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Case Report

A rare case of metastatic colon cancer to the pineal region: A case report

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ABSTRACT

Background: Colorectal cancer is the third most common cancer and the third most leading cause of death in the United States with brain being a rare site for metastasis and the pineal region being a rarer site to manifest.

Case Description: We present a rare case of a 72-year-old male patient with pineal region tumor and obstructive hydrocephalus for which an endoscopic third ventriculostomy was done with biopsy of the tumor showing primary colorectal origin in a patient known to be previously healthy.

Conclusion: Intracranial metastasis to the pineal region is considered rare especially in cases without widely spread systematic cancer or without presence of other metastatic lesions in the brain. The case we presented suggests that we should consider pineal region metastasis as part of our differential whenever we encounter patients with an isolated pineal lesion. Endoscopic third ventriculostomy can be a better treatment option to treat obstructive hydrocephalus caused by the lesion potentially avoiding peritoneal dissemination.

Keywords: Colon cancer, Endoscopic third ventriculostomy, Pineal lesion, Pineal region metastasis

INTRODUCTION

Colorectal cancer (CRC) is the third most common cancer and the third most leading cause of death in the United State.[2,4] It has been reported that the most common sites of metastasis include regional lymph nodes, liver, lungs, and peritoneum.[2] However, and it is rare, the incidence of brain metastasis from CRC approximates 0.7–10.3% and is detected more due to the increased use of magnetic resonance imaging (MRI) as part of the radiological workup.[3] A retrospective study of 39 confirmed cases of brain metastasis from CRC between 1984 and 2006 showed that the most common locations are the cerebellum (44%) followed by the frontal lobe (26%), parietal lobe (15%), temporal lobe (10%), and the occipital lobe (5%).[4] On the other hand, pineal region tumors account for <1% of all intracranial brain tumors with 0.4–3.8% of a metastatic origin.[6] In a study in 2006, ten patients were found to have metastatic pineal gland tumors. In those ten cases, six primary tumors were identified, three cases of lung cancer, and one case of each breast, renal, cervical, esophageal, gastric, and colon carcinomas.[1] Therefore, due to its rarity and the limited data available, we present a rare case of CRC metastasis to the pineal gland region.

CASE PRESENTATION

We present the case of a 72-year-old male patient who is known to have coronary artery disease on aspirin and who presented to our institution with 2-month history of horizontal, binocular diplopia, with the left-sided numbness of his face, gait instability, tinnitus, and vertigo. He denied previous history of headaches, seizure activity, memory deficits, or urinary incontinence. His physical examination was intact with no neurological deficits. MRI brain done as part of the work up showed a 2.8 cm tumor with its epicenter in the pineal gland region which invades the medial aspects of the thalami bilaterally, the tectum inferiorly, and the anteroinferior aspect of the splenium of the corpus callosum superiorly [Figure 1]. It shows irregular rim of enhancement with large areas of the central necrosis and extensive surrounding vasogenic edema involving the thalami bilaterally, the midbrain extending into the superior cerebellar peduncles, and the posterosuperior aspect of the pons. This caused obstruction of the aqueduct of Sylvius with resultant moderate non-communicating hydrocephalus. The differential diagnosis after reviewing imaging was either a tectal plate GBM or a pineal malignant tumor with the latter possibility being more likely.

The patient underwent a right burr hole for endoscopic third ventriculostomy with endoscopic biopsy of the pineal region tumor.

The pathology result was consistent with a colorectal primary cancer. The tumor cells were positive for CK20 and CDX-2 and negative for CK7 and TTF-1.

DISCUSSION

Colon cancer is known to metastasize to several sites including lymph nodes, liver, lung, peritoneum, and rarely to the brain holding a poor prognosis with best median survival shown to be in patients who receive multimodality treatment.[2] Combination of surgery and radiation therapy compared to surgery alone has been shown to have better outcomes with greater median overall survival of 14 months versus 4.8 months in the surgical group only.[4] In patients with brain metastasis, some factors can predict the prognosis of these patients with improved survival including age less than 70, having less than or 3 metastatic lesions, KPS more than or equal to 70, and no chemotherapy intake before diagnosing brain metastasis.[2] Pineal region metastasis is uncommon and is considered to be found incidentally in patients who have widely metastatic systemic cancer.[1] The patient in our case was not known to have metastatic cancer and was diagnosed with colon cancer after biopsy of the pineal lesion. The clinical symptoms reported in such cases include headache, encephalopathy, parinaud syndrome, and hydrocephalus.[1] Lassman *et al*. showed that most of the cases of the pineal gland metastases collected in their series were from lung primary cancer with the rest being from breast, renal, cervical, esophageal, gastric, and colon carcinoma whereby the primary malignancy was either in remission or undiagnosed[1]. The most common site of primary origin of pineal metastasis is the lung with small cell carcinoma being the most frequent histological type.[5] The mechanism behind development of pineal metastasis is suggested to be a hematogenous spread to the pineal body through the posterior choroidal arteries, especially that the pineal gland is excluded from the blood-brain barrier which makes it more susceptible to hematogenous metastasis from distant tumors.[5] Patients can undergo symptomatic treatment of hydrocephalus by either ventriculoperitoneal shunt placement or through an endoscopic third ventriculostomy which was performed in our case; since shunting is associated with risk of infection and peritoneal neoplastic dissemination.[5]

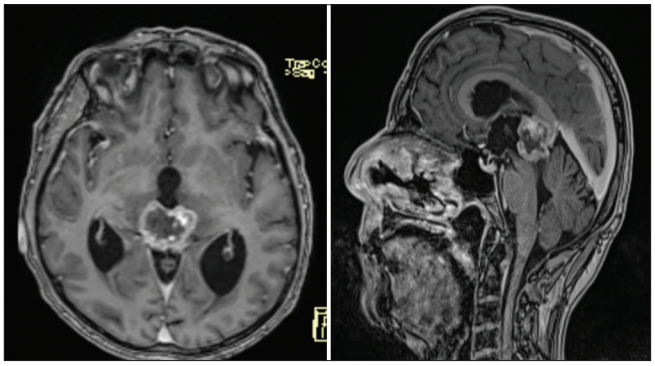

Figure 1: Magnetic resonance imaging brain with gadolinium axial and sagittal views showing a homogenously enhancing mass with the central necrosis occupying the pineal region causing mass effect on the cerebral aqueduct and secondary ventricular dilatation.

CONCLUSION

Intracranial metastasis to the pineal region is considered rare especially in cases without widely spread systematic cancer or without presence of other metastatic lesions in the brain. The case we presented suggests that we should consider pineal metastasis as part of our differential whenever we encounter patients with isolated pineal lesion. Endoscopic third ventriculostomy can be a better treatment option to treat obstructive hydrocephalus caused by the lesion without causing any peritoneal dissemination, especially that a biopsy may be done in the same procedure should that be required.

Declaration of patient consent

Patient's consent not required as patient's identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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