Hematoma Beneath the Retinal Pigment Epithelium

Report of a Case Mistaken Clinically for a Malignant Melanoma of the Choroid

MAJ T. J. TREDICI, USAF (MC), and R. H. FENTON, MD, Washington, DC

In its early stages a hematoma beneath the retinal pigment epithelium is said to simulate a malignant melanoma of the choroid more closely than any other lesion.1-3 These hematomas are characterized clinically by the sudden onset of visual loss associated with a dark, rounded thickening at the posterior pole. The hemorrhagic nature of the lesion usually becomes evident within ten days to two weeks after onset, as it begins to clear, or as hemorrhage appears at its edges.

This report concerns a case in which a dark, elevated tumor appeared several weeks after the discovery of a hemorrhagic lesion in the macular area. The rapid appearance of this dark mass, which increased in size and became elevated, led to a clinical diagnosis of malignant melanoma of the choroid, and the eye was enucleated.

Report of Case

Clinical History.—An 84-year-old white woman noted the sudden onset of blurred vision in her left eye two days before she was examined. She gave no history of injury or infection of either eye, and her family history was negative for eye disease. The patient's general health was excellent, her blood pressure was 160/90, and she had no history of diabetes. Although she did have allergies, they never affected her eyes.

Fig 1.—Changes in the ophthalmoscopic appearance of the lesion on repeated examinations (redrawn from clinical sketches). See text for details.
The patient’s visual acuity at the time of examination was 20/40 in her right eye and 20/200 in her involved left eye. External examination and ocular tension were within normal limits. The lens had a few peripheral opacities but was otherwise not remarkable. Ophthalmoscopic examination revealed a large hemorrhagic lesion involving the macular area (Fig 1). Hard exudates, not unlike those seen in diabetes, were observed above and below the accumulation of blood. The posterior pole of the right eye was within normal limits except for a few drusen. The fundus of the left eye was reexamined ten days later. At that time a new hemorrhagic area was observed just below the larger macular lesion. Two weeks later a slate-gray lesion was noted for the first time at the nasal edge of the macular hematoma. Seven days later this slate-gray area was observed to be larger and also more elevated. Twenty days later (one week before enucleation) the dark mass had grown larger than the original hemorrhagic macular lesion. It measured about three disc diameters and was elevated two diopters. The hemorrhages and exudates were still present.

The patient was seen by several consultants, one of whom felt that the lesion was such that it “. . . would almost make one believe that he was dealing with a choroidal hemorrhage which had broken through and caused some blood to be visible below the retina.” The consensus, however, was that the lesion was a malignant melanoma, and enucleation was recommended.

Pathologic Findings.—Macroscopic examination revealed a firm left eye of normal size with 1 mm of optic nerve attached. Transillumination was good but failed to reveal the presence of an intraocular mass. The eye was opened in the horizontal plane. At the posterior pole, one disc diameter temporal to the
optic disc, there was a dark, slightly elevated lesion that measured 3 × 1.5 mm. Inferiorly, a whitish area about three-fourths the size of the disc was observed; this appeared to be exudate.

Histologic examination revealed a normal anterior segment; all pathologic findings were located posteriorly. In the macular area large numbers of erythrocytes, associated with capillaries and fibroblasts, were present between the degenerated retinal pigment epithelium and Bruch's membrane (Fig 2). The pigment epithelium was elevated in this area, and the overlying retina was detached, with a small amount of eosinophilic exudate in the subretinal space (Fig 3). In some sections the pigment epithelium between the macula and the disc was interrupted (Fig 4). Capillaries and fibroblasts were particularly numerous in the space beneath the pigment epithelium, and the subretinal eosinophilic exudate extended into this area through the break in the pigment epithelium. A fibrovascular membrane extended from the vascular tissue in the space beneath the pigment epithelium through the break in the epithelium and along the inner aspect of the retinal pigment epithelium. Collections of erythrocytes were present in the subretinal exudate on either side of the elevated hematoma beneath the retinal pigment epithelium. In the region between the hematoma and the optic disc exudates were present in the inner nuclear and outer plexiform layers of the retina. The optic nerve was not remarkable.

**Diagnoses.**—Hematoma beneath the retinal pigment epithelium; fibrovascular membrane between the pigment epithelium and Bruch's membrane; retinal detachment with hemorrhage into the subretinal space; retinal exudates.

**Comment**

Hematomas beneath the retinal pigment epithelium are uncommon. In a review of 100 enucleated eyes with visible lesions that were mistaken clinically for malignant melanomas of the posterior uvea, Ferry was able to find only one example of such a hematoma. The association of sudden loss of vision and a dark, rounded, globular elevation occupying the posterior pole of the eye in the vicinity of the macula is usually described as the initial event in patients with these hematomas. Most cases show evidence of bleeding within the lesion, along an edge, or as a hemorrhagic zone outside the limits of the lesion. One of the most characteristic aspects of these hematomas is the change that occurs following their initial discovery, with the hemorrhagic nature of the lesion usually becoming evident within 10 to 14 days after its onset. According to Reese and Jones the eventual outcome of these hematomas ranges from a relatively insignificant atrophic and scarred retinal spot to a typical circinate retinopathy.

In the present case this usual sequence of events did not occur. Instead, hemorrhages associated with exudates were observed at the initial examination. The dark, elevated mass did not appear until several weeks later.
Following its discovery the mass continued to increase in size. The original hemorrhagic areas remained essentially unchanged during the period of observation. It is doubtful that the slate-gray area became apparent as the result of resorption of the original hemorrhage, which was probably due to bleeding from the fibrovascular membrane on the inner surface of the retinal pigment epithelium. A more plausible explanation of the sequence of events in the present case is that there was either leakage of blood or a fresh hemorrhage beneath the retinal pigment epithelium. Microscopically Reese and Jones observed a fibrovascular network between the retinal pigment epithelium and Bruch's membrane in eyes containing hematomas of the type described in this report. These authors were of the opinion that bleeding from this vascular tissue was the cause of the hematomas beneath the retinal pigment epithelium. Such a vascular membrane, continuous with a similar layer on the inner surface of the pigment epithelium, was present in this case. This might have been the source of the original hemorrhagic episode and probably explains the unusual sequence of events in this case.

The finding of hemorrhages and/or exudates in or about a subretinal lesion is evidence against the presence of a malignant melanoma, although exceptions do occur. Hemorrhages have been seen in association with small tumors, and Bodi recently reported a case in which prominent edema residues in the retina about a subretinal mass led some observers to doubt seriously that the lesion was melanomatous. Histopathologic study, however, revealed it to be a malignant melanoma.

Reese has pointed out that in most cases careful follow-up with repeated ophthalmoscopic examination will permit the ophthalmologist to differentiate between melanomas and lesions that simulate them. The present case illustrates that at times confusion may arise even in the course of such a careful study.

Summary

Hematomas beneath the retinal pigment epithelium are uncommon lesions that can, in their early stages, simulate a malignant melanoma of the choroid. Usually a dark, elevated fundus lesion is observed prior to the development of hemorrhagic signs. In the present case this sequence of events was reversed, and hemorrhagic manifestations occurred several weeks before the appearance of the choroidal tumor. The presence of a vascular layer on the inner surface of the retinal pigment epithelium in addition to a fibrovascular membrane between the pigment epithelium and Bruch's membrane probably accounts for the unusual sequence of events in this case.

Maj T. J. Tredici, USAF (MC), Ophthalmic Pathology Branch, Armed Forces Institute of Pathology, Washington, DC 20305.

REFERENCES