

# EVALUATION OF OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY OF THE FELLOW EYE OF PATIENTS WITH UNILATERAL CHOROIDAL NEOVASCULARIZATION

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## Introduction

Age-related macular degeneration (AMD) is considered one of the leading causes of visual impairment and visual loss throughout the world and most of the vision loss in AMD is due to the development of choroidal neovascularization (CNV) . CNV associated subretinal, intraretinal fluid and PED are seen with OCT, but these devices don’t provide a direct visualization of neovascular network. Optical coherence tomography angiography (OCTA) is considered a novel, safe, non-invasive, and rapid imaging technique to evaluate the microvascular anatomy in the retina and choroid without the need for contrast agents. It employs motion contrast imaging to high-resolution volumetric blood flow information providing angiographic images in just seconds. The Prevalence of subclinical CNV in fellow eyes of patients with unilateral CNV has been reported to be between 6.25–27%. Therefore, the assessment, follow-up, and early detection of CNV in these eyes is crucial to ensure superior visual outcomes .

## Aim of the work

The aim of this study was to evaluate the macula of the fellow eyes of the patients with unilateral CNV secondary to AMD using optical coherence tomography (OCT) and optical coherence tomography angiography (OCTA).

## Patients and Methods

The study was conducted on 20 patients with unilateral CNV in Alexandria Main University Hospital as a prospective observational study for a period of follow up for 6 months following the initiation of the study and all patients included in the study were subjected to demographic data collection including age and gender , full ophthalmological history , complete clinical ophthalmic examination including best corrected visual acuity assessment , anterior segment evaluation with slit lamp and fundoscopy with dilatation. OCT and OCT-A images were obtained using Spectralis® machine (Heidelberg Engineering, Heidelberg, Germany) and the images findings were carefully recorded.

## Results

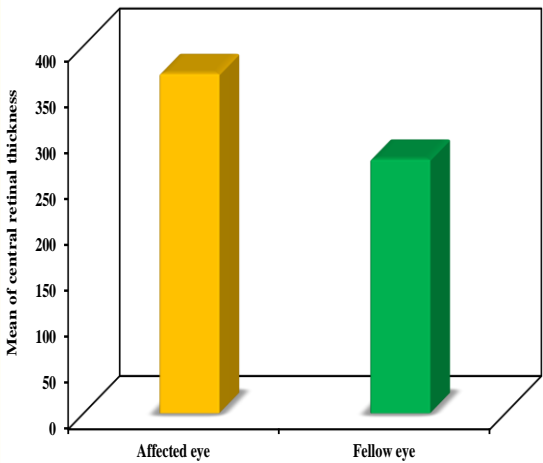


Figure (1): Comparison between affected and fellow eyes of the cases according to central retinal thickness in μ

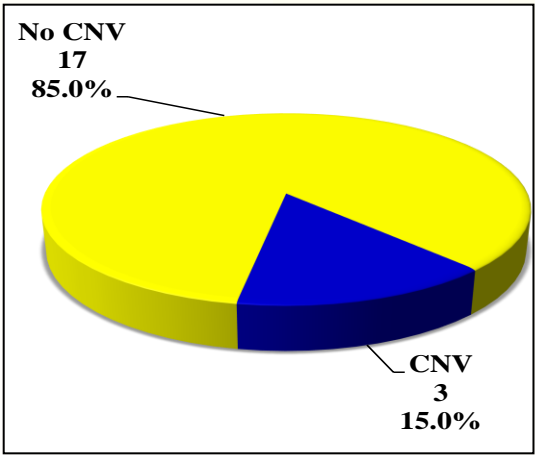


Figure (2):Distribution of the studied cases according to the OCT Angiography macula findings of the fellow eyes in the initial visit

Table (1):Comparison between affected and fellow eyes of the cases according to central retinal thickness in μ in the initial visit (n =20)

| Central retinal thickness | Affected eye             | Fellow eye                | t      | p       |
|---------------------------|--------------------------|---------------------------|--------|---------|
| Min. –Max.                | 240.0 – 498.0            | 220.0 – 301.0             | 4.933* | <0.001* |
| Mean ±SD.                 | 369.95 ± 82.08           | 260.75 ± 29.50            |        |         |
| Median (IQR)              | 365.0<br>(304.5 – 447.5) | 264.50<br>(251.5 – 276.0) |        |         |

Table (2 ) Distribution of the studied cases according to the OCT Angiography macula findings of the fellow eyes in the initial visit (n =20)

| OCTA macula findings fellow eye in the initial visit | No. | %    |
|--|-----|------|
| No CNV pattern in the avascular complex slab         | 17  | 85.0 |
| CNV pattern in the avascular complex slab            | 3   | 15.0 |

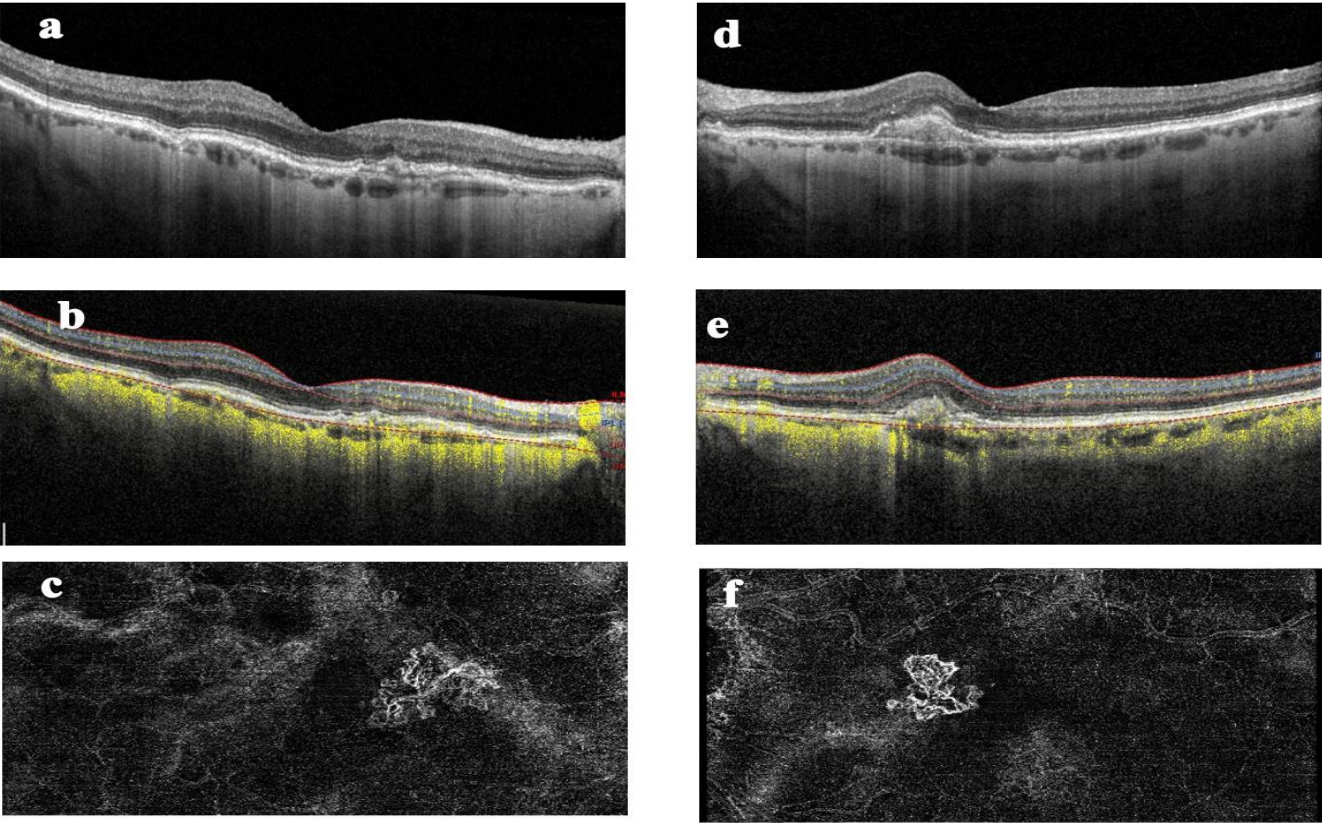


Figure (3) ( a,b and c) OCT and OCTA of the right eye showing drusen and CNV pattern in the avascular complex slab ( d , e and f ) OCT and OCTA of the left eye showing Sub-RPE CNV and CNV pattern in the avascular complex slab

The study included 40 eyes of 20 patients diagnosed with unilateral CNV secondary to AMD .The age ranges between 62 and 77 years with a mean age of  $68.75 \pm 4.32$ . The mean CRT in the affected eyes was  $369.95 \pm 82.08 \mu$  while the mean CRT in their fellow eyes was  $260.75 \pm 29.50 \mu$  .The CRT in the CNV affected eyes was statistically significantly thicker than in the fellow eyes (p value < 0.001). OCTA macula findings of the fellow eyes in the initial visit showed 17 cases (85.0%) with no detectable CNV while 3 cases (15.0%) showed CNV pattern in the avascular complex slab.One case out of these three cases developed exudation at the 6 month follow up visit .During the follow ups , none of the 17 cases without CNV in the fellow eyes showed any changes or CNV patterns and they were stable.

## Conclusion

OCTA was found to be a very promising investigation for cases with unilateral CNV for early detection of their fellow eyes subclinical CNV that carries higher risk of exudation.