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### ABSTRACT

**TITLE:** Correlation of Vascular Impairment with Geographic Atrophy Progression Analyzed with Swept Source OCT Angiography and Variable Interscan Time Analysis

### **ABSTRACT BODY:**

**Purpose:** Optical coherence tomography angiography (OCTA) enables visualization of the choriocapillaris (CC). Recently our group developed a novel OCTA algorithm, termed variable interscan time analysis (VISTA), which allows display of relative blood flow speed. In this study we evaluated CC alterations cross-sectionally and longitudinally in patients with geographic atrophy (GA) in nonexudative age-related macular degeneration (AMD).

**Methods:** Data was collected using a 1050nm, 400kHz swept source OCT system. VISTA was used to calculate relative flow speeds using 1.5ms and 3.0ms interscan times.

**Results:** Seven eyes of 5 patients with GA secondary to nonexudative AMD were evaluated. (79.4±8.3 y/o; all Caucasians; 2 male, 3 female). Four eyes were evaluated at one visit, and 3 eyes had follow-up scans. Mean follow-up duration for the 3 eyes was 14 months (range 7 to 20 months). In all 7 eyes, OCTA revealed marked CC alteration in the area of GA, as well as CC flow alterations extending beyond the GA border. The changes outside the region of GA were classified as: minimal CC loss with some areas of decreased blood flow speed (14.28%), and diffuse CC loss and decreased blood flow speed (85.71%).

**Conclusions:** We found severe CC alterations underlying areas of GA, and diffuse CC alterations, including regions of slower blood flows, beyond the GA margins in some patients. Further longitudinal data is needed to evaluate the pattern of GA progression and determine whether areas of CC flow impairment are predictive of the direction of GA enlargement.



92 y/o GA eye. (A.1) Color fundus photo. (A.2) Sub-retinal pigment epithelium (RPE) OCT slab. (A.3) CC OCTA image. (A.4) CC VISTA-OCTA image. The margin of atrophy was traced (white contour) on the sub-RPE slab, and overlaid on the OCTA and VISTA-OCTA images. OCT data was taken over 6x6mm field. For VISTA image, red (blue) indicates faster (slower) blood flow speeds.<br/>br />



76 y/o GA eye at (A) baseline visit, and (B) ~7 month follow-up. (A-B.1) Sub-retinal pigment epithelium (RPE) OCT slab; red circles indicate control points used to register images. (A-B.2) CC OCTA image. (A-B.3) CC VISTA-OCTA image. The margin of atrophy was traced (white contour) on the sub-RPE slab and overlaid on the OCTA and VISTA-OCTA images. For VISTA images, red (blue) indicates faster (slower) blood flow speeds.<br/>
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#### DETAILS

PRESENTATION TYPE: #1 Paper, #2 Poster CURRENT REVIEWING CODE: 1280 AMD imaging - RE CURRENT SECTION: Retina Clinical Trial Registration (Abstract): No Other Registry Site (Abstract): (none) Registration Number (Abstract): (none) Date Trial was Registered (MM/DD/YYYY) (Abstract): (none) Date Trial Began (MM/DD/YYYY) (Abstract): (none) Grant Support (Abstract): Yes Support Detail (Abstract): National Institutes of Health: 5-R01-EY011289-28, Air Force Office of Scientific Research: FA9550-15-1-0473, FA9550-10-1-0551, Macula Vision Research Foundation

#### TRAVEL GRANTS and AWARDS APPLICATIONS

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