

Swept source optical coherence tomography angiography of a case of retinal artery macro-aneurysm before and after combined laser and intra-vitreous ranibizumab treatment

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Intra-vitreous anti-vascular endothelial growth factor (anti-VEGF) injections have emerged as a useful treatment modality in patients with retinal artery macroaneurysms (RAMs).^[1] There are a few case reports suggesting that the combined use of focal laser and anti-VEGF agents could better reduce macular exudation caused by RAM,^[2] and Lewis *et al.* have also reported that direct laser of the RAM lesion and the surrounding area of exudation may decrease the flow and intra-luminal pressure.^[3] However, this therapy can be associated with the risk of vascular occlusion, scotomas, and macular pucker.^[4] We describe swept source optical coherence tomography (OCT) angiography (SS-OCTA) results before and after successful treatment of RAM lesions by combined treatment of intra-vitreous ranibizumab and laser photo-coagulation.

A 64-year-old female with a history of hypertension for the past 15 years presented with a history of sudden onset blurred vision and floaters in her left eye.

The visual acuity (VA) at presentation was 20/400. Fundus showed fusiform dilations of supero-temporal retinal arterioles associated with the sub-retinal fluid (SRF) and pre-retinal bleed [Fig. 1a]. Fundus fluorescein angiography (FFA) of the early phase showed two well-defined round hyper-fluorescent lesions along the supero-temporal arcade [Fig. 1b] that increased in the late phase in size and intensity [Fig. 1c]. SS-OCT demonstrated a pocket of the sub-retinal fluid [Fig. 1d], and the SS-OCTA scan at the level of deep capillary plexus (DCP) showed three hyper-reflective fusiform dilations of retinal arterioles [Fig. 1e].

The patient received two intra-vitreous ranibizumab injections at four weekly intervals that resulted in improvement in her visual acuity to 20/40. The color fundus photograph and SS-OCT showed drastic reduction in the exudative fluid at the macula [Fig. 2a and b]. SS-OCTA showed the persistent presence of fusiform RAM lesions [Fig. 2c]. At this stage, the patient was advised laser photo-coagulation.

The color fundus photograph 2 months after the laser photo-coagulation showed a decrease in size of RAM with adjacent whitening [Fig. 3a], and SRF had reduced drastically. The SS-OCT scan showed a normal foveal profile [Fig. 3b]. SS-OCTA showed reduced flow at the original site of the RAM lesion [Fig. 3c]. Her VA had improved to 20/20. The color fundus photograph at 6 months showed complete re-absorption of retinal hemorrhages with sclerosed RAM at 6 months [Fig. 4a]. SS-OCT showed the presence of a few hyper-reflective foci of hard exudates [Fig. 4b], and the SS-OCTA scan did not pick up any flow abnormalities in the area of the RAM lesion [Fig. 4c].

Discussion

SS-OCTA demonstrated focal out-pouching of the retinal arterioles with hyper-reflective lumen consistent with active RAM. Such a lesion demonstrated partial regression following ranibizumab injections; however, laser treatment resulted in permanent thrombosis of RAM as seen on SS-OCTA at 6-month follow-up.

Our case highlights the relevance of non-invasive OCT angiography as a tool to provide useful information in the diagnosis, management, and follow-up of RAMs despite signal attenuation because of hemorrhage that may cause degradation of the image quality.

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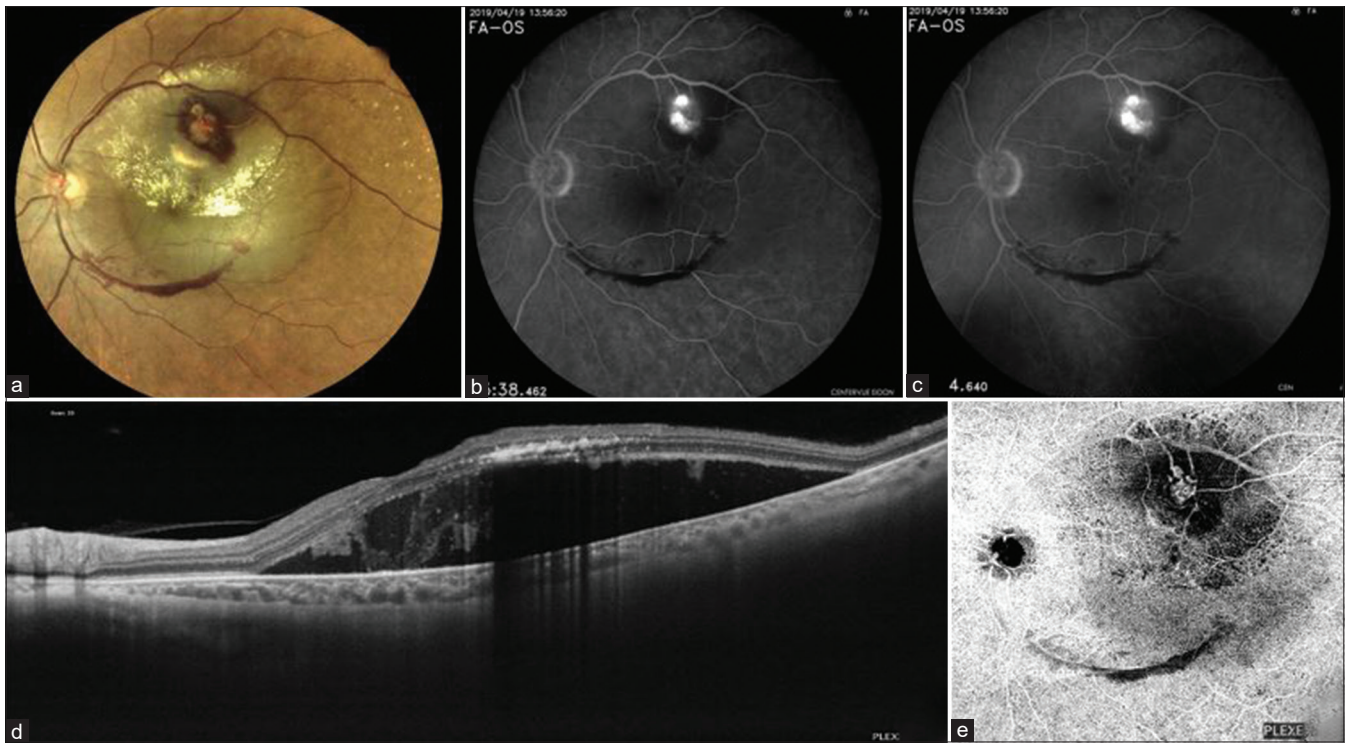


Figure 1: (a) Fundus photograph revealed a lesion along the supero-temporal vascular arcade consistent with RAM and surrounding sub-retinal hemorrhage, exudative fluid tracking into macula, and pre-retinal boat-shaped bleed in inferior macula. (b) Early frame of FFA showed two well-defined round hyper-fluorescent lesions along the supero-temporal arcade. (c) Late frame of FFA showed an increase in the size and intensity of hyper-fluorescence from RAM. (d) SS-OCT scan demonstrated massive collection of the sub-macular fluid with increased retinal thickening and the presence of hard exudates. (e) SS-OCTA (DCP) scan demonstrated RAM lesions which were well delineated as multiple round fusiform areas of increased blood flow

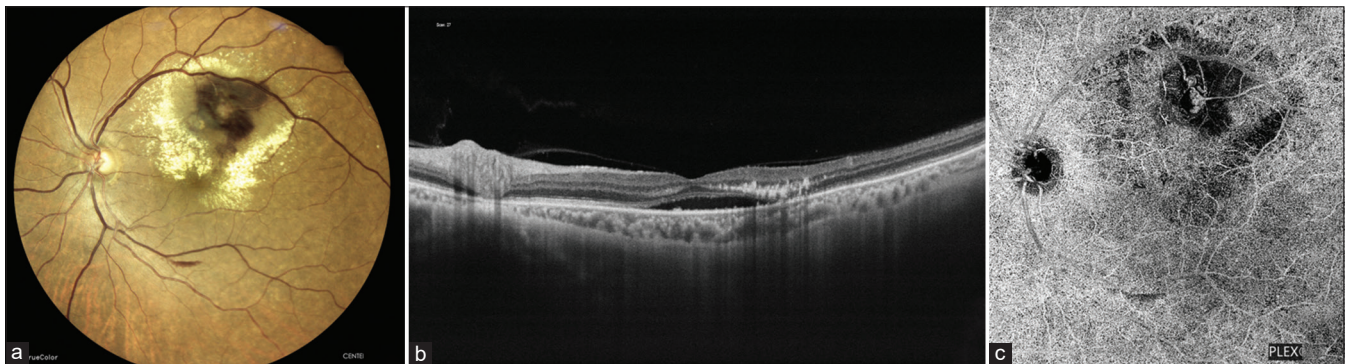


Figure 2: (a) Fundus photograph after two Anti-VEGF injections demonstrated reduction of pre-retinal bleed and the sub-retinal fluid and lipid exudates at the macula. (b) SS-OCT scan demonstrated significant reduction in the sub-retinal fluid, resulting in visual acuity improvement to 20/40. (c) SS-OCTA (DCP slab) showed persistent RAM lesions with slightly reduced flow signals through them

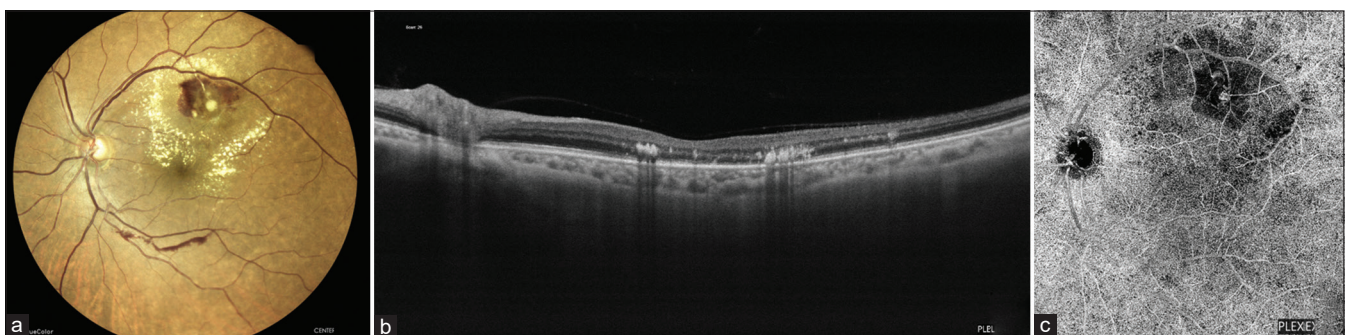


Figure 3: (a) Fundus photograph 2 months after laser showed sclerosis of RAM with reduced lipid exudates. (b) SS-OCT showed restoration of the foveal contour with the presence of hyper-reflective foci of hard exudates scattered in the outer nuclear layer. (c) SS-OCTA (DCP slab) showed further reduced signal flow in the area of the RAM lesion

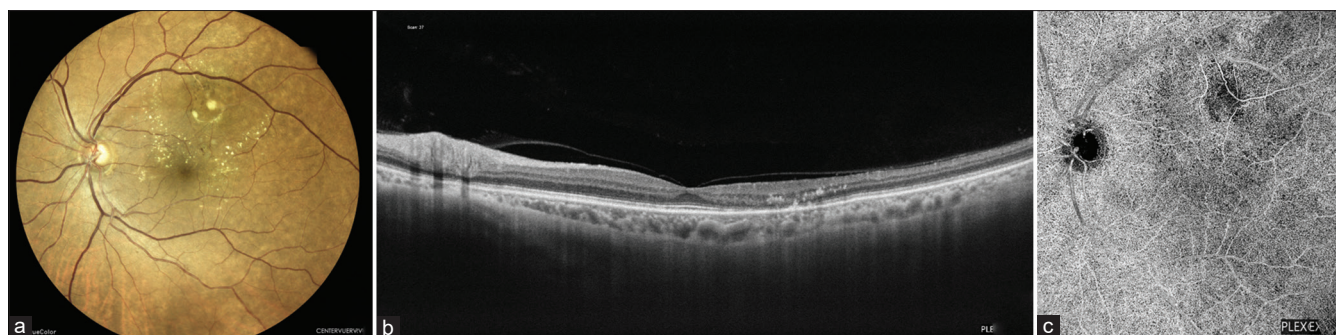


Figure 4: (a) Fundus photograph 6 months from presentation showed sclerosed RAM with complete disappearance of retinal hemorrhage and the retinal fluid. (b) SS-OCT scan demonstrated a normal foveal contour with further reduction in hyper-reflective foci of hard exudates. (c) SS-OCTA (DCP slab) did not pick up any abnormal flow signal in the area of the original RAM lesion

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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Conflicts of interest

There are no conflicts of interest.

References

1. Mansour AM, Foster RE, Gallego-Pinazo R, Moschos MM, Sisk RA, Chhablani J, *et al*. Intravitreal anti-vascular endothelial growth factor injections for exudative retinal arterial macroaneurysms. *Retina* 2019;39:1133-41.
2. Chen YY, Lin LY, Chang PY, Chen FT, Mai ELC, Wang JK. Laser and anti-vascular endothelial growth factor agent treatments for retinal arterial macroaneurysm. *Asia Pac J Ophthalmol (Phila)* 2017;6:444-9.
3. Lewis RA, Norton EW, Gass JD. Acquired arterial macroaneurysms of the retina. *Br J Ophthalmol* 1976;60:21-30.
4. Rabb MF, Gagliano DA, Teske MP. Retinal arterial macroaneurysms. *Surv Ophthalmol* 1988;33:73-96.