

# OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY FINDINGS IN FELLOW EYES OF PATIENTS WITH PROVED UNILATERAL WET SUBRETINAL NEOVASCULAR MEMBRANE

Said Ahmed Gomaa, Mohamed Abd-Elhamid Ragab, Mohamed Sobhy El-Mansy, Mganga Wegoro Majura

Department of ophthalmology, Faculty of Medicine, Alexandria University

## Introduction

Age-related macular degeneration (AMD) is globally the most common cause of blindness in elderly with significant economic burden to individuals and societies. It can be dry or wet type with gradual versus abrupt affection of vision respectively. Visual outcomes of fellow eyes of patients with unilateral wet AMD can be improved with regular follow-ups using optical coherence tomography (OCT) and OCT angiography (OCT-A) to detect features of progression and home monitoring techniques.

On OCT-A, the fellow eyes of wet AMD may present with a subclinical choroidal neovascularization (CNV) or areas of choriocapillaris signal loss contrary to the normal grainy appearance. The double-layer sign on structural OCT can predict the possibility of a subclinical CNV in OCT-A. Type 1 CNV is associated with more advanced fellow eye findings than type II CNV.

Life-style modification and nutritional supplements are advocated in early and intermediate AMD. No proven treatment for geographic atrophy while exudative AMD is managed with repeated intravitreal injection of anti-VEGF. Hence proper monitoring with OCT/OCT-A and timely treatment can improve visual prognosis of AMD patients through detection of these features.

## Aim of the work

This study was aimed at determining the optical coherence tomography angiography findings in the fellow eyes of patients with proved unilateral wet subretinal neovascular membrane at Alexandria main university hospital.

## Patients and Methods

This was a prospective observational study at the ophthalmology department of Alexandria main university hospital. It involved 110 patients with unilateral exudative AMD and normal to intermediate AMD in the fellow eyes from April 2022 to April 2023. Risk factors for AMD, general medical and ophthalmic history were taken and examinations performed. OCT/OCTA and fluorescein angiography were performed to document the type, activity, morphology of the CNV.

Categorization of the fellow eye findings into ‘Normal’, ‘Drusen with/without drusenoid PED’, and ‘Subclinical CNV’ based on OCT and outer retinal to choriocapillaris and choriocapillaris slabs of OCT-A was done. From structural OCT, the double-layer sign was identified and the significance of its association, sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) with regard to subclinical CNV were assessed. Lastly, the type of CNV and risk factors of AMD were compared with fellow eyes clinical classification of AMD.

## Results

Participants mean age was  $71.6 \pm 7.8$  years (54-89 years), most were above 70 years, slightly more men (51.8%) than females (48.2%). Hypertension, active smoking, family history of AMD, cataract surgery and cardiovascular diseases were reported in 34.5%, 32.7%, 18.2%, 18.2% and 7.3% respectively. Increasing age, female sex, hypertension and active smoking had a significant association with fellow eyes advanced AMD severity. Two-thirds of exudative AMD eyes were type I with more advanced fellow eye findings than type II CNV. Incidence of subclinical CNV was 7.3% which could be predicted with the double-layer sign on structural OCT with a sensitivity, PPV, specificity and NPV of 75%, 75%, 98% and 99% respectively. Two-thirds of eyes without subclinical CNV had notable areas of choriocapillaris signal void which represent shadowing artifact and/or other microvascular abnormality.

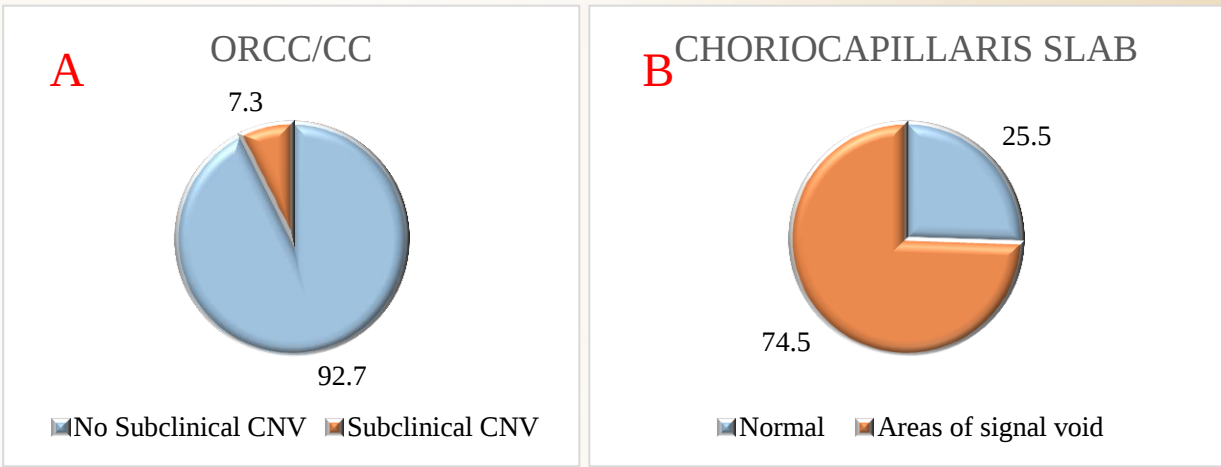


Figure (1):

- A. The distribution of fellow eyes based on the presence or absence of subclinical CNV in the ORCC/CC slabs of OCT-A
- B. The distribution of the OCT-A choriocapillaris slab findings of normal and areas of signal void.

## Conclusion

Known consistent risk factors of AMD and type I CNV are associated with relatively more advanced fellow eyes clinical classification of AMD compared to those without these risk factors and type II CNV respectively. The incidence of subclinical CNV is 7.3% which is associated and can be predicted with a structural OCT feature of double layer sign with high sensitivity and specificity. The areas of choriocapillaris signal void are a common finding in the fellow eyes of exudative AMD, they are due to shadowing artifact but may also represent areas of microvascular abnormality.