Solitary Fibrous Tumor of the Meninges in the Posterior Cranial Fossa: Magnetic Resonance Imaging and Histological Correlation

—Case Report—

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Abstract

A 58-year-old female presented with a rare case of intracranial solitary fibrous tumor (SFT) manifesting as progressive ataxic gait and hearing loss on the left persisting for 6 months with recent symptoms of increased intracranial pressure. Computed tomography demonstrated a large isodense irregular-shaped mass in the left posterior cranial fossa. T2-weighted magnetic resonance imaging showed two components appearing as very low intensity and high intensity. Extreme-lateral suboccipital craniotomy was performed. Gross total resection was achieved except for some dural attachment in the jugular foramen. All symptoms and signs subsided after surgery. Histological, immunohistochemical, and electron microscopic examinations led to a diagnosis of SFT. The strongly hypointense areas on the T2-weighted images were hypocellular region characterized by disorganized spindle cells and thick bands of collagen. The hyperintense areas on the T2-weighted images were hypercellular region mimicking hemangiopericytoma. Strong immunoreactivity for CD34 was also helpful in the diagnosis. Electron microscopy revealed absence of pinocytic vesicles and dense laminae which are characteristic of hemangiopericytoma. The magnetic resonance imaging appearance of SFT seems to be pathognomonic.

Key words: solitary fibrous tumor, brain tumor, magnetic resonance imaging

Introduction

Intracranial solitary fibrous tumor (SFT) is a newly described clinical entity, with only 11 cases so far reported.1-7 We describe the magnetic resonance (MR) imaging appearance and histological correlation of intracranial SFT.

Case Report

A 58-year-old female presented with progressive ataxic gait and hearing loss on the left persisting for 6 months and recent symptoms of increased intracranial pressure. Neurological examination revealed left hypoglossal nerve paresis, dysphagia, deafness, and dysmetria. Computed tomography demonstrated a large isodense irregular-shaped mass in the left posterior cranial fossa. Preoperative T2-weighted MR imaging demonstrated two different components appearing as very low intensity and high intensity (Fig. 1 right). Axial T2-weighted MR imaging revealed a hypointense irregular-shaped mass (Fig. 1 center), with inhomogeneous enhancement after contrast administration (Fig. 1 left). Extreme-lateral suboccipital craniotomy achieved gross total resection of the tumor except for some dural attachment in the jugular foramen. All symptoms and signs subsided after surgery.

Detailed histological, immunohistochemical, and electron microscopic examinations led to a diagnosis of SFT. Surgical specimens corresponding to the low intensity area on the T2-weighted MR images contained disorganized spindle cells with thick bands of collagen (Fig. 2 left). Specimens corre-
Fig. 1 **left:** T₂-weighted magnetic resonance (MR) image with gadolinium demonstrating inhomogeneous enhancement. **center:** Axial T₂-weighted MR image showing a hypointense irregular-shaped mass. **right:** Axial T₂-weighted MR image showing inhomogeneity with strongly hypointense and hyperintense areas.

Fig. 2 Photomicrographs of the tumor showing a collaginous area with scant cellularity (**left**), and a hypercellular region mimicking hemangiopericytoma with "staghorn" vascular pattern (**right**). HE stain, original magnification × 300.

sponding to the high intensity area on T₂-weighted MR images revealed hypercellular histology mimicking hemangiopericytoma (**Fig. 2 right**). There was strong immunoreactivity for CD34. Electron microscopy revealed the absence of pinocytic vesicles and dense laminae characteristic of hemangiopericytoma.

**Discussion**

The main differential diagnosis of intracranial SFT includes fibrous meningioma and hemangiopericytoma. Fibrous meningiomas can be identified by the immunohistochemical pattern, but preoperative differential diagnosis based on neuroimaging is difficult. T₂-weighted MR imaging is useful for excluding hemangiopericytomas. Hemangiopericytomas do not contain the areas of thick bands of collagen which appear as hypointense on the T₂-weighted images. Strong immunoreactivity for CD34, as in this case, is helpful for making the diagnosis, but such findings are not specific for
SFT. Electron microscopy may be useful. This rare pathology should be considered in the differential diagnosis of brain neoplasms.

References


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Neurol Med Chir (Tokyo) 40, August, 2000