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Subfrontal Recurrence of Medulloblastoma

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Summary: The authors describe a series of patients with focal recurrence of medulloblastoma along the floor of the anterior cranial fossa, a site that is remote from the primary tumor.

Index terms: Medulloblastoma; Brain neoplasms

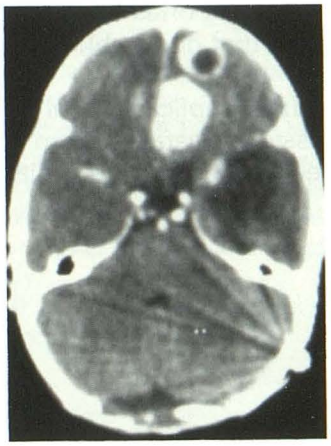
Aggressive multimodality therapy of medulloblastoma is yielding significant numbers of long-term survivors (1, 2), with attendant need for periodic radiologic surveillance of the entire neural axis. Early recurrence detection allows salvage attempts.

Patients and Results

Twenty-nine patients received all or part of their therapy for medulloblastoma at our institution between 1983 and 1990. Review identified five patients (16%), with subfrontal recurrence, one of whom was initially treated by our staff. All five patients had undergone gross total tumor resection and irradiation of the entire neural axis. All subsequently died of uncontrolled tumor. Four recurrences, imaged with CT, had massive subfrontal deposits, from 4 cm to 7 cm in diameter (Fig. 1). A single case imaged with MR had a smaller, 2 cm, recurrence (Fig. 2). Four of five patients had isolated subfrontal metastases; one had synchronous spinal recurrence. Review of radiotherapy portals clearly indicated that the subfrontal region was excluded from the therapy beam by eye blocks in four of five cases. The single recurrence after initial therapy at our hospital occurred despite inclusion of the subfrontal region in the therapy field.

Discussion

Postoperative therapy of medulloblastoma is based on craniospinal irradiation. The initial field should provide a homogeneous dose to the whole brain, meninges, and entire spinal axis, along with a posterior fossa "boost" (3). Subfrontal recurrences have been reported previously by Hardy et al (4) and Jereb et al (5). Several unproved



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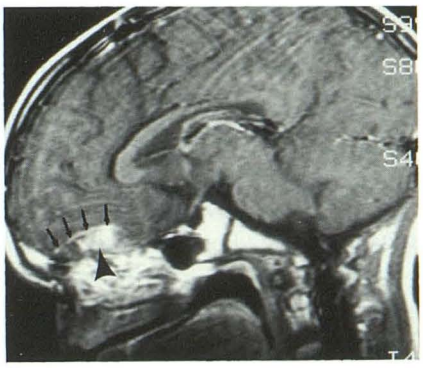

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Fig. 1. CT shows enhancing left subfrontal tumor deposits, one with a nonenhancing portion. Suspect enhancement at right olfactory sulcus as well.

Fig. 2. Enhanced sagittal T1-weighted scan (500/20/2) demonstrates extraaxial enhancing tumor deposit (*arrowhead*), demarcated by enhancing leptomeninges (*arrows*).

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etiologies are offered. First, the floor of the anterior cranial fossa is a dependent focus in certain important circumstances. Patients are generally operated upon in the prone position, which could allow for pooling of tumor cells at operation. Patients then spend about 30 minutes a day in the prone position for about 30 radiation therapy sessions. Secondly, the anterior cranial fossa can be underdosed with radiation in an effort to avoid ocular side effects. Excessively generous eye blocks can, as in four of our five cases, extend to the subfrontal region. Radiotherapists have suggested that the best solution to the problem of coverage of this region is close attention to the use of eye blocks that do not block the subfrontal region (3, 6).

The therapeutic implications of isolated anterior cranial fossa metastases from medulloblastoma have been noted by the radiation therapy community. The imager is herein alerted to the need for close scrutiny of this site.

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