Metastatic Leiomyosarcoma of the Skull
—Case Report—

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Abstract

A 65-year-old female presented with a rare intestinal leiomyosarcoma metastasis to the skull manifesting as a mass beneath the scalp. She was free of neurological and physical symptoms on admission. The tumor was totally removed with normal surrounding bone and dura. The histological diagnosis was leiomyosarcoma. Ultrastructural and immunohistochemical studies demonstrated the smooth muscle origin of the tumor. Such patients in good physical condition should be immediately treated surgically to achieve the best chance of survival.

Key words: metastasis, leiomyosarcoma, skull tumor

Introduction

Leiomyosarcoma is an uncommon neoplasm of smooth muscle origin, usually occurring in the retroperitoneum, subcutaneous tissues, gastrointestinal tract, and the uterus. Metastatic sites are most frequently the lung and liver, while bone metastases are rare (3% of reported cases). Several intracranial metastases have been reported. However, the computed tomography (CT) appearance of cranial metastasis has only been described once. Here, we describe a 65-year-old female with a metastatic leiomyosarcoma of the skull tightly adherent to the dura mater.

Case Report

A 65-year-old female presented in September, 1992 with a mass beneath the scalp in the left frontal region, which had been growing steadily for 2 months. Fifteen years previously, she had undergone removal of a jejunal mass, which was histologically diagnosed as leiomyosarcoma. She had undergone five other abdominal operations, including removal of hepatic and peritoneal metastases.

Fig. 1 Plain skull x-ray film, showing two defects in the left frontal and parietal bones. (These tumors were removed as one lesion at operation.)
bones (3.6 × 2.5 and 1.9 × 1.2 cm) (Fig. 1). Precontrast CT scans showed a slightly high-density mass in the left frontal region, which was destroying the skull structure (Fig. 2). Magnetic resonance (MR) images demonstrated an extradural cranial mass in the left frontal region, which was strongly enhanced by gadolinium-diethylenetriaminepenta-acetic acid (Gd-DTPA) (Fig. 3). External carotid angiograms revealed a left frontal vascular stain supplied by the middle meningeal and accessory meningeal arteries (Fig. 4).

The tumor was radically removed with surrounding normal bones as one lesion through a left frontal craniotomy. The tumor was adherent to the dura, but not the cerebral parenchyma. The involved dura was totally removed and the defect repaired with lyophilized dura. The bone defect was covered with a methylmethacrylate resin plate.

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Hematoxylin and eosin (HE) staining of the surgical specimen revealed highly cellular, spindle-shaped tumor cells in an intersecting fascicular pattern, with some mitotic figures (Fig. 5 upper). The histological diagnosis was metastatic leiomyosarcoma. Ultrastructurally, bundles of cytoplasmic microfilaments with dense bodies were often seen in the tumor cells (Fig. 5 lower). Immunohistochemical staining showed that most tumor cells were positive for vimentin, but no desmin-positive tumor cells were demonstrated.

She followed a satisfactory postoperative course without neurological deficits. No evidence of recurrence had appeared as of July, 1993.

Discussion

The diagnosis of the present leiomyosarcoma was based on the histological pattern. Ultrastructural and immunohistochemical examinations demonstrated the presence of bundles of cytoplasmic microfilaments in the tumor cells, strongly suggesting smooth muscle differentiation, while the absence of immunohistochemical staining for desmin protein is not uncommon in leiomyosarcoma. 9

Only one case each of dural1) and cranial2) metastasis have been previously reported. In our patient, the tumor was mainly located in the skull, although broadly adherent to the dura mater. HE staining of the specimen showed massive invasion of the tumor cells into the diploic space, but only reactive changes of the dural outer membrane. Therefore, the tumor is thought to have originated in the skull and then adhered to the dura mater.

Leiomyosarcoma is usually accompanied by widespread metastases and a poor chance of survival. However, a few patients have achieved prolonged survival.6,10) Our patient had also survived for more than 15 years since her first surgical treatment, and she was still doing well on admission. The present tumor had grown steadily in a few months, so was a potential cause of brain parenchyma compression and neurological deficits. The tumor was radically removed without irradiation, because radiotherapy is apparently ineffective.8) We recommend that such patients in good physical condition should be treated surgically as soon as possible to maintain a good quality of life.

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References


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