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.
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 />
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

TRAVEL GRANTS and AWARDS APPLICATIONS

AWARDS:

AFFIRMATIONS

Affirmations: Affirmation to present same work as abstract submission.
Affirmations: Affirmation that abstract data/conclusions have not been published; not redundant with other submissions from same investigators.
Affirmations: Affirmation to reveal essential structure, novel compound elements, or identify new gene compounds.
Affirmations: Affirmation of compliance with ARVO’s Statement for Use of Human Subjects and/or Declaration of Helsinki.
Affirmations: Affirmation of compliance with ARVO policy on registering clinical trials.
Affirmations: Affirmation to pay Annual Meeting’s full registration fee.
Affirmations: Affirmation that submission of this abstract has been approved by the Principal Investigator.
Affirmations: Affirmation of copyright transfer from each author to ARVO, or certification of public domain abstract.
Affirmations: Affirmation of compliance with ARVO’s Statement for Use of Animals.