Multilobed uveal melanoma masquerading as postoperative choroidal detachment*

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It is well known that a choroidal detachment after intraocular surgery may clinically simulate a malignant melanoma of the uveal tract, and that such eyes have occasionally been enucleated with an erroneous diagnosis of malignant melanoma (Ferry, 1964; Shields and Zimmerman, 1973). The reverse situation, in which a malignant melanoma simulates a postoperative choroidal detachment, however, is extremely rare.

Case report

A 71-year-old myopic White woman was admitted to a local hospital because of dense cataracts in both eyes. Except for the lens opacities, which precluded a view of the fundi, her physical and ocular findings were reported to have been within normal limits. The patient underwent an uncomplicated cataract extraction in the left eye, followed one week later by a similar procedure in the right eye. At that time the left eye was noted to have a 'kissing choroidal detachment'. A retinal specialist agreed with the diagnosis and followed-up the patient conservatively for six weeks. Since the lesion failed to resolve the patient was referred to us for further evaluation to exclude the possibility of an intraocular tumour.

On examination the physical findings were normal except for mild hypertensive cardiovascular disease compatible with the patient's age. The positive findings were confined to the eyes. In the right eye the visual acuity was 6/24 with pinhole. There was surgical aphakia with a sector surgical coloboma superiorly. Ophthalmoscopy showed moderately advanced myopic chorioretinopathy with a clear vitreous. In the left eye the visual acuity was perception of light without projection and the intraocular pressure was 10 mmHg by applanation compared with 19 mmHg in the right eye. There was no evidence of excessive episcleral pigmentation. Through the left pupil a trilobed dark-brown

mass was seen with the domes of the three lobes almost touching one another centrally. The inferotemporal lobe was displacing the ciliary processes centrally and the iris forward in that quadrant. Transillumination with a high-intensity fibre optics transilluminator showed no transmission of light through any of the lobes. B-scan ultrasonography showed a multilobed solid intraocular mass with a smooth surface and numerous internal reflections suggestive of either a tumour or haemorrhagic retinal detachment. Intravenous fluorescein angiography showed extensive leakage into the vitreous from the areas of detachment.

No definite diagnosis could be made. From the initial clinical studies the diagnosis was 'haemorrhagic choroidal detachment, rule out atypical malignant melanoma'. A transconjunctival (non-incisional) ³²P test was performed, comparing the inferotemporal mass with the symmetrical quadrant of the opposite eye. The procedure was performed with both the Detector Ocular Tumor Unit (EON Corporation) and the solid state semiconductor (Nuclear Associates, Technical Associates). The calculated percentage uptake was as follows:

Post injection	EON unit	Solid state unit
1 hour	143	145
24 hours	176	179
48 hours	205	230

This is considered a positive test (Hagler, Jarrett, and Humphrey, 1970; Ruiz, 1972; Shields, Sarin, Federman, Mensheha-Manhart, and Carmichael, 1974; Shields, Hagler, Federman, Jarrett, and Carmichael, 1975a).

Because the lesion so closely resembled a choroidal detachment rather than a melanoma we thought that the ³²P results might represent a 'false positive'. We therefore did an incisional ³²P test immediately after the 48-hour transconjunctival test. This assured closer approximation of the probe to the lesion. Because it gave a positive result by the transconjunctival technique the dense inferotemporal mass was tested, the superonasal lobe in the same eye being used as a control area. The percentage uptakes of the lesion over the control were as follows:

EON unit	Solid state unit
561	448

This was interpreted as an unequivocally positive test. Certain investigators have stated that a choroidal or subretinal haemorrhage can give a false-positive result

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FIG. 1 Biopsy specimen showing spindle-shaped cells with pigment. Diagnosis: malignant melanoma, spindle-B cell type. Haematoxylin and eosin. $\times 640$

to the ^{32}P test. We therefore obtained tissue for biopsy from the inferotemporal mass through a trap-door pars plana incision. Several pieces of loose pigmented material were carefully removed and the wound was securely closed. Histological examination within 15 minutes showed numerous spindle-B malignant melanoma cells (Fig. 1). The eye was subsequently enucleated.

Pathology

The globe measured $26 \times 26 \times 25$ mm with 2 mm of optic nerve attached. There was a total retinal detachment with extensive haemorrhage and exudate in the subretinal space on the nasal side. On the temporal side the choroid was replaced by a large, multinodular pigmented tumour which filled almost one-half of the globe (Fig. 2).

Histologically the tumour consisted of predominantly spindle-B cells with occasional epithelioid cells (Callander classification). The biopsy site inferotemporally showed acute and chronic inflammatory cells superficially, but the tumour cells were confined within the globe. There was no evidence of extrascleral extension. Superiorly and nasally there was a total haemorrhagic and serous retinal detachment, which produced the dark elevations seen with the slit lamp.

Discussion

When a dark, multilobed mass is seen through the pupil of an eye with low intraocular pressure after cataract surgery the most likely diagnosis is a choroidal detachment. A serous choroidal detachment permits transillumination, whereas a dense haemorrhagic choroidal detachment, like a malignant melanoma, usually does not. This case had several features which were more suggestive of a haemorrhagic choroidal detachment than of a malignant melanoma.

A melanoma of the choroid or ciliary body is usually a solitary mass often associated with a serous detachment of the sensory retina. It is unusual for a melanoma to have a multilobed configuration or to produce an extensive haemorrhagic retinal detachment, as in this case. The haemorrhagic retinal detachment in the superior and nasal portions of the fundus produced dark, bullous masses which appeared identical clinically to the malignant melanoma in the inferotemporal fundus. Choroidal detachments after intraocular surgery are usually associated with low intraocular pressure. The pressure in the affected eye in this

FIG. 2 Section of globe showing multilobed tumour arising from choroid and ciliary body on temporal side (left) and haemorrhagic retinal detachment on nasal side (right). When viewed through pupil the two lobes looked identical

case was 10 mmHg compared with 19 mmHg in the other eye. This relative hypotony, however, does not exclude the diagnosis of malignant melanoma. In fact, we have found that most eyes with ciliary body melanomas which have not extensively invaded the anterior chamber angle have lower intraocular pressures than the fellow eye.

The ^{32}P test has recently enjoyed renewed popularity in American ophthalmology (Hagler and others, 1970; Ruiz, 1972; Shields and others, 1974, 1975a; Shields, Annesley, and Totino, 1975b; Shields, McDonald, Leonard, and Canny, 1976c; Shields, Carmichael, Leonard, Federman, and Sarin, 1976a; Shields, Carmichael, Leonard, Sarin, and Federman, 1976b). It may be a highly accurate diagnostic procedure in certain cases of atypical intraocular tumours (Shields and others, 1975a, 1975b; Shields and others, 1976c). We recently reported our results in 300 such procedures (Shields and others, 1976a, 1976b). With the transconjunctival (non-incisional) technique the incidence of false-positive results is less than 1 per cent and the incidence of false-negative results about 4 per cent (Shields and others, 1976a). With the transcleral (incisional) technique there were no false-positive and an incidence of 2 per cent false-negative results (Shields and

others, 1976b). We have found it the most accurate ancillary test for differentiating benign from malignant intraocular tumours. It was correct in predicting a malignancy in this case despite the clinical findings, which suggested a choroidal detachment rather than a melanoma. Because the transconjunctival (non-cutting) technique, which produced a positive result, may occasionally be misleading, we incised the conjunctiva for more precise localization. The percentage uptake of the inferotemporal mass over the superior mass (both of which appeared identical clinically) was 561 per cent with one standard counter and 448 per cent with another. Both of these were strongly positive, indicating that the inferotemporal mass was malignant.

Although it has not been our experience, some investigators have stated that false-positive ^{32}P test results may occur with haemorrhagic retinal and choroidal detachments. An intraocular biopsy, therefore, was performed to make certain that the lesion was a melanoma rather than a simulating lesion. We have used this technique successfully in certain difficult cases (Shields, Green, and McDonald, 1973). In this case biopsy confirmed the results of the ^{32}P test and the eye was subsequently enucleated. We do not recommend routine biopsy of suspected posterior uveal melanomas. In fact, biopsy may be contraindicated in such cases (Sanders, 1952; Makley, 1967; Sanders and Smith, 1972). With improved methods for diagnosing intraocular tumours (Shields and McDonald, 1974) biopsy should rarely be necessary.

An important aspect of this case is the diagnostic confusion that occurred. Perhaps the diagnostic difficulties could have been avoided if the patient had been investigated more thoroughly before the cataract extraction. Transillumination, if properly performed, would have shown a shadow corresponding to the tumour inferotemporally. Preoperative ultrasonography would also have detected the mass in this case. At present, however, this technique is often not readily available. As ultrasound becomes more widely used probably tumours will occasionally be detected in the preoperative evaluation of eyes with dense cataracts.

We recommend that visual acuity, transillumination, and ultrasonography findings are carefully evaluated in all patients with opaque cataracts. When a tumour pattern is found a ^{32}P test should be done to confirm or rule out a malignancy. Although the ^{32}P test, when properly performed, is highly accurate in diagnosing intraocular malignancies, therapeutic decisions should not be made solely on the findings. The evidence of ophthalmoscopy, transillumination, fluorescein angiography (Gass, 1974), ultrasonography, antibody studies (Federman, Lewis, Clark, Egerer, and Sarin, 1974), and other procedures must be taken

into account before making a definitive therapeutic choice. With this approach, our diagnostic accuracy for intraocular tumours will continue to improve (Shields and McDonald, 1974).

Summary

A case of multilobed malignant melanoma with a haemorrhagic retinal detachment which mimicked a postoperative choroidal detachment is described. Because the lesion showed no resolution six weeks after cataract surgery a tumour evaluation was

undertaken. The diagnosis was established with a positive radioactive phosphorus uptake (^{32}P) test and biopsy of the intraocular mass. A suggested approach to the diagnosis in such difficult cases is proposed.

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