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Paracentral acute middle maculopathy and the ischemic cascade associated with retinal vascular occlusion

Mathieu F. Bakhoum, K. Bailey Freund, Rosa Dolz-Marco, Belinda CS. Leong, Caroline R. Baumal, Jay S. Duker, David Sarraf.

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Abstract

Purpose: To analyze the spectrum of ischemia associated with paracentral acute middle maculopathy (PAMM) in eyes with acute retinal vascular occlusion and to describe an ischemic cascade.

Design: A retrospective observational case series.

Methods: Patients presenting with PAMM secondary to acute retinal vascular occlusion were identified. Analysis of multimodal imaging was performed at baseline and at follow up visits to elucidate the patterns and progression of ischemia within the retinal layers.

Results: Multimodal retinal imaging from 16 eyes of 16 patients with acute retinal vascular occlusion associated with PAMM was studied. Analysis of *en face* OCT segmentation of the inner nuclear layer (INL) identified distinct patterns of PAMM correlating with the severity of ischemia and not the type of occlusion. A perivenular fern-like PAMM pattern was associated with better visual outcomes (average final visual acuity was 20/25). This pattern was noted to sequentially progress in 2 cases to a diffuse globular PAMM pattern in the INL, or to a pattern of ischemia involving both the middle and inner retinal layers with commensurate vision loss. Globular patterns of PAMM or ischemia involving both the middle and inner retina correlated with poorer visual outcomes (average final visual acuity was counting fingers at 5.5 ft). These various patterns of ischemia developed in eyes with retinal vascular occlusions in which blood flow through the retinal capillary plexuses was present but was significantly reduced and delayed.

Conclusions: This study describes OCT findings suggestive of an ischemic cascade in eyes with retinal vascular occlusion. The middle retina at the level of the deep capillary plexus, especially at the venular pole, may be more vulnerable to ischemic injury.