Idiopathic choriovitreal membrane – a case report

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Abstract

A case of a macular idiopathic choriovitreal membrane is described which developed in a diabetic man. On initial examination the patient was found to have a pigment epithelial detachment with a choroidal neovascular membrane (CNVM) in the right eye. Two months after the first visit the CNVM was seen to have penetrated the retina and presented as a choriovitreal membrane. Panretinal photocoagulation was applied after which the choriovitreal membrane demonstrated fibrotic involution. This case is unusual in that the choriovitreal membrane developed in the absence of a choroidal or retinal pigment epithelial disease process that may be associated with a CNVM as well as in the absence of previous macular laser treatment.

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Choroidal neovascular membranes (CNVMs) are usually confined to the subpigment epithelial or subretinal space unless the retina has been traumatised (for example, by laser photocoagulation), in which case they have been reported to produce chorioretinal or choriovitreal neovascularisation. We report a case of an idiopathic CNVM which penetrated an intact retina to produce a choriovitreal fibrovascular membrane.

Case report

A 69-year-old insulin-dependent diabetic man presented with decreased vision in both eyes due to vitreous haemorrhage from disc and peripheral retinal neovascularisation. The visual acuity in the right eye was counting fingers at 2 metres and in the left eye 6/12. The anterior segments were normal except for nuclear sclerosis of both lenses. On biomicroscopy of the posterior segments, a pigment epithelial detachment with a CNVM was noted beneath the fovea of the right

eye and was documented by fluorescein angiography (Fig 1A and B). No drusen, retinal pigment epithelial changes, or macular retinal exudates were observed in either fundus. Proliferative diabetic retinopathy was present in both eyes with disc and peripheral retinal neovascularisation as well as vitreous haemorrhage noted in the right eye (Fig 1A). Panretinal photocoagulation (PRP) was begun in both eyes because of the high risk characteristics of proliferative diabetic retinopathy. During the course of the laser the CNVM in the right eye was observed by stereoscopic biomicroscopy to have broken through the surface of the retina within the fovea and to grow as an epiretinal, fibrovascular membrane internal to the surface of the retina. The posterior hyaloid had not separated from the surface of the macula (Fig 2). The visual acuity in the right eye had decreased to hand movements at 1 metre. On follow-up examination a few weeks after completion of panretinal photocoagulation to the right eye, the macular epiretinal fibrovascular membrane demonstrated progressive fibrosis with adherence to the posterior hyaloid and elevation from the surface of the retina producing a tractional retinal detachment (Fig 3). Vitreous surgery was attempted to reduce the progressing retinal detachment. At the time of delamination of the epiretinal membrane, a fibrous stalk was noted to extend from the subretinal space through the foveal region to the epiretinal component attached to the posterior hyaloid.

Discussion

Numerous causes of CNVMs are recognised, all of which are known or thought to occur with a defect in Bruch's membrane. When no cause can be determined clinically they may be labelled as idiopathic. In the case described here a subretinal CNVM developed in an elderly diabetic man without drusen, without previous laser therapy or evidence of optic disc drusen, or a retinal

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Figure 1 (A) A red-free photograph of the right fundus at first presentation demonstrating a subfoveal choroidal neovascular membrane and diabetic retinopathy with epipapillary neovascularisation (arrow) and vitreous haemorrhage. (B) Fluorescein angiogram of the right fundus at first presentation demonstrating the foveal choroidal neovascular membrane and leakage from the epipapillary neovascularisation.

Fig 1A

Fig 1B

Figure 2 Red-free fundus photograph of the right eye demonstrating a fibrovascular membrane on the inner surface of the retina overlying the macular retinal vessels.

Figure 3 Fundus photograph demonstrating the fibrotic lesion in the right macula following panretinal photocoagulation.

pigment epithelial disease process that has been associated with CNVM. The early appearance of the CNVM confined to the subretinal space appeared similar to those described by Yeo *et al*,¹ where subretinal fibrosis developed in diabetic macular oedema associated with large lipid deposits. In only one of their cases was the subretinal fibrosis secondary to a CNVM and in all of their cases the nodular subretinal fibrosis followed extensive macular exudate, which was not observed here. Within 2 months the CNVM observed in our patient had grown through the retina and appeared as an epiretinal fibrovascular membrane with adherence to the posterior vitreous hyaloid and on surgery was noted to extend from the subretinal space as choriovitreal neovascularisation.

Subretinal neovascular membranes of choroidal vascular origin have been reported following heavy photocoagulation for diabetic macular oedema, proliferative diabetic retinopathy, proliferative sickle retinopathy, central serous chorioretinopathy, presumed ocular histoplasmosis syndrome, choroidal haemangiomas, and choroidal melanomas. Extension of the CNVM to form choriovitreal neovascular membranes has been described following intense photocoagulation for proliferative sickle cell retinopathy,² proliferative diabetic retinopathy,³ sarcoidosis,⁴ and malignant melanoma.⁵ To our knowledge, however, this is the first report of a CNVM spontaneously growing through an intact retina to produce choriovitreal neovascularisation.

CNVMs following intense photocoagulation are thought to develop through a disruption in Bruch's membrane and have been reproduced in rhesus monkeys. In the animal model infiltration of the retina occurred if there was coexistent inner retinal ischaemia which was the case in our patient's eye. Inner retinal ischaemia may also be associated with changes at the level of the retinal pigment epithelium (RPE).⁶ The diabetic eye may demonstrate thickening of the RPE basement membrane and narrowing of the choriocapillaris lumen,^{7,8} all of which may have

contributed to the formation of the CNVM and promoted its penetration of the thin retina at the foveola where it arose.

Choriovitreal neovascularisation has in general been thought not to respond to panretinal photocoagulation. Augsburger *et al*⁴ however observed regression of such neovascularisation in two patients following scatter photocoagulation of areas of retinal ischaemia peripheral to an area of choriovitreal neovascularisation after treatment for malignant melanoma. Although the CNVM in our case did demonstrate some fibrosis prior to photocoagulation for the proliferative diabetic retinopathy, the involution of the membrane appeared to have been accelerated by the photocoagulation. Choriovitreal neovascularisation was successfully treated with direct argon and/or xenon photocoagulation in two of four eyes treated by Dizon-Moore.² Direct treatment was not considered in our case owing to the location of the membrane. Because of the progressive tractional retinal detachment, vitrectomy with en bloc membrane delamination was attempted and was successful at releasing the detachment and improving the central scotoma and vision, though the macula remained puckered due to the subretinal fibrosis.

- 1 Yeo JH, Murphy RP, Lewis H. Subretinal fibrosis developing after macular lipid in diabetic macular edema. *Invest Ophthalmol Vis Science* 1988; 29 (suppl): 69.
- 2 Dizon-Moore RV, Jampol LM, Goldberg MF. Chorioretinal and choriovitreal neovascularization; their presence after photocoagulation of proliferative sickle cell retinopathy. *Arch Ophthalmol* 1981; 99: 842-9.
- 3 Wallow I, Johns K, Barry P, Chandras S, Bindley C. Chorioretinal and choriovitreal neovascularization after photocoagulation for proliferative diabetic retinopathy. A clinicopathologic correlation. *Ophthalmology* 1985; 92: 523-32.
- 4 Galinos SO, Asdourian GK, Woolf MB, Goldberg MF, Busse BJ. Choriovitreal neovascularization after argon laser photocoagulation. *Arch Ophthalmol* 1975; 93: 524-30.
- 5 Augsburger JJ, Piro PA, Shields JA, Magargal LE, Donoso LA. Scatter photocoagulation for choriovitreal neovascularization. *Retina* 1984; 4: 171-6.
- 6 Archer DB, Gardiner TA. Experimental inner retinal ischemia and blood-retinal barriers. In: Cunha-Vaz, JG, ed. *The blood-retinal barriers*. New York: Plenum, 1980; 279-99.
- 7 Yanoff M, Fine BS. *Ocular pathology*. Philadelphia: Lippincott 1989; 567.
- 8 Tso MOM, Cunha-Vaz JG, Shih C, Jones CW. Clinicopathologic study of blood-retinal barrier in experimental diabetes mellitus. *Arch Ophthalmol* 1980; 98: 2032-40.