Primary Intrasellar Leiomyoma

Case Report

D. J. Kroe, M.D., W. R. Huddins, M.D., J. C. H. Simmons, M.D.,
and C. F. Blackwell, M.D.

Department of Pathology, Baptist Memorial Hospital, and the Departments of Neurosurgery, Baptist Memorial Hospital and University of Tennessee Medical Units, Memphis, Tennessee

Primary brain tumors composed solely or partially of mesodermal elements have been described in the literature. They have included fibroblastoma,\(^1\) fibrosarcoma,\(^3\) rhabdomyosarcoma,\(^4\) and leiomyosarcoma.\(^7\) The origin of such tumors has been attributed to the neoplastic potential of perivascular connective tissue,\(^1,\(^8\) perivascular undifferentiated mesenchymal cells,\(^4\) or “the outcome of perverted development in embryogenesis.”

The present report to the authors’ knowledge is the first of a primary intrasellar leiomyoma.

Case Report

A 68-year-old woman was admitted to the Baptist Memorial Hospital because of impaired vision. During a routine examination 6 years previously, an ophthalmologist had been unable to correct a visual deficit in the left eye and referred her to an ophthalmologist who found the acuity to be 20/20 of the right eye, but 20/200 of the left. Visual field examination revealed an incomplete bitemporal hemianopsia, and neurosurgical evaluation was recommended but refused.

Nine months before admission the patient first became aware of defective vision in the left eye and since then had noted progressively decreased visual acuity, more so in the left eye. One month before admission she returned to her ophthalmologist, and he found the visual acuity of the right eye was still 20/20 and of the left 20/200 eccentric. The bitemporal hemianopsia had become more pronounced.

The patient had experienced mild generalized headaches for many years, always relieved by aspirin. Her daughter stated that for the past 18 months the patient would look to the side of people when attempting to see them.

Examination. The patient was a moderately obese woman who was alert and cooperative; the temperature was 97.4, pulse, 80, and blood pressure, 120/70. The stated visual field loss by confrontation was confirmed, and mild to moderate pallor of the optic discs was noted. There was a mild Parkinson-like tremor of the left arm. Pertinent laboratory data included a hematocrit of 33%, normal RAI uptake and PBI, and definite flattening of the glucose tolerance curve. X-rays of the skull and a left carotid arteriogram, done with contralateral carotid compression, confirmed the impression of pituitary tumor (Fig. 1).

Operation. A right frontal craniotomy was performed; a smooth grey tumor mass was found in the pituitary fossa, compressing the optic chiasm. The tumor capsule was incised, and its soft, almost gelatinous contents were easily evacuated by suction. There was brisk hemorrhage both from the tumor capsule and its contents; this was easily controlled by packing with Surgicel. The optic chiasm was completely decompressed after removing the Surgicel and collapsing the tumor capsule. The entire tumor mass, estimated to be 2.5 to 3.0 cm in diameter, was firmly adherent to the adjacent lateral structures on each side. It was judged to be unnecessarily hazardous to dissect out the tumor capsule, and consequently the exact site of origin or attachment of the tumor could not be determined.

The patient’s vision was subjectively improved postoperatively, and she was discharged on the tenth postoperative day on hormonal replacement therapy. Nine months after surgery she was reported doing well.

Microscopic Examination. Sections of the tumor were stained with hematoxylin and
FIG. 1. Left: Left lateral skull x-ray shows moderate enlargement of the sella with erosion of the floor and dorsum sellae. Right: Left carotid arteriogram with contralateral carotid compression shows elevation of the A-1 segments of both right and left anterior cerebral arteries, indicating presellar extension of the tumor.

eosin (H. & E.), Masson’s trichrome, phosphotungstic acid-hematoxylin (PTAH), and Wilder’s reticulum stains. Histologically the tumor was composed of uniform, elongated cells with cigar-shaped nuclei. The cytoplasm was very finely granular, and the plasma membrane of individual cells was generally not distinct (Fig. 2 left). Nuclear chromatin was distributed into fine strands and clumps. Nucleoli were not prominent. In the H. & E.-stained sections, these cells appeared to be typical smooth muscle cells. The tumor cells stained blue with PTAH and red with Masson’s trichrome stains, confirming the H. & E. observation. Wilder’s reticulum stain revealed only scant reticulum fibers present, and these tended to be arranged around blood vessels. The tumor did not have a fibrous component except in the immediate perivascular areas, where loose-ground substance with few collagen fibers was evidenced. No mitotic figures were seen. The predominant histologic pattern was one of interlacing bundles. (Fig. 2 right) having a marked similarity to myometrium. In other areas the tumor cells tended to be arranged in sheets with varied polarity. Vascular spaces were present but not in overabundance.

Discussion
The concept that primary brain tumors can be derived from embryonic rests and intracranial connective tissue is well established and has been applied in explanation of such tumors as hamartomas, craniopharyngiomas, certain fibrosarcomas, and rhabdomyosarcomas. On the bases of tumor location, age of the patient, and embryogenesis, certain brain tumors appear readily explained as embryonic rests, while others appear more appropriately considered as expressions of the neoplastic potential of perivascular connective tissue.

The present case does not appear to have derived from an embryonic rest since it consists of a single cell type having no recognizable organoid pattern. Intracranial smooth muscle is restricted to the blood vessels; therefore, the tumor does not appear explained as a neoplasm of adventitial connective tissue.

Although infrequently encountered, both leiomyomas and leiomyosarcomas of vascu-
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Fig. 2. Left: Photomicrograph showing elongated uniform nuclei and finely granular cytoplasm with indistinct cell margins, typical of smooth muscle cells. H. & E., × 400. Right: In this field one sees interlacing bundles of the uniform, smooth, muscle cells. H. & E., ×160.

lar smooth muscle origin have been described in various sites other than the brain. That the same neoplastic process could involve vessels supplying the brain should not be entirely unexpected. In our case, origin of the leiomyoma from vasculature smooth muscle appears to be the most likely explanation. The tumor was entirely within the pituitary fossa, suggesting that its origin was probably from vessels supplying the pituitary.

References