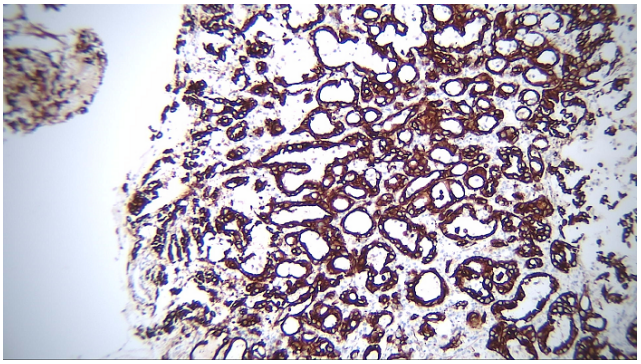

Fig. 3: CK 7 +

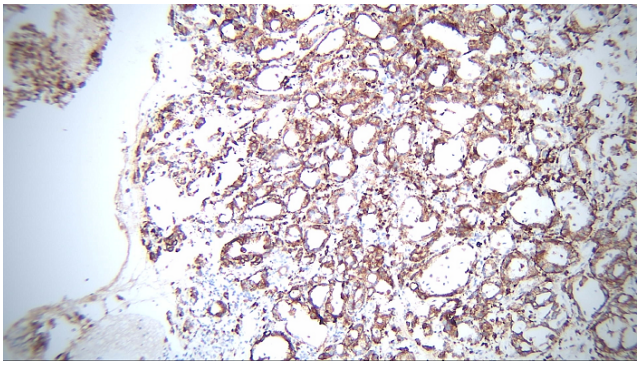

Fig. 4: Napsin A+

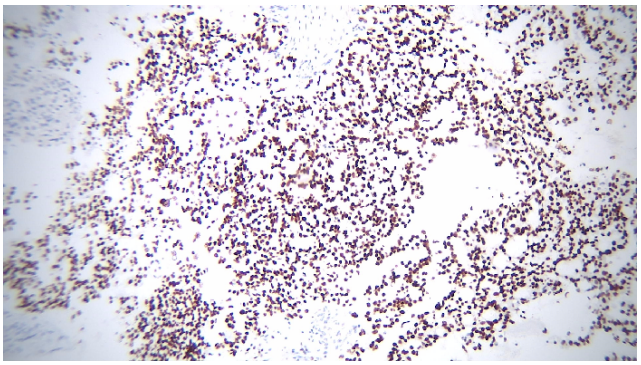

Fig. 5: TTF1 +

3. Discussion

Breast cancer was most often found to be the primary cancer to present as pituitary metastasis followed by lung cancer. Visual involvement is the most common clinical presentation. About 0.14 to 3.6% of all intracranial metastases are in the pituitary, of which posterior pituitary is commoner than anterior.[10,11] 1.8% of all pituitary masses that are resected were diagnosed to be metastatic tumors.[6] Presentation is gender independent commonly involving individuals in sixth decades of life. The incidence of pituitary metastasis seems to be on the rise which may be attributed to improved diagnostic techniques. Only 2.5-18.2% of all the patients present with symptoms due to the metastasis.[12]

Clinical manifestations range from general symptoms like fatigue and headache to specific features such as polyuria and polydipsia. Absence of symptoms or presence of nonspecific symptoms in most cases leads to delayed diagnosis. In our current, patient presented with specific symptoms of diabetes insipidus. Only 1% of patients presenting with diabetes incipidus have pituitary adenoma. So, it's been suggested that diabetes insipidus patients should undergo investigation for pituitary metastasis to locate the primary.[13]

Literature shows that lung cancer to be the second most common cause for pituitary metastasis. One study estimated pituitary metastasis to be the first manifestation in 34.5% of cancer cases, Out of which, lung cancer is responsible for 50% of the metastases. The third most common cause for pituitary metastasis is thyroid and renal tumors take the fourth place.[14–16]

There are various hypotheses in the literature trying to explain why posterior pituitary metastasis is more common than anterior pituitary. One explanation would be the blood supply. Posterior pituitary gets blood from the systemic circulation whereas anterior pituitary receives blood from hypophyseal portal system. Another explanation would be the smaller size of posterior pituitary leading to symptomatic manifestation even for the smallest metastatic lesion.[16–19]

Treatment includes surgery, radiotherapy, radiosurgery, chemotherapy and hormone therapy. Total resection is usually impossible owing to increased vascularization and local invasiveness of the tumor. Any of the above treatments may lead to panhypopituitarism.[20] Treatment does not necessarily increase patient survival. Patient survival essentially depends on subtype of primary malignancy and presence of other metastases. The mean survival rate after diagnosis of pituitary metastasis is approximately 13.6 months and median survival after surgical resection is 6 months.[20–22]

4. Conclusion

No investigations including high resolution imaging technologies can reliably differentiate primary pituitary tumors from metastatic lesions. High level of suspicion along with focused clinical evaluation by the endocrine specialist and neuroradiology guidance is needed to make this rare diagnosis.

5. Source of Funding

None.

6. Conflict of Interest

None.

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