Branch retinal artery occlusion – Finding the culprit!

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Key words: Branch retinal artery occlusion, embolus, multimodal imaging

Branch retinal artery occlusion (BRAO) occurs when one of the branches of the central retinal artery gets occluded. When secondary to an embolus, most common are cholesterol emboli from atheromatous plaques, platelet-fibrin emboli, calcific emboli from cardiac valvular disease, exogenous emboli in intravenous drug abusers or idiopathic.[1]

We performed spectral domain optical coherence tomography (SDOCT) scans and multicolour imaging with a combined SDOCT-cSLO system (Spectralis HRA-OCT; Heidelberg Engineering, Heidelberg, Germany). Multicolour imaging by scanning laser imaging uses three lasers of different wavelengths simultaneously to provide diagnostic images that show distinct structures at different depths within the retina and helps to better highlight structures and pathologies.[2] In addition, OCT angiography (OCTA) scan were performed. Both SDOCT and OCTA are non-invasive tools to document pathological changes in retinal vascular conditions.[3,4]

Our patient is a 60-year-old man with an idiopathic superotemporal macular branch retinal artery occlusion in the right eye. The corrected distance vision acuity was 20/20 since the foveal centre was not involved. The other eye was normal. Colour Fundus photograph [Fig. 1a] and multi colour image [Fig. 1b] shows segmental retinal whitening with an emboli blocking the retinal arteriole. Green [Fig. 1c] and blue reflectance images [Fig. 1d] show areas of increased reflectivity with a hyper autofluoroscent dot inside the arteriole (emboli). Spectral Domain Optical Coherence Tomography shows a segmental hyperreflectivity of the inner retinal layers [Fig. 2a] with an arterial plaque (*Fig. 2b). The optical coherence tomography angiography [Fig. 3] shows nonperfusion in the corresponding superficial plexus (arrow head) which correlates with the segmental hyperreflectivity of the inner retinal layers on the OCT BScan. The altered signals in the outer retina and choroidal level may be attributed to the changes in the reflectivity secondary to the pathology in the superficial layers.

Discussion

Changes due to the arteriolar occlusion are better delineated and localized when imaged through different modalities. Though OCT and OCTA characteristics have been reported in literature,[3,4] multicolor imaging being a relatively newer modality, can be of help in documenting changes specific

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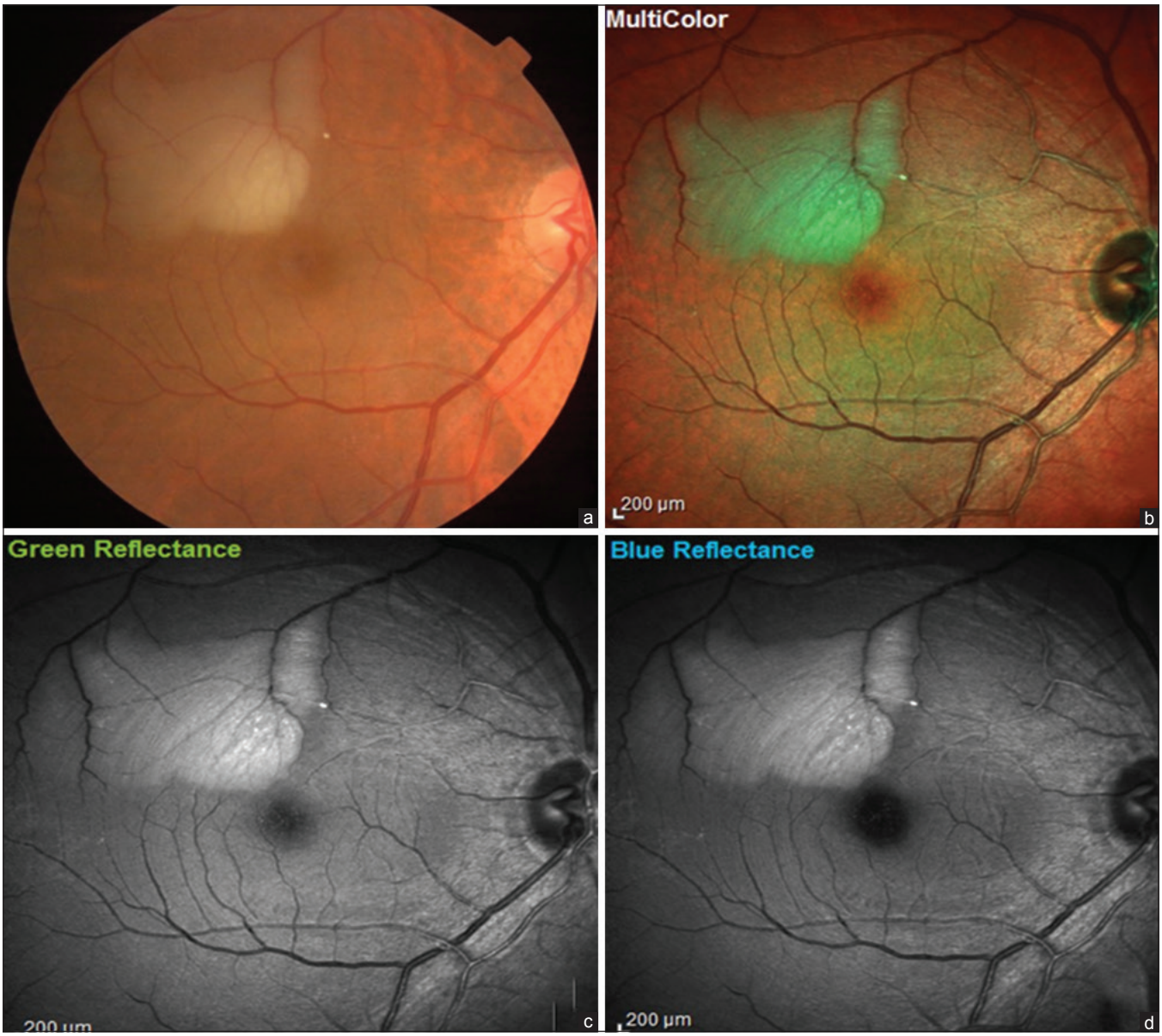

Figure 1: Colour fundus photograph (a) and multi-colour image (b) showing segmental retinal whitening with an emboli blocking the retinal arteriole, green (c) and blue reflectance images (d) showing an area of increased reflectivity with a hyper reflective spot inside the arteriole depicting the embolus

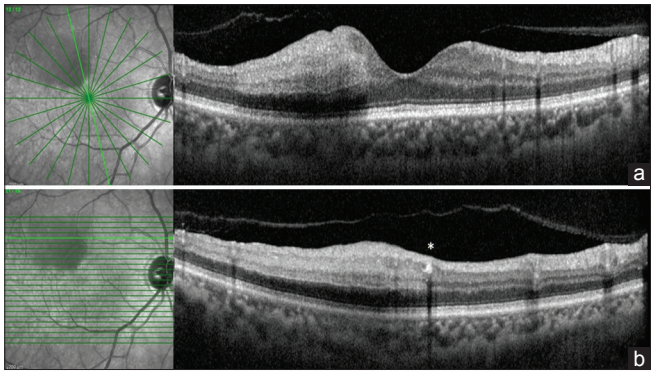

Figure 2: Spectral domain optical coherence tomography scan (a and b) showing segmental hyper reflectivity of the inner retinal layers with the arterial plaque (*)

to BRAO. A combined use of non-invasive modalities helps to get a comprehensive picture to better understand the pathophysiologic changes. It also allows frequent serial follow up of patients and is an excellent patient educative tool.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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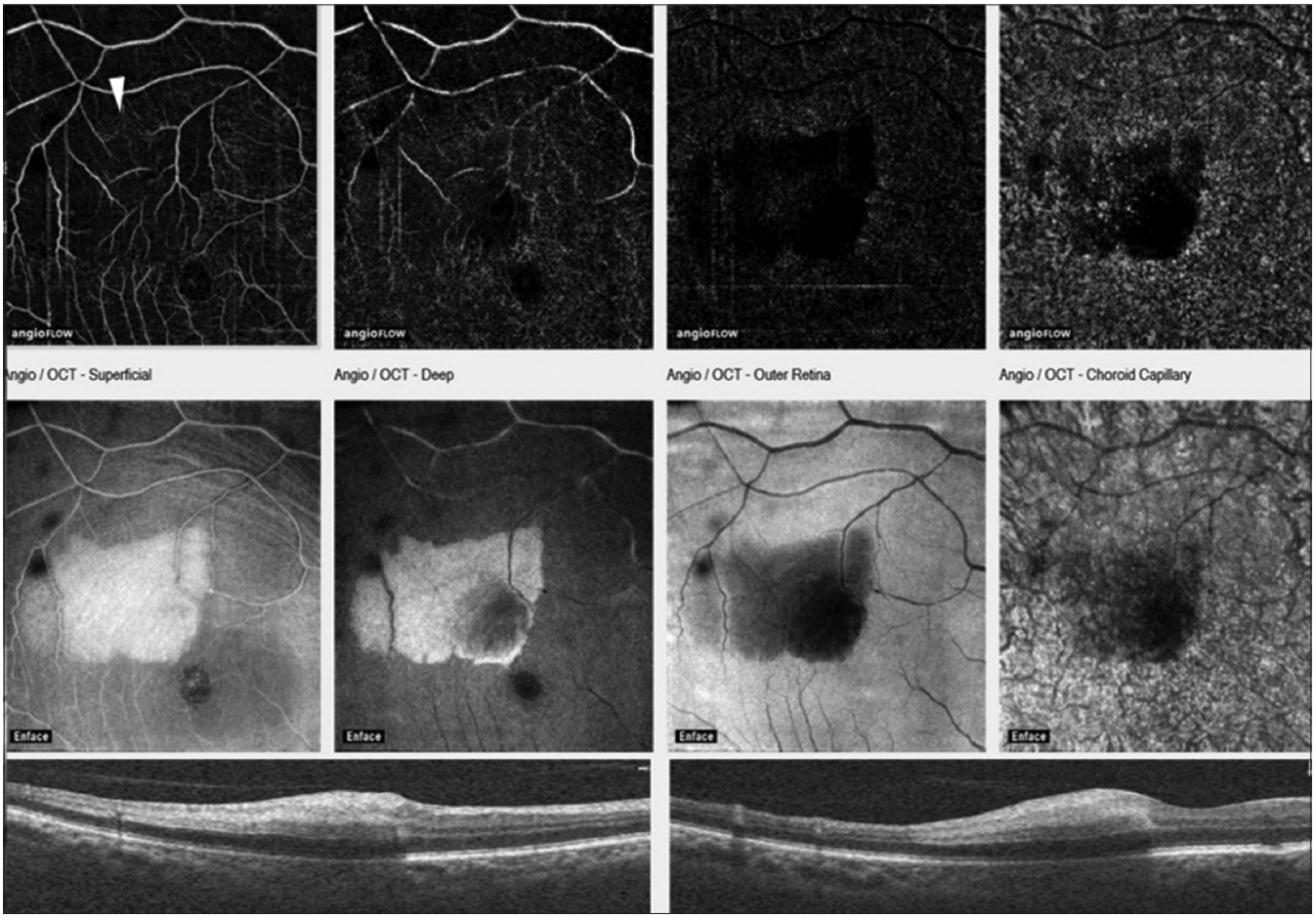

Figure 3: An optical coherence tomography angiography scan showing nonperfusion in the superficial plexus (arrow head) correlating to the segmental hyperreflectivity of the inner retinal layers on the BScan

Conflicts of interest

There are no conflicts of interest.

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