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Glioblastoma Multiforme Masquerading as a More Benign Process

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Glioblastoma multiforme is the most common form of astrocytoma in adults. The incidence of these tumors is highest in the frontal lobes, followed by temporal and parietal lobes, basal ganglia, and occipital lobes. On computed tomography (CT) glioblastoma multiforme typically demonstrates characteristic findings of an irregular enhancing mass, usually surrounded by a significant amount of low-density edema involving white matter. As a result, there is often significant mass effect causing gross distortion of the ipsilateral ventricle. Our case report illustrates an unusual CT presentation of glioblastoma multiforme involving the cavernous sinus and gasserian ganglion with retrograde extension along the trigeminal nerve; this appearance closely resembles a more benign intracranial tumor.

Case Report

A 62-year-old woman had a 6-week history of progressive facial pain and numbness. Her past history was noncontributory. Physical examination revealed an elderly white woman in mild distress and fully oriented. Neurologic examination revealed decreased sensation to pinprick in the distribution of the right fifth cranial nerve, particularly the first and second divisions. The rest of the physical examination was either normal or noncontributory.

CT revealed a relatively homogeneously enhancing 2.5 cm mass at the base of the right middle cranial fossa involving the right cavernous sinus as well as the right gasserian ganglion, with associated well defined erosion of Meckel cave. The tumor had concentrically enlarged the foramen ovale on the right to about three times its expected diameter. Thin-section slices (1.5 mm) revealed growth of a tumor posteriorly along the right trigeminal nerve toward the brainstem (figs. 1A–1C). Cerebral angiography revealed evidence of an avascular, extraaxial mass involving the posterior inferior aspect of the right cavernous sinus (fig. 1D). The primary considerations in the differential diagnosis were parasellar meningioma and trigeminal neuroma.

Surgery

Craniotomy revealed a cavernous-sinus-based, firm, and gritty lesion. It indented, but seemed distinct from, the anteromedial aspect of the right temporal lobe as observed by the two operating neurosurgeons. The relatively avascular tumor was easily separated from the adjacent brain parenchyma, and the gross appearance of the lesion was consistent with meningioma to both neurosurgeons.

Histologic Examination

Biopsy material revealed a neoplasm composed of anaplastic astrocytes with numerous mitoses. Immunoperoxidase stain demonstrated glial fibrillary acidic protein, positive staining of cells demonstrating marked pleomorphism. There was evidence of extensive infiltration of dura by the neoplasm. Final pathologic diagnosis on the tumor indicated glioblastoma multiforme, grade IV.

Clinical Course

The immediate postoperative course was uneventful, and the patient was treated with neon heavy-particle radiation. Subsequent CT scans revealed further retrograde progression of the tumor along the fifth cranial nerve, as well as development of characteristic CT findings of glioblastoma multiforme involving the right temporal lobe (fig. 1E). Six months after initial presentation, the patient died. An autopsy was not performed.

Discussion

This case demonstrates a very unusual CT presentation of glioblastoma multiforme simulating a slow-growing, extraaxial tumor with growth along the cranial nerve and smooth enlargement of a foramen at the base of the skull. We are unable to find similar published cases in the radiographic or neurosurgical literature over the past 35 years [1–4]. In both its radiographic and surgical appearance, this lesion had the criteria of a more benign process. Its extraaxial appearance, including involvement of the cavernous sinus and trigeminal ganglion and nerve; the concentric enlargement of the foramen ovale; and the lack of surrounding edema, mimicked a much slower growing tumor, such as a parasellar meningioma or trigeminal neuroma. However, this tumor's truly aggressive nature was made apparent on follow-up CT scans demon-

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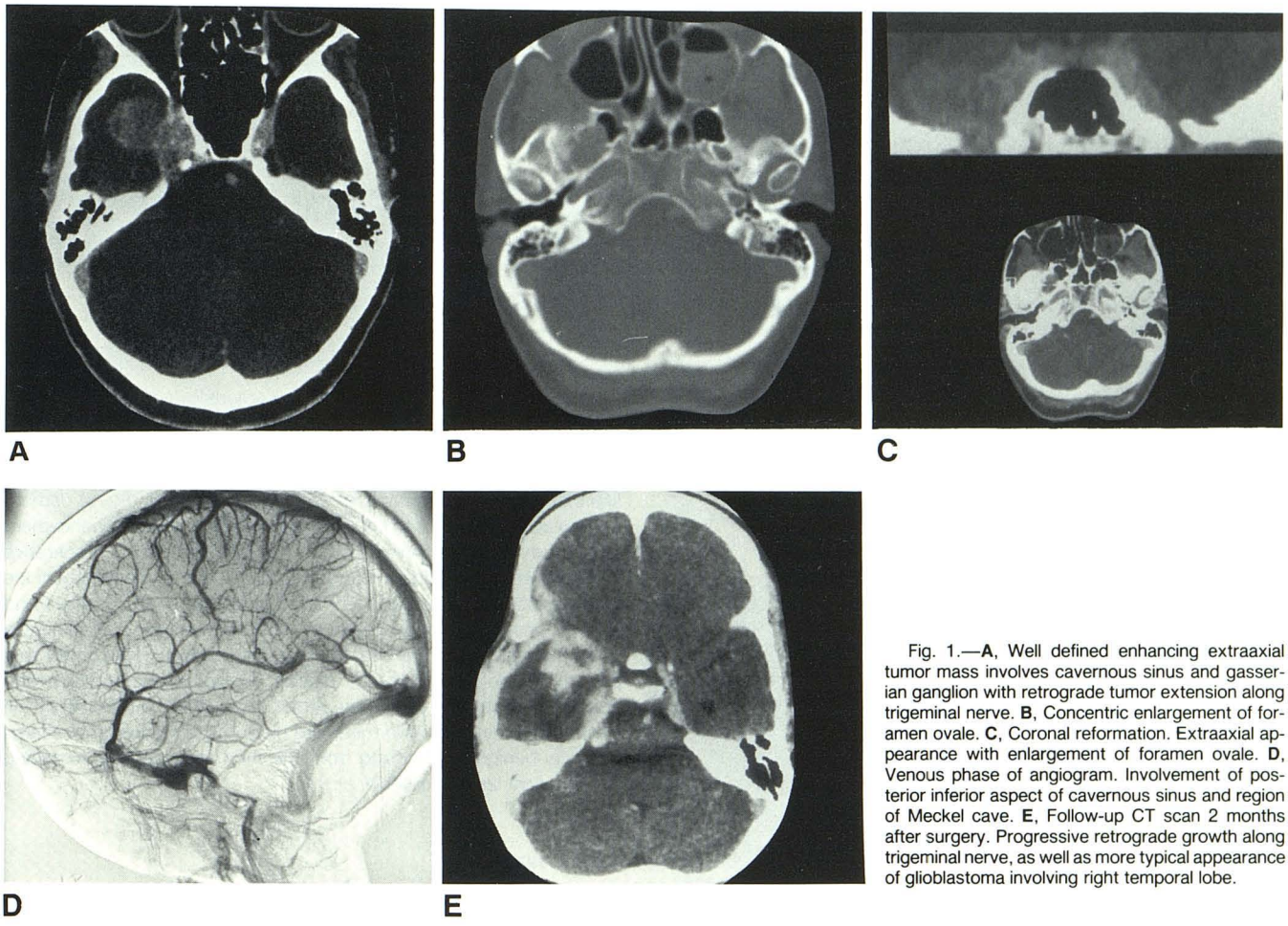

Fig. 1.—**A**, Well defined enhancing extraaxial tumor mass involves cavernous sinus and gasserian ganglion with retrograde tumor extension along trigeminal nerve. **B**, Concentric enlargement of foramen ovale. **C**, Coronal reformation. Extraaxial appearance with enlargement of foramen ovale. **D**, Venous phase of angiogram. Involvement of posterior inferior aspect of cavernous sinus and region of Meckel cave. **E**, Follow-up CT scan 2 months after surgery. Progressive retrograde growth along trigeminal nerve, as well as more typical appearance of glioblastoma involving right temporal lobe.

strating the more typical appearance of glioblastoma involving the right temporal lobe.

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