Original Article

Retinal Pigment Epithelium Rip Following Serial Intravitreal Injections of Avastin®

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Anti-vascular endothelial growth factor (anti-VEGF) therapy has tremendously improved the management of wet age-related macular degeneration (AMD). With an increase in the usage of such agents over the last few years, complications have also been noted. It has been reported that retinal pigment epithelium (RPE) rip can occur following intravitreal injection of bevacizumab and other anti-VEGF agents[1,2]. We would like to share our experience with intravitreal injection of bevacizumab (1.25 mg/0.05 ml) in a patient of AMD with pigment epithelial detachment (PED).

CASE REPORT

A 65-year-old male presented a year back with complaints of central scotoma in the both eyes. Vision at presentation was CF in the right eye and 6/36 in the left eye. He was diagnosed of having bilateral sub-foveal Choroidal Neovascularization (CNVM) on 27th September 2007.

He took second opinion and received injection Lucentis® twice and injection Avastin® eight time in his right eye and injection Lucentis® three times and injection Avastin® ten times in his left eye. During that period his vision kept on fluctuating.

He presented to us on 1st January 2010 with decrease vision in his both eyes. Examination revealed a large PED at the macula in the right eye with hard exudates and drusen and a large PED at the macula in the left eye (Fig. 1,2). Fundus fluorescein angiography (FFA) revealed a large PED corresponding with the clinical picture, with ill-defined stippled late leakage temporal to the disc. Optical coherence tomography (OCT) of right eye showed a large PED with overlying subretinal fluid (Fig. 3). In the left eye well-defined V-shaped depression (marked) in the contour of the PED corresponding to the tomographic 'notch' delineated the superior high-domed PED from the adjacent shallow-domed PED. This feature was seen when the OCT scan was taken through the area of stippled hyper fluorescence and this area has been suggested to be indicative of the presence of an occult membrane[3] (Fig. 4).

Based on the above features (OCT and FFA correlation), a diagnosis of fibrovascular PED with occult membrane was made. The patient was explained the different modalities of treatment. The patient chose to undergo intravitreal bevacizumab injection. Two months post injection of intravitreal bevacizumab, his vision recovered to 6/36 in right eye and 6/18 in left eye and clinically, PED reduced in size.

He remained stable for three months after which he had recurrence of the symptoms. His vision was 6/36 in right eye and his vision dropped to 6/36 in the left eye. The PED had re-occurred at the same location and was comparable to the size on initial presentation. A Fundus fluorescein angiography was done which confirmed the large RPE rip within the PED margins (Fig. 5). Optical coherence tomography was repeated which, when taken through the area of the rip showed interruption of the RPE layer and hyper-reflective double layering of the RPE layer indicative of the rolled but flattened RPE rip at the edge of the PED[4] (Fig. 6,7).

DISCUSSION

Pigment epithelial detachments have been known to develop RPE rips, either spontaneously or following laser photocoagulation and photodynamic therapy. It is usually seen to occur at or along the border of the serous RPE detachment on the side opposite to the location of the choroidal neovascular membrane (CNVM). Spontaneous PEDs are explained by the hydrostatic pressure of leaking exudates from the sub-RPE occult membranes, leading to the formation of RPE detachments as well as the acute RPE tears or rips. The RPE tears post laser and photodynamic therapy are explained by contraction of the fibrovascular tissue comprising the membrane[5,6]. Retinal pigment epithelial tears are not unique to Avastin® and have been seen in patients treated with pegaptanib (Macugen®), ranibizumab (Lucentis®), and photodynamic therapy (verteporfin). Such retinal tears have also been seen in patients who have not had any prior therapy.

However, given the rapid increase in treatment options available to treat AMD over the past couple of years, the number of patients presenting with retinal tears is increasing. One hypothesis for what might cause retinal tears is that the AMD leaves the retina compromised and weakened, but at the same time, newer treatments offer a more rapid resolution of retinal oedema and thickening. If vitreo-macular traction; a condition where the vitreous in the eye becomes very "sticky" and adheres tightly to the retina is resolved too quickly, it can tear the retina as the vitreous becomes more fluid and pulls away from the retina. This alternation may predispose to retinal pigment epithelial weakening, and subsequent tears. Anti-VEGF agents act by reducing angiogenesis and arresting the CNVM and thus the same pathology of fibrovascular tissue contraction may be at work in RPE rips following anti-VEGF therapy. Thus the risk of an RPE rip should be considered with treatment with anti-VEGF agents in cases with fibrovascular PEDs.

In our case, the occult CNVM was located in the subfoveal area and the RPE rip was seen at both the borders of the PED. The free edge of the RPE had rolled under and retracted towards the area of neovascular tissue.

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