Haemorrhagic bacillary layer detachment secondary to retinal artery macroaneurysm

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DESCRIPTION

A woman in her 80s presented with sudden painless monocular vision loss in the right eye. Her medical history was significant for uncontrolled hypertension and a left intracavernous carotid artery aneurysm. Visual acuity (VA) was 20/100 and 20/20 in the right and left eyes, respectively. Dilated fundus examination of the right eye revealed a retinal artery macroaneurysm (RAM) along the superior vascular arcade associated with multilayer haemorrhage (figure 1A). Optical coherence tomography (OCT Spectralis, Heidelberg Engineering, Germany) revealed preretinal, subinternal limiting membrane, subretinal and intraretinal haemorrhage with bacillary layer detachment (BALAD, figure 1B). She underwent focal laser photocoagulation to the RAM 1 week post presentation after optimising blood pressure control. The BALAD was transient, and its resolution was associated with a break in the posterior border 1 week after treatment (figure 2A). At 12 weeks, there was complete resolution of acute changes including BALAD (figure 2B), with residual intraretinal exudates, ellipsoid zone (EZ) attenuation and VA restoration to 20/40.

RAMs are localised aneurysmal dilatations along retinal arterioles typically found in hypertensive women. Three subtypes of RAM have been described: quiescent (incidental), exudative (gradual-onset) and haemorrhagic (acute-onset). Several treatment strategies have been employed including intravitreal antivascular endothelial growth factor, focal laser, observation and vitrectomy. Similar risk factors (ie, female gender in 84%, hypertension in 47%) exist for intracavernous carotid aneurysms, which are typically stable and asymptomatic. Intracavernous carotid aneurysms have not been associated with retinal sequelae unless embolised. In this case, it was the contralateral side, thus representing multiple anatomical

Figure 1 Multimodal imaging of the right eye. (A) Colour fundus photograph of the right eye showing a retinal artery microaneurysm at the superior macular arcade with associated multilayer haemorrhage as well as hypertensive retinopathy. (B) Late phase fluorescein angiogram delineating RAM and multilayer masking by haemorrhage. (C) OCT B-scan through the fovea showing intraretinal haemorrhage with bacillary layer detachment. The magnified inset shows the laminar splitting of the EZ. ELM, external limiting membrane; EZ, ellipsoid zone; MZ, myoid zone; OCT, optical coherence tomography; RAM, retinal artery macroaneurysm.

Figure 2 (A) OCT B-scan demonstrating resorbing intraretinal and subretinal haemorrhage with a focal break in the posterior EZ border (red arrow). (B) OCT B-scan showing resolution of intraretinal and subretinal haemorrhage and fluid, restoration of foveal contour and residual EZ attenuation and outer retinal hyper-reflective foci. EZ, ellipsoid zone; OCT, optical coherence tomography.

Learning points

- Bacillary layer detachment may arise from choroidal and retinal vascular pathology with sufficient hydrostatic force to overcome the weak apposition of ellipsoid zone and myoid zone.
- Though visual acuity may improve to 20/40 level within 2 weeks, further resolution with restoration of near normal anatomical structure may take several months.
- Systemic hypertension is a risk factor for both intraocular and intracerebral arterial aneurysms and control of this risk factor may prevent blindness or life-threatening complications.
sites of arterial aneurysmal changes associated with systemic hypertension.

The bacillary layer describes the complex comprised of photoreceptor inner segments, which consist of a vitread myoid zone (MZ) and sclerad EZ, and the photoreceptor outer segments. Ramtohul et al described BALAD’s OCT hallmarks including an anterior border comprising a split hyper-reflective MZ (with external limiting membrane (ELM) anteriorly) and a posterior border of variable reflectivity contiguous with EZ adherent to retinal pigment epithelium (RPE). Typically BALAD is also associated with subretinal fluid (SRF, 77%) ± intraretinal fluid (6%) though BALAD contents are more hyper-reflective than SRF. Classically BALAD is associated with primarily choroidal pathology (eg, Vogt-Koyanagi-Harada disease) where increased vascular hydrostatic forces overcome the weak apposition of MZ and EZ. Haemorrhagic BALADs have been described secondary to choroidal neovascularisation associated with both age-related macular degeneration and macular telangiectasia type 2.

Few cases of RAM with haemorrhagic BALAD have been described which resolved with observation, intravitreal tissue plasminogen activator or vitrectomy. Here, we describe the first report of RAM-associated BALAD resolving with focal laser. The mechanism of RAM-associated BALAD is acute violent extravasation of blood/fluid which is forced between the most weakly opposed layers, leaving the anterior portion of MZ adherent to ELM anteriorly and the EZ secured to RPE posteriorly. This may go underdiagnosed as the multilayered retinal haemorrhages associated with RAM may mask this transient phenomenon. However, recovery of functional VA (mean 20/40) is typically achieved within approximately 2 weeks.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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