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Case report

Histologically benign intraventricular meningioma with concurrent pulmonary metastasis: Case report and review of the literature

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Abstract

Only 1–2% of all meningiomas are intraventricular in location. Metastasis from a histologically "benign" meningioma is a rare, but well-documented event. However, there are only four reported cases in the literature of metastatic spread from a purely intraventricular meningioma. The tumors in these reports had a frankly malignant histology or were associated with surgical manipulation and recurrence of the primary lesion. In this report, the authors present a rare case of the concurrent presentation of a histologically benign intraventricular meningioma and a solitary lung lesion which proved to be metastatic meningioma.

Keywords: Meningioma; Benign; Intraventricular; Metastasis

1. Introduction

Meningiomas are generally benign intracranial tumors. Only an estimated 0.1% metastasizes [10]. Meningiomas located exclusively within the ventricles are also rare, comprising 1–2% of the total. Tumors with malignant histological features have a higher rate of recurrence and metastasis; however, there are reports of metastasis from "benign" meningiomas. There are very few reports of metastasis of intraventricular meningiomas. All previously published cases of metastatic spread occurred in tumors with histologically malignant features or recurrence of the primary. The authors present a case of a patient with an intraventricular meningioma with benign histology and a concurrently discovered metastasis in the lung.

2. Case report

The patient is a non-smoking 54-year-old male who presented with a generalized seizure. Magnetic resonance imaging (MRI) showed a right contrast-enhancing intraventricular tumor with surrounding edema (Fig. 1). The patient had an unremarkable past medical history with no previous seizures. His neurological exam was normal.

A pre-operative computed tomography (CT) scan of the chest demonstrated a 2 cm, well-circumscribed right lung lower lobe mass (Fig. 2). A fine needle aspiration of the lung mass was performed and initially interpreted as "poorly differentiated non-small cell carcinoma."

The intraventricular tumor was then excised via a right parietal-occipital craniotomy. The tumor was extremely fibrous. It was contained in the ventricle and had no gross brain invasion. Pathological examination revealed a meningioma with both a meningothelial and fibroblastic components (Fig. 3). There was marked collagen deposition. Conforming to a World Health Organization (WHO) grade I meningioma, this tumor lacked atypical features, had a mitotic count of less than one per ten high power fields, and was characterized by a low (2–3%) Ki-67 labeling index.

Abbreviations: WHO, World Health Organization; EMA, epithelial membrane antigen; CT, computed tomography; MRI, magnetic resonance imaging.

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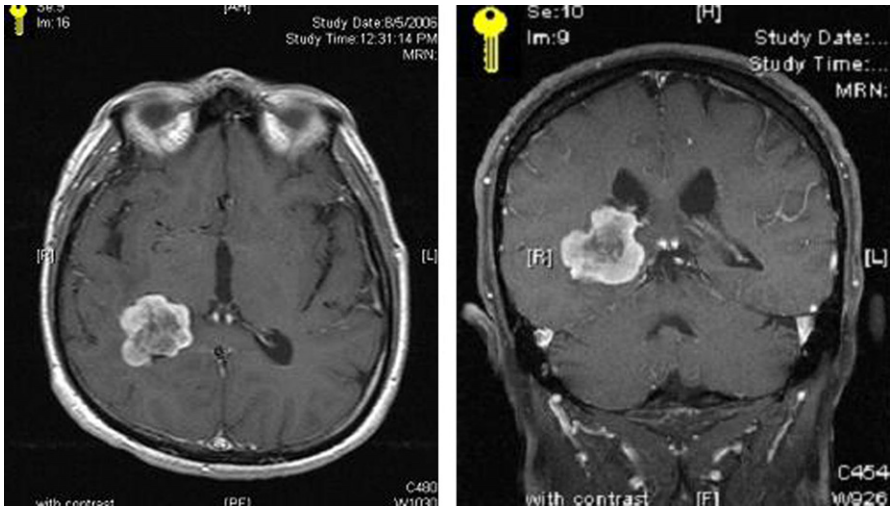

Fig. 1. MR axial and coronal T1 with contrast views showing enhancing, intraventricular mass.

Eighteen days later, a thoracotomy was performed for presumed lung cancer. The pathological specimen was again characteristic of meningioma demonstrating a predominantly transitional morphology (Fig. 4). Similar to its intracranial counterpart, this tumor lacked atypical features, had a mitotic count of one per ten high powered fields and a low (2–3%) Ki-67 labeling index consistent with a WHO grade I meningioma. The tumor was positive for epithelial membrane antigen (EMA) and progesterone receptor further confirming the diagnosis of meningioma. It was negative for CD 34 and Factor XIIIa. All resected thoracic lymph nodes were negative for malignancy.

The patient recovered well from both surgeries. There has been no evidence of recurrence in MRI or positron emission tomography (PET) for over 1 year after surgery.

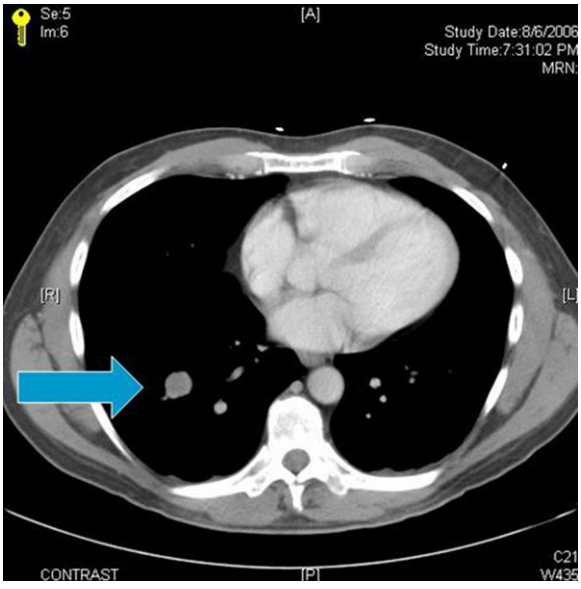

Fig. 2. CT scan of chest with arrow indicating a well-circumscribed, solitary mass.

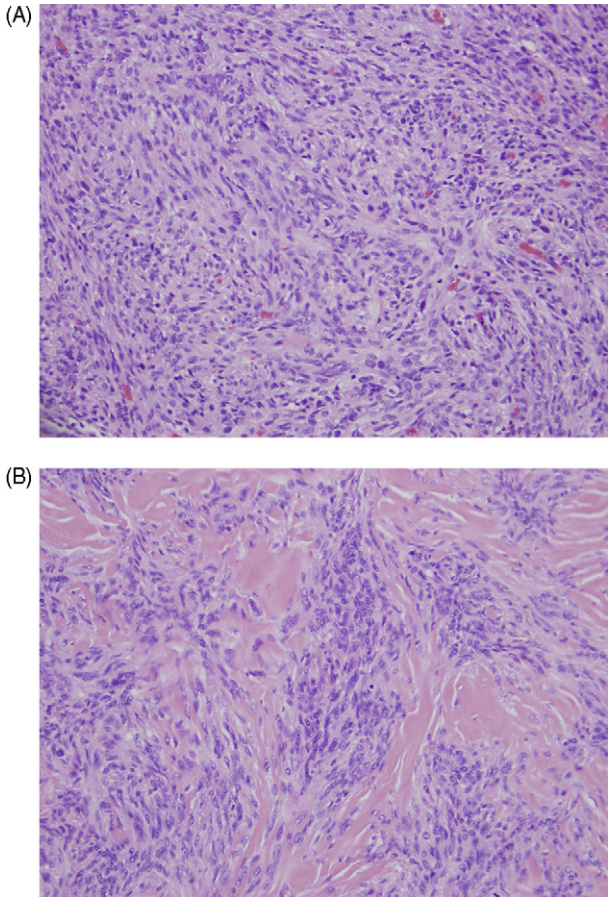

Fig. 3. Photomicrographs of the intracranial specimen showing a characteristic transitional pattern (A) and a significant "fibroblastic" collagen deposition (B) indicative of fibrous meningioma. H&E, original magnification ×25.