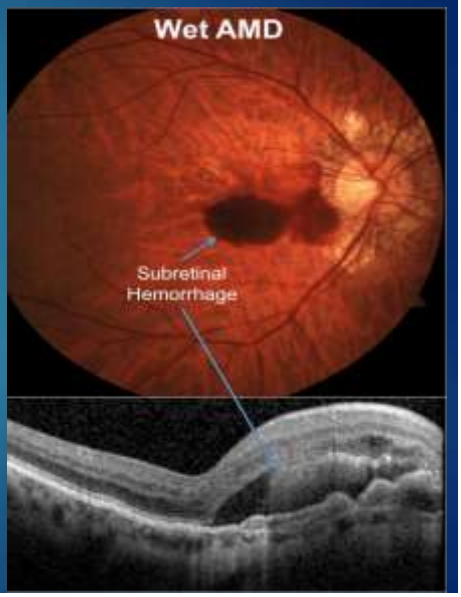
بسم الله الرحمن الرحيم

OCT/OCT-A IN INFLAMMATROY CNV

DR. SAWSAN ABD EL SABOUR SHAALBY
PROFESSOR OF OPHTHALMOLOGY AL AZHAR UNIVERSITY

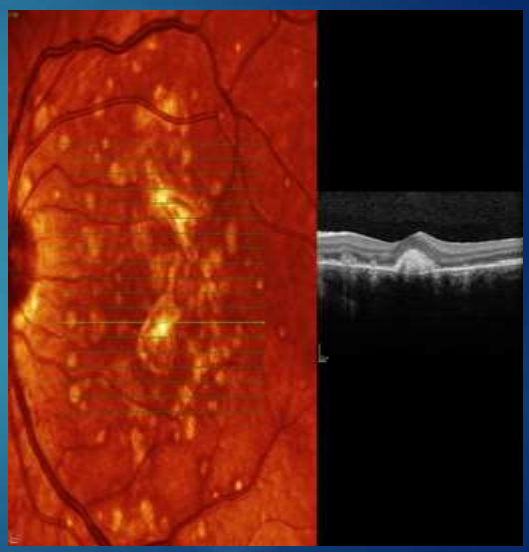
CNV

- A diverse array of pathological processes involving the retinal pigment epithelium (RPE) and Bruch's membrane may lead to the formation of CNV.
- Age-related macular degeneration (AMD) and myopia are the conditions that most commonly lead to the development of CNV, with ocular inflammation being the next most frequently implicated



- Wide range of uveitis include both infectious and non-infectious etiologies. Notably, the incidence of CNV in posterior uveitis eg
- Punctate inner choroidopathy (PIC).
- Mmultifocal choroiditis.
- Serpiginous choroiditis.
- Presumed ocular histoplasmosis syndrome (POHS).
- Toxoplasma retinochoroiditis.
- Vogt-Koyanagi-Harada (VKH) disease.

CNV



INFLAMMATROY CNV

- Recently, the ocular imaging tools by which clinicians diagnose and manage CNV have undergone significant advances. For example, the development of optical coherence tomography angiography (OCTA) provides a highly valuable instrument to monitor the progression of CNV

O CT and OCT-A

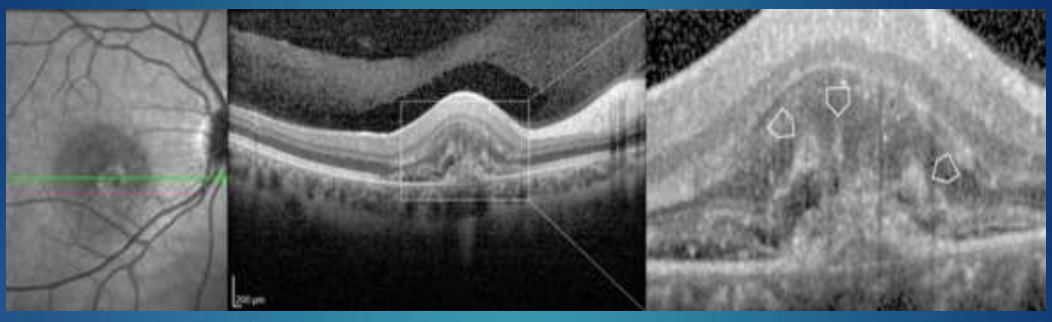
- Diagnosis of active CNV.
- Monitor CNV progression and response to therapy.
- Differentiate I.CNV from AMD and MYOPIC.
- Differentiate I.CNV from active inflammatory foci.

- On OCT scans, the activity of CNV is associated with signs of exudation such as retinal thickening,subretinal fluid, intraretinal fluid, intraretinal flecks, and low reflectivity or undefined boundaries of the subretinal material .
- The presence of these features better to be correlated with the leakage on fluorescein angiography .

I-CNV Vs AMD

- I-CNV usually develops between the retinal pigment epithelium (RPE) and the neurosensory retina, with imaging features comparable to type 2 CNVs .
- On OCT images, these lesions appear as hyper-reflective structures anterior to a disrupted RPE, with solid tissue visualized in the subretinal space .

- One distinctive OCT feaure of i-CNV that helps to distinguish these cases from other type 2 CNVs is the “pitchfork sign.”
- This sign describes finger-like hyper-reflective projections extending from the CNV area into the outer retinal layers .



25-year-old female with multifocal choroiditis. The enlarged sections of the scans sign show typical multiple finger-like projections (arrowheads) arising from the area of CNV into the outer retinal layers.
(***Hoang et al.)***

- In cases of CNV as a sequela of uveitis, an occult component of the membrane can be present, appearing as a pigmented epithelial detachment .

- Several uveitis are characterized by the presence of non-neovascular alterations occurring at the level of the RPE, which induce changes in the retina and the choroid..
- In multifocal choroiditis, for instance, acute inflammatory foci are characterized by deeper penetration of the OCT signal underneath the lesion.
- This sign is usually absent in i-CNV .

I-CNV Vs inflammatory focus

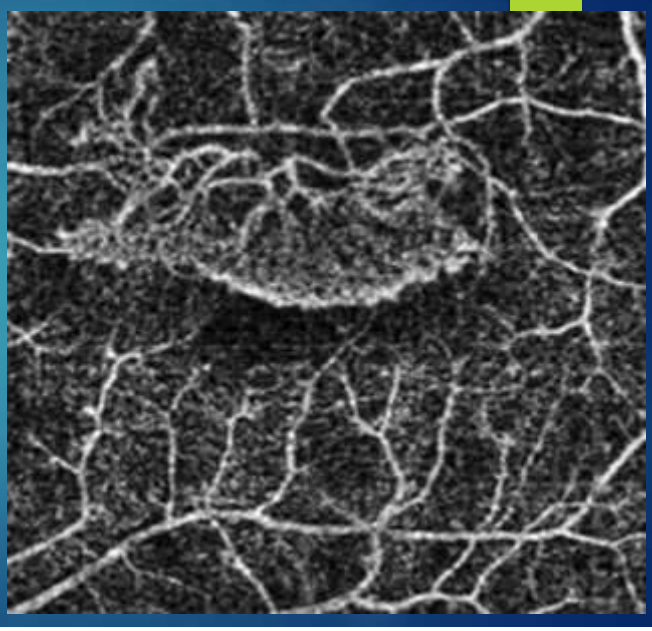
- Inflammatory chorioretinal lesions may present with very similar features of outer retinal/RPE hyperreflectivity, intra-retinal edema, sub-RPE fluid, and exudation.
- In such situations, a combination of imaging tools such as FA and ICGA, as well as OCTA, may be useful in determining the characteristics of the lesions .

Optical Coherence Tomography angiography (OCTA)

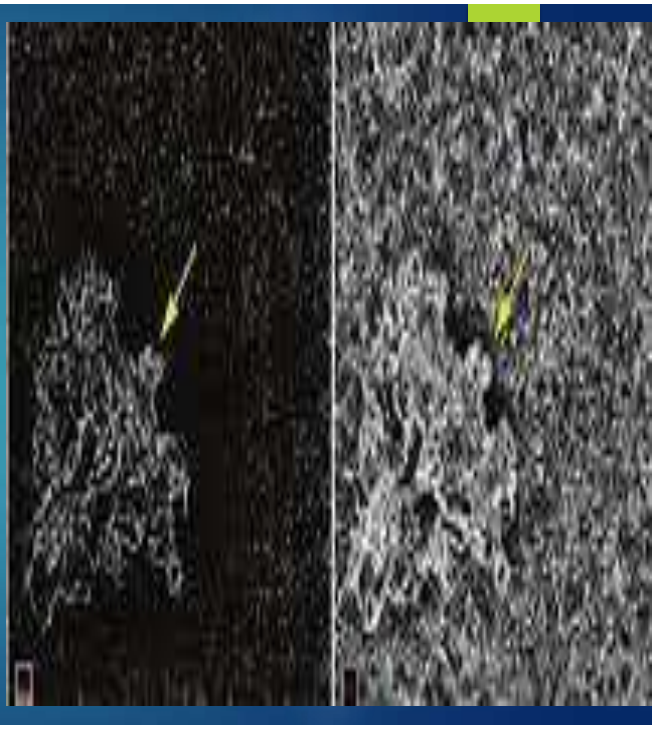
- OCT A can help in the detection of inflammatory choroidal neovascularization,
- OCTA can allow precise delineation of i-CNV lesions in patients with uveitis, esp when the FA and OCT are inconclusive.
- Being non –invasive ,OCTA particularly has an advantage over FA in distinguishing neovascular lesions from inflammatory lesions.

OCTA has allowed identification of two major categories:

- Medusa head pattern with large diameter vessels sprouting from a central vessel.

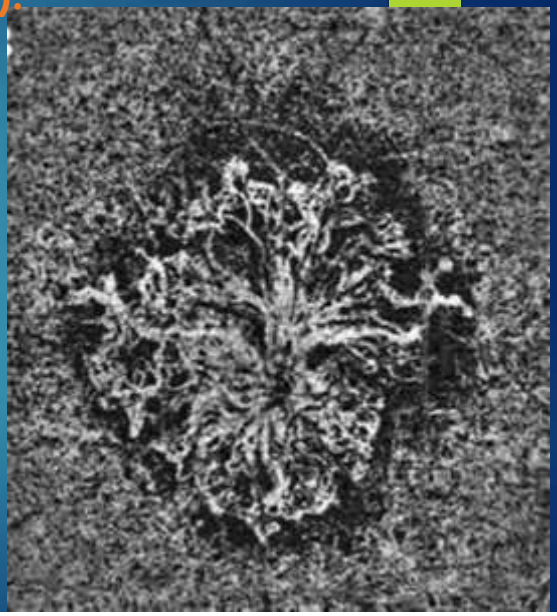


- Sea fan configuration with densely packed networks and capillary sprouts.



Biological markers of activity of the CNV (indicators of an active lesion):

- The presence of Perilesional halo.
- Increased complexity of branching and capillary sprouts.
- Alteration of choriocapillaris flow at the margins.



- On the other hand, lesions with large trunk vessels with minimal branching indicate residual inactive networks in AMD which may not require therapy.

- In the context of uveitis,automatic segmentation is even more challenging due to the abnormalities involving the chorioretinal layers .
- The disadvantages such as motion artifacts, inaccurate segmentation, and projection artifacts .

Can OCT/OCT A cancel the need for dye based angiography in cases with I.CNV?

TAKE HOME MESSEGES

- The detection of CNV is challenging in patients with uveitis due to the difficulties of visualizing the lesion amidst choroiditis lesions, scarring, and pigmentation.
- OCT remains an important tool for detection of I.CNV.

- OCTA can also be used non-invasively to follow-up such lesions.
- Lesions that may be considered to be inflammatory lesions on examination and conventional imaging. Interpretation of OCTA requires careful review of the images to exclude any image artifacts and incorrect segmentation errors.

- FA and ICGA, the two gold standard dye-based angiographic techniques, provide significant information regarding the retinochoroidal pathology in uveitis, including the level and severity of inflammation, presence of focal lesions, and vascular changes including neovascularization..

- OCTA appears to provide certain advantages over these existing tools in the detection of neovascular flow lesions in uveitis but certainly does not replace the information provided by the other imaging tools in the present times.

- Finally.OCTA in conjunction with FA, ICGA,and OCT can help in improved detection of CNV lesions, especially in cases where conventional imaging is inconclusive.