Focal fluorescence of choroidal melanoma*

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SUMMARY The surface of the tumours of four patients with apparently dormant small choroidal melanomas showed a distinct, localised, hyperfluorescent zone by fluorescein angiography. It was interpreted as being secondary to atrophy of the retinal pigment epithelium. In each patient later growth of the tumour was evidenced by its eruption through Bruch's membrane at this same site. This angiographic finding may predict a tumour that is prone to grow and break through Bruch's membrane at that location.

Many patients with a small choroidal melanoma are managed by a period of observation for recording of the tumour's growth before treatment is recommended.^{1,2} We have recently recognised an unusual fluorescein angiographic pattern that preceded clinically evident eruption of several melanomas through Bruch's membrane.

Case reports

CASE 1

A 65-year-old man presented to the Oncology Service in January 1984. He had previously undergone intracapsular cataract extractions with implantation of an anterior chamber intraocular lens in both eyes. Over the previous several months he had noted blurred vision in the right eye. Examination revealed visual acuity of 20/80 in the right eye and 20/20 in the left. Ophthalmoscopy of the right eye showed a small amelanotic choroidal melanoma in the inferior macula estimated to be 5.5 × 5 mm in basal diameter (Fig. 1). Ultrasonography showed its thickness to be 3 mm. Fluorescein angiography showed early mottled hyperfluorescence over the entire tumour with a distinct localised hyperfluorescent site just nasal to the centre, which was consistent with an area of retinal pigment epithelial attenuation (Fig. 2). Owing to the tumour's small size and proximity to the disc and macula, we decided to observe the tumour for growth before considering treatment.

Follow-up examination three months later revealed a nodular eruption through Bruch's membrane at the previously hyperfluorescent focus (Fig. 3). A moderate amount of subretinal fluid and haemorrhage was also noted. The patient was treated by iridium-192 plaque therapy.

CASE 2

In May 1984 a 45-year-old man was found to have a small amelanotic choroidal melanoma just nasal to the optic disc in his right eye (Fig. 4). The tumour was approximately 10 × 6 × 3.5 mm in size. Fluorescein angiography showed mottled early hyperfluorescence, with a focal area on the temporal aspect of the tumour that showed earlier, more pronounced

Fig. 1 Fundus photograph of choroidal melanoma (case 1).

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Fig. 2 Fluorescein angiogram of tumour seen in Fig. 1. Note the conspicuous area of increased hyperfluorescence.

hyperfluorescence (Fig. 5). A decision was made to observe the tumour for growth before treatment.

In September 1984 the patient returned for scheduled follow-up. A large nodular eruption through Bruch's membrane was noted at the site of the previously noted transmission defect (Fig. 6). The patient was treated then by radioactive iridium plaque therapy.

CASE 3

In September 1982 a 62-year-old patient with glaucoma presented with a one-year history of blurred vision in the right eye. Examination revealed visual acuity of 20/200 and 20/20 in the right and left eyes respectively. Ocular examination revealed a

Fig. 3 Follow-up fundus photograph showing tumour breaking through Bruch's membrane at the site of previous hyperfluorescence.

Fig. 4 Fundus of case 2. Note the small tumour nasal to the optic disc.

small choroidal tumour measuring $3.5 \times 3 \times 1.5$ mm in size in the foveal region of the right eye. Fluorescein angiography showed early hypofluorescence except for a small isolated hyperfluorescent transmission defect. Late-phase frames showed diffuse mottled hyperfluorescence of the tumour.

Periodic follow-up examinations showed no appreciable change in this tumour until July 1984, when the patient returned with a visual acuity in the right eye reduced to counting fingers. Examination

Fig. 5 Fluorescein angiogram of tumour seen in Fig. 4. An area of increased hyperfluorescence is present.

Fig. 6 Follow-up fundus photograph of case 2. Note the large tumour eruption through Bruch's membrane.

showed that the tumour had broken through Bruch's membrane at the site of the previous window defect. An enucleation was performed. Pathological examination identified the tumour as a spindle-B cell melanoma and confirmed the eruption through Bruch's membrane (Fig. 7).

CASE 4

A 35-year-old man was referred to the Oncology Service for evaluation of a choroidal lesion. In December 1981 examination revealed normal vision in both eyes. Ophthalmoscopy showed an amelanotic choroidal melanoma measuring approximately $6 \times 4 \times 2.5$ mm and located 3 mm nasal to the optic disc in the right eye. Fluorescein angiography showed a small focus of hyperfluorescence in the early-phase frames.

The patient returned in November 1984 with a definite eruption of the tumour through Bruch's membrane at the site of the previously noted transmission defect. The tumour was treated by radioactive iridium plaque therapy.

Discussion

These four cases are similar in several ways. They are all examples of small choroidal melanomas near the optic disc or fovea that were observed for growth before proceeding with treatment. All four tumours developed a well-defined focus of early intense hyperfluorescence on the initial angiogram consistent with localised attenuation of the retinal pigment epithelium. These sites were not evident by comprehensive ophthalmoscopic examination. Subsequent examinations revealed that all these tumours had enlarged, with eruption of the tumour through Bruch's membrane in the area of the angiographic transmission defect.

Fig. 7 Microscopic examination of tumour in case 3. Note eruption through Bruch's membrane and mushroom configuration. (Haematoxylin-eosin, $\times 0.6$).

On the basis of this series of cases we suggest that the finding of focal intense hyperfluorescence on the surface of a small choroidal melanoma predicts that the tumour is active and that it will enlarge by erupting through Bruch's membrane at that site. We believe that this angiographic finding should be included in the group of other clinical signs that identify those small choroidal melanomas that are prone to grow.^{1,2} If the fluorescein angiograms of other patients with small melanomas which eventually erupt through Bruch's membrane are studied carefully, other cases of this type may be recognised.

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References

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