Primary intracranial leiomyoma

Case illustration

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This 40-year-old woman presented to our hospital with severe headache, nausea, and vomiting. Computerized tomography and magnetic resonance (MR) images revealed an approximately 4 × 4.5 × 7–cm rounded lobulated mass with a large amount of calcification in the right temporoparietal convexity area. Except for the calcific area, the mass was well enhanced on MR imaging after addition of gadolinium–diethylenetriamine pentaacetic acid (Fig. 1). The patient underwent right-sided temporoparietal craniotomy. At surgery, the dura was easily peeled away from the tumor mass. The tumor was well demarcated and had a rubbery consistency, and two small cortical arteries were attached to the mass on the medial side. Histological examination revealed that the tumor was densely composed of spindle cells with cigar-shaped nuclei and a moderate amount of eosinophilic cytoplasm (Fig. 2 upper). There was no mitosis or pleomorphism. On immunohistochemical examination, the tumor displayed positive staining for vimentin and smooth-muscle actin. Electron microscopy disclosed myofilaments with dense bodies characteristic of smooth-muscle cells (Fig. 2 lower).

Leiomyoma is a benign tumor originating from smooth-muscle cells. It tends to be relatively common in the genitourinary and gastrointestinal tracts. However, the occurrence of leiomyoma in the intracranial cavity is extremely rare. To our knowledge, this is the fourth case of benign intracranial leiomyoma and the first documented by MR imaging. Because in the cranial cavity smooth-muscle cells are located only in blood vessels, Kroe and colleagues1 and Thierauf and Weiland3 thought that their cases originated from hypophysial vessels. The tumor reported by Lach and associates2 was grossly similar to an arteriovenous malformation, and they believed it had developed on the basis of a preexisting vascular malformation. We also found two small cortical arteries attached to the brain mass and regarded those arteries as the origin of the leiomyoma. It is sometimes difficult to differentiate leiomyoma from fibroma by using light microscopy alone. Therefore, immunohistochemical staining for vimentin and smooth-muscle actin and electron microscopy must be used to confirm this rare brain tumor.

References