Prechiasmal Infarction Associated with Intrachiasmal and Suprasellar Tumors*

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There is a little heralded lesion of the chiasmal region that occurs occasionally and has not, as yet, received sufficient attention, namely, the blue, dome-shaped, or "blueberry" infarct of the prechiasmal or anterolateral portion of the chiasm. It is apparently due to simultaneous impairment of the superior and inferior vascular supply to the optic nerve and chiasm. We are reporting two cases of this lesion: an optic nerve glioma, and an infarction of a suprasellar pituitary tumor. Both of these patients underwent a craniotomy with surgical incision of the lesion in the prechiasmal area, and both required intrachiasmal aspiration with a tiny sucker to remove the clotted blood and necrotic tissue. There was partial improvement of the vision in one patient and none in the other. The two cases are presented to emphasize the importance of early diagnosis and treatment and to propose an anatomical concept of how these lesions may occur secondary to impairment of the vascular supply to the optic nerve and chiasm.

Case Reports

Case 1. This child was first seen in 1946 when she was 1 year old and had a cord-like mass in the left cheek and the supraorbital notch, causing limitation of facial movement and partial occlusion of the nares. She had left-sided proptosis, a doughy resistance on palpation of the left globe, and limitation of motion of the left superior rectus muscle. A diagnosis of lymphangioma or neurofibroma was made. The skull x-ray films revealed an enlargement of the left orbit without distortion of the optic foramina or any other bony abnormality. A few "bursts" of radiation therapy had been given at another hospital.

Examination. On July 3, 1956, the patient, now 10 years old, was admitted to the University Hospital with a diagnosis of influenza following 2 weeks of severe frontal headaches, nausea, and vomiting. For 7 days she had had complete blindness of the left eye. Examination showed she had total loss of vision in the left eye and a right temporal hemianopsia (Fig. 1). Skull films showed optic foramina of normal size with a definitely enlarged left superior orbital fissure (Fig. 2).

First operation. A left frontal osteoplastic craniotomy was performed 10 days after admission. Upon retraction of the left frontal lobe, the left optic nerve was found to be three times normal size due to an infiltrating tumor. A blue, dome-shaped ("blueberry") infarct was seen at the junction of the left optic nerve and the chiasm (Fig. 3). When all attempts to aspirate the area of infarction with a No. 22 spinal needle were unsuccessful, a very small incision was made superficially paralleling the fibers at the most distal portion of the swelling, and a tiny suction tip was used to evacuate the lesion. Consideration had been given to the location of the crossing fibers of the chiasm and the best site selected. A minute biopsy was taken of the tumor, which was reported to be a spongioblastoma polare.

First postoperative course. Within 12 days there was light perception in the peripheral portion of the nasal and temporal fields; a tangent screen field was recorded 22 days postoperatively (Fig. 4). Subsequent alterations of the visual field were seen in the left eye 7 months later, demonstrating bizarre patterns (Fig. 5). Four years postoperatively the visual field in the left eye remained improved (Fig. 6).
Second operation. In 1964, because of inability to count fingers with the left eye and bilateral optic atrophy, a left frontal osteoplastic craniotomy was performed. A multiloculated cystic lesion of the orbit was found and drained. The large optic nerve infiltrated with tumor was cut anterior to the chiasm and posterior to the globe and removed.

Second postoperative course. The visual fields were essentially the same as on July 3, 1956, showing a complete loss of vision in the left eye and a right temporal hemianopsia.

Comment. In retrospect, the patient's slow infarction of the tumor at the junction of the chiasm and the left optic nerve probably began 2 weeks prior to her 1956 admission. Had the rapid change of vision been known to the ophthalmologist or neurosurgeon, it should have suggested the urgency of surgical intervention. The case illustrates how infarction may occur within the chiasm with dissection of the optic nerve and the chiasmal fibers causing compression rather than destruction of them. This condition is analogous to an intracerebral hemorrhage in the depths of the brain. The fact that the infarct could not be aspirated and required incision and drainage indicated it was not of recent origin but might very well have been of a week's duration.

It is remarkable that the patient retained good recovery of her vision for 8 years after the operation on the chiasm.

Case 2. This 57-year-old man had a headache in association with an upper respiratory...