INTERNATIONAL CONGRESS OF THE
EGYPTIAN
OPHTHALMOLOGICAL SOCIETY

EOS 1902

In collaboration with: MEACO

OCT Angiography in Diagnosis and Management of nAMD : What does it add?

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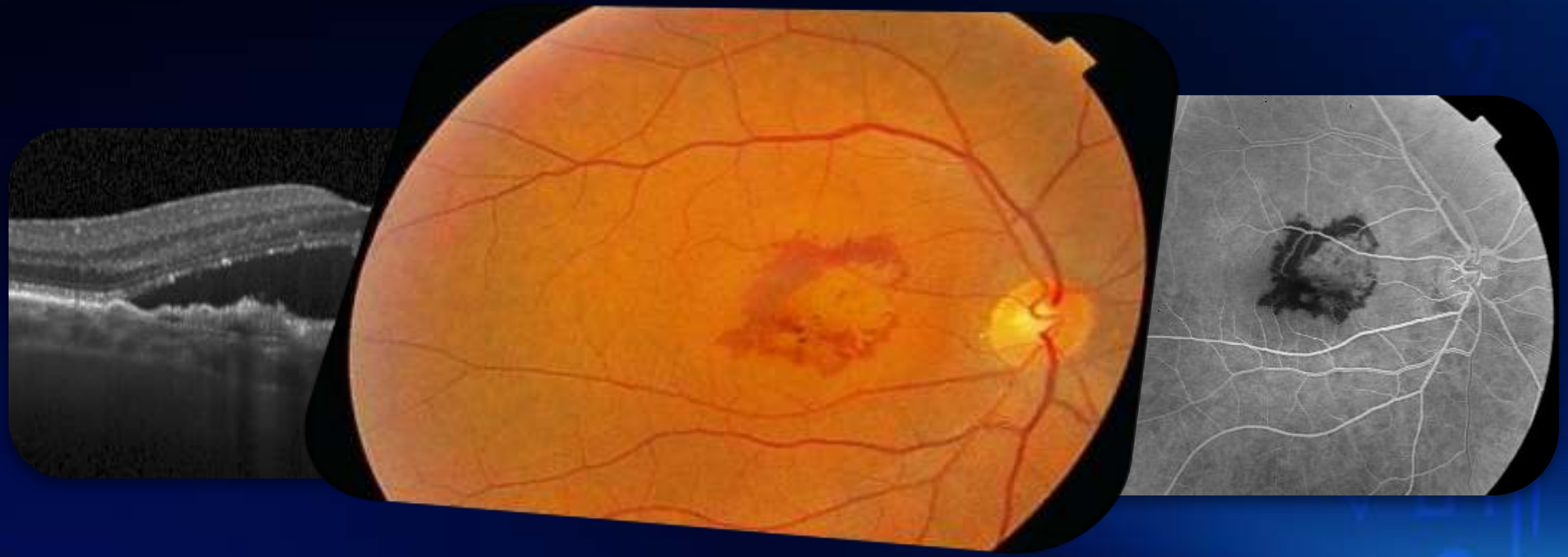
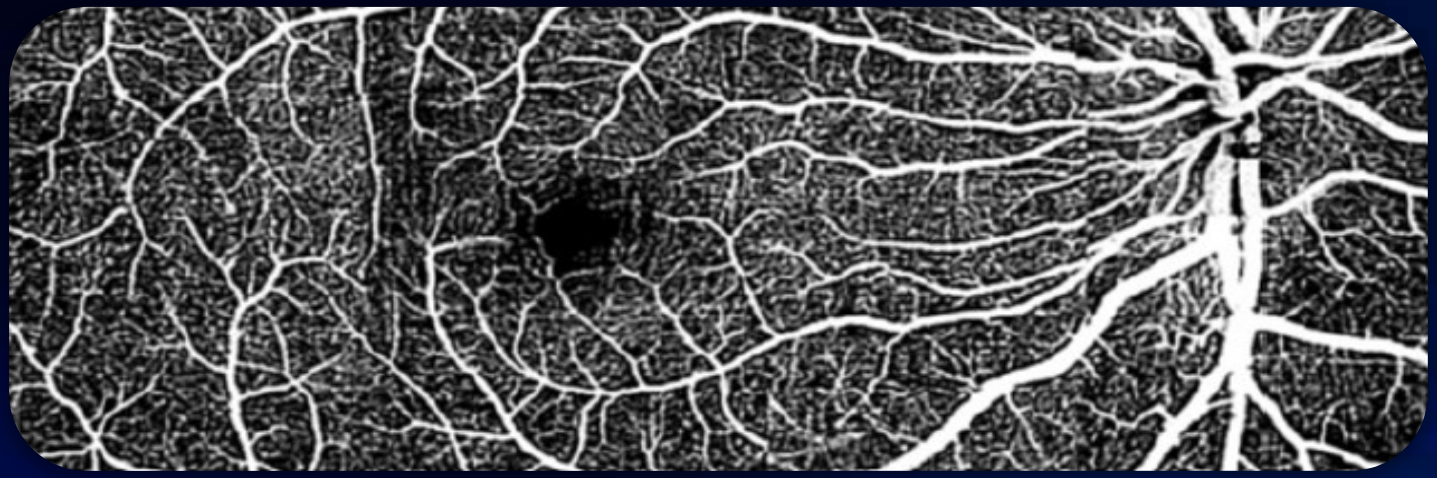
Exudative Consequences of CNV



Hemorrhage and Exudation are the Sine Qua Non of CNV.

OCT Angiography

"Dye-less" Angiography



"A new Black Horse"

EOS 2025

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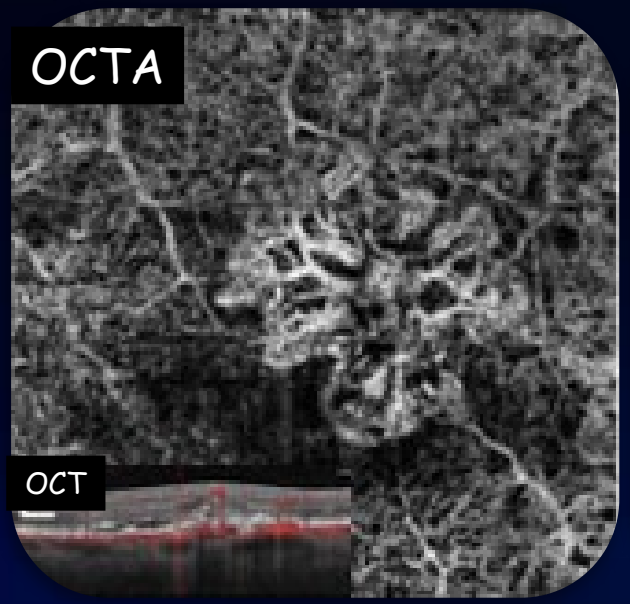
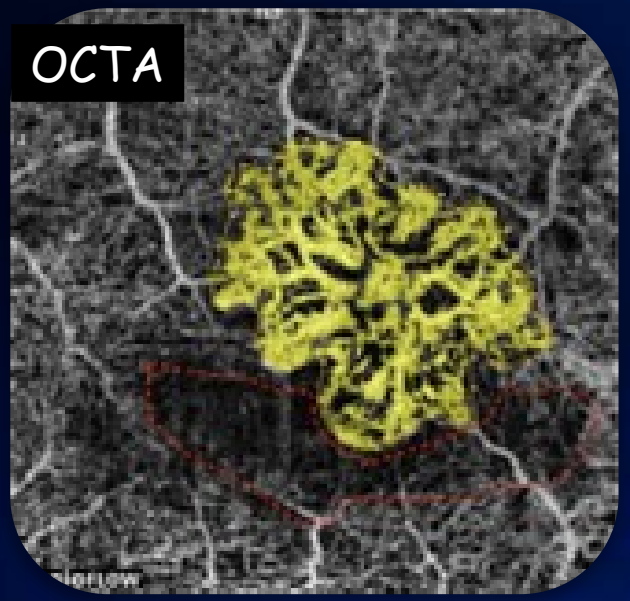
Karim A Raafat MD



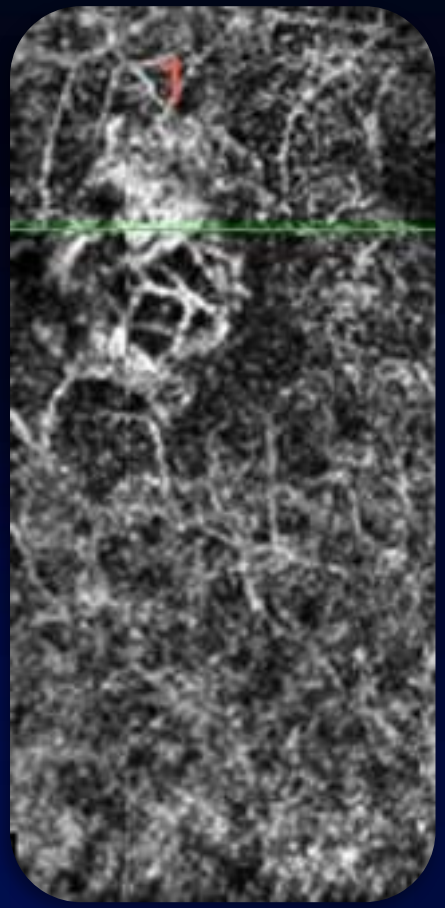


Treatment-naive

Flow area : 1,562 sq mm

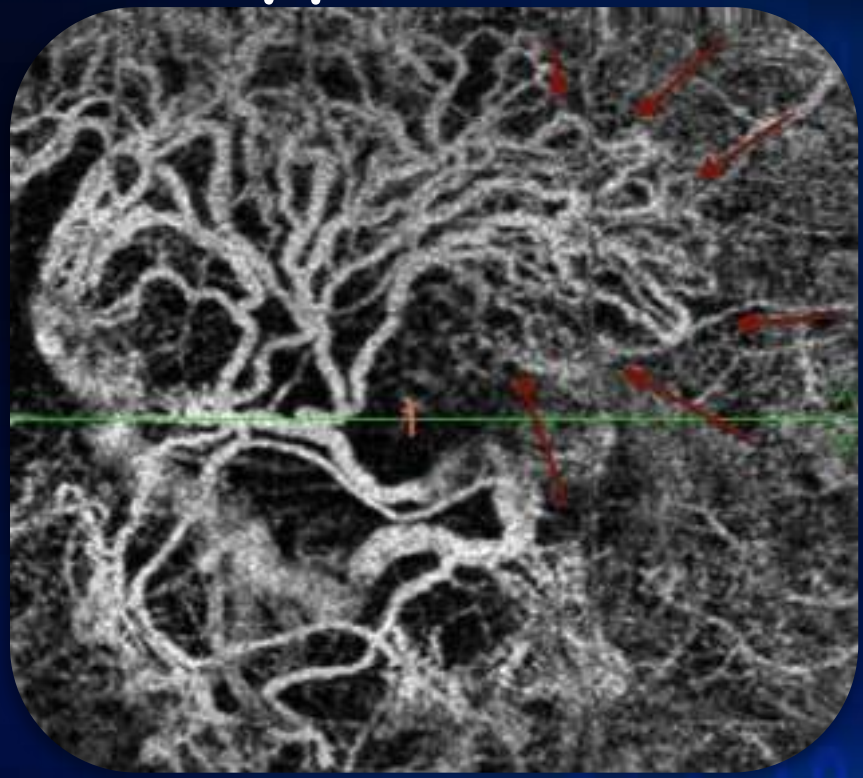
Quantitative & Qualitative

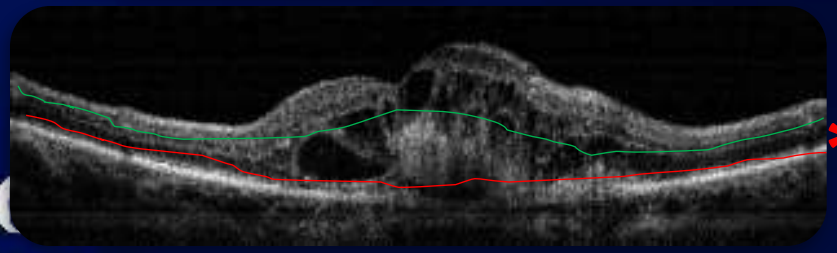
RAP Lesion



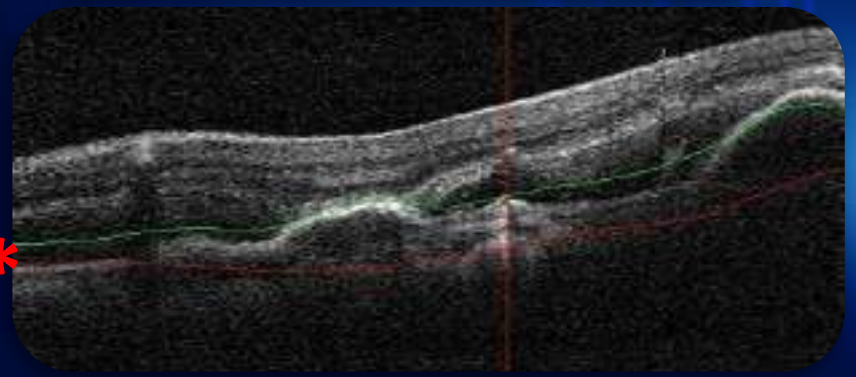
No masking by Leakage

Type I CNV





* Slab



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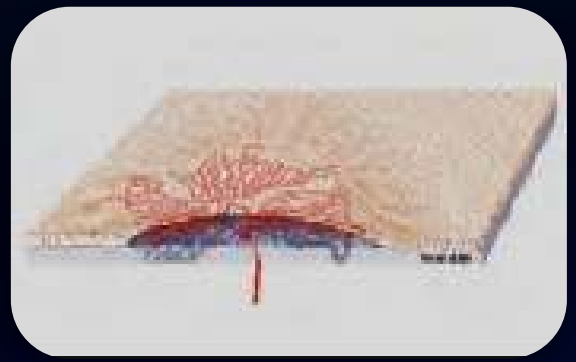
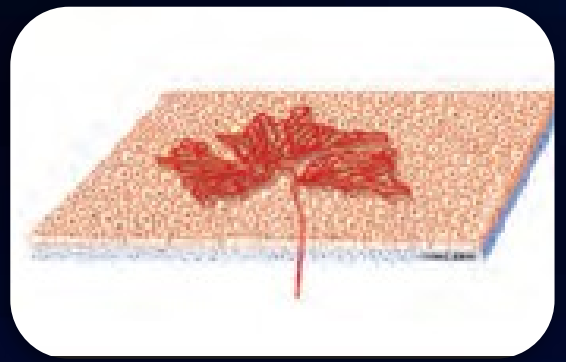
Depth- resolved Images

Type 1 Sub-RPE



- Delayed response to Anti-VEGF.
- Less incidence of GA.
- Better long-term VA

Type 2 Sub-Retinal



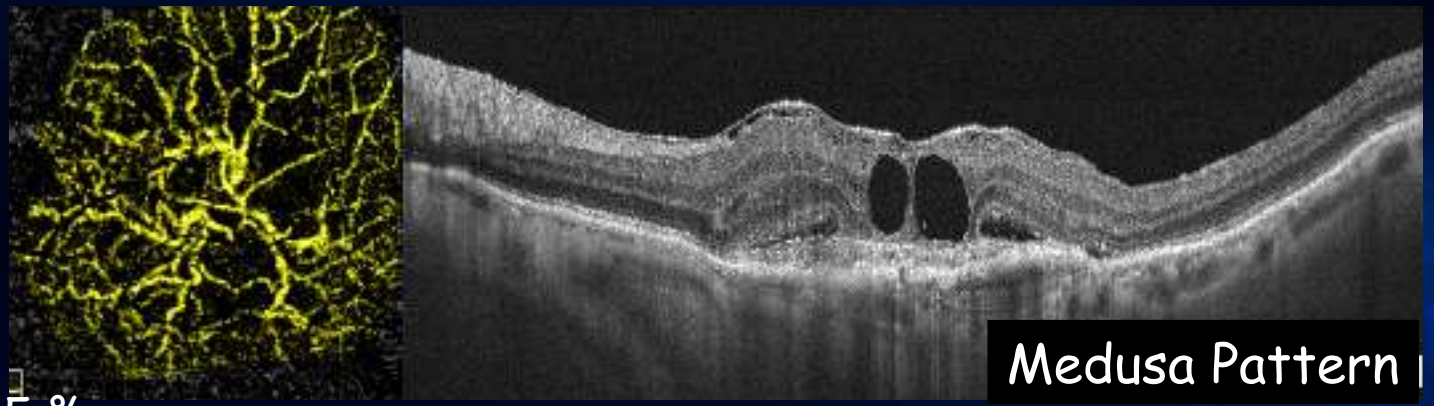
- Better early response to Anti-VEGF.
- More incidence of GA.
- Less long-term VA

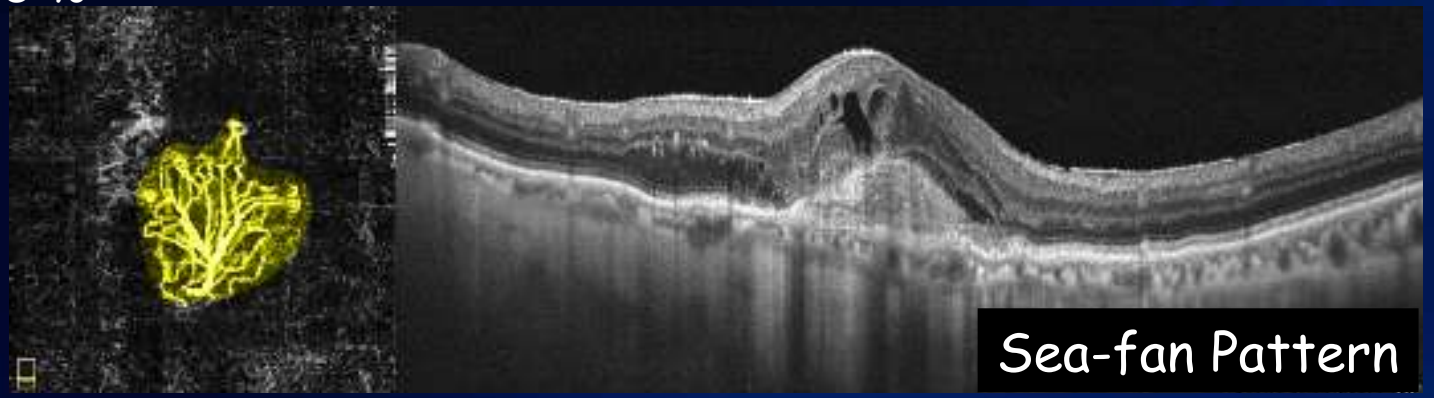
Type 3 RAP

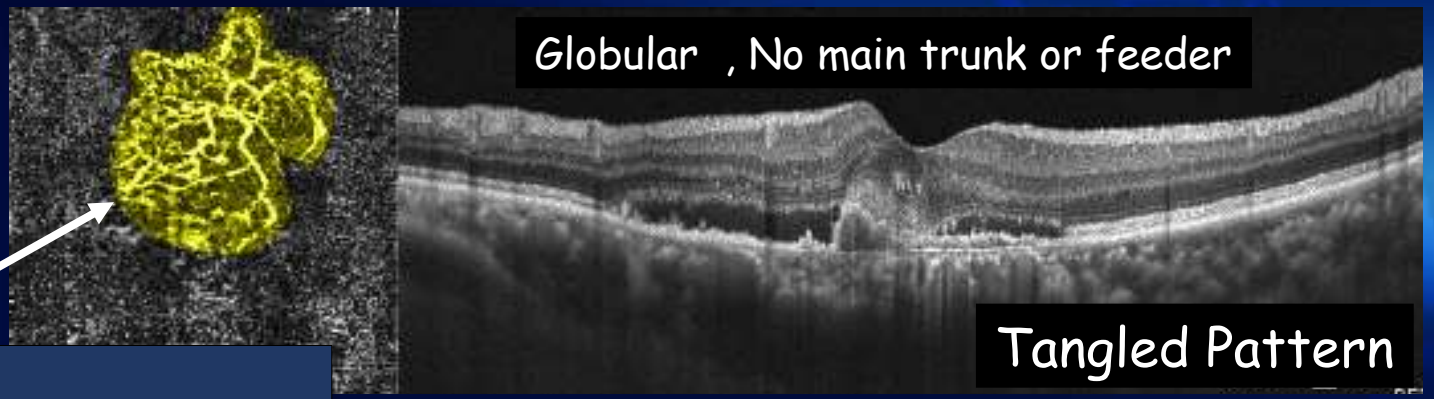
- Better response to Anti-VEGF.
- Less number of injections
- Associated with reticular drusen
- Higher incidence of GA.
- Less long-term VA

CVN Morphology by OCT Angio

Sensitivity for CNV detection : 50-85 %
Less : PED , occult , inactive.

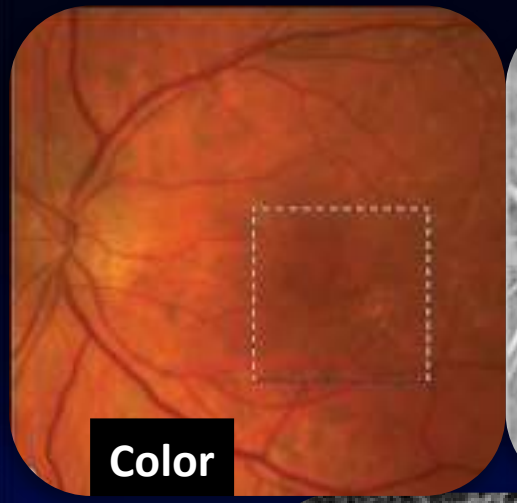


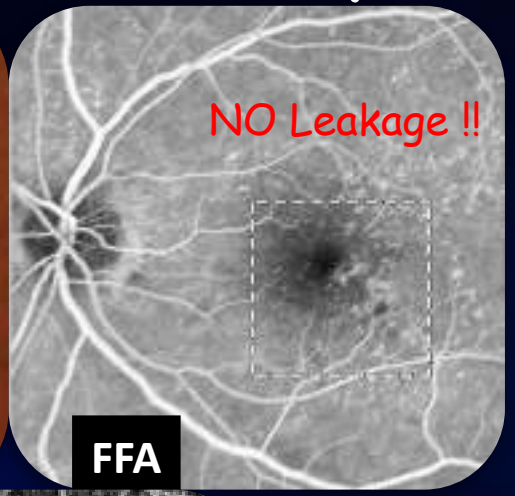


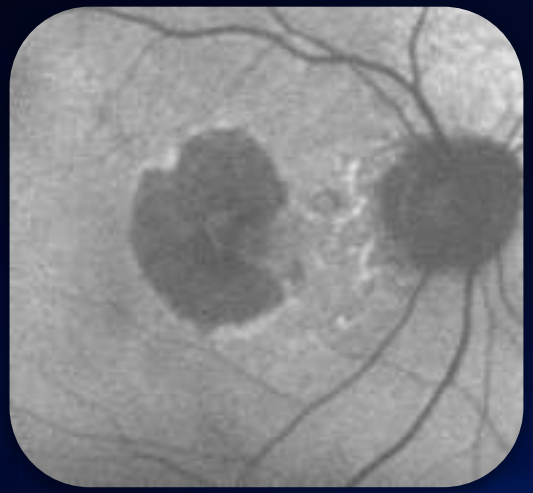


Better VA at baseline.
Greater visual improvement with Anti-VEGF

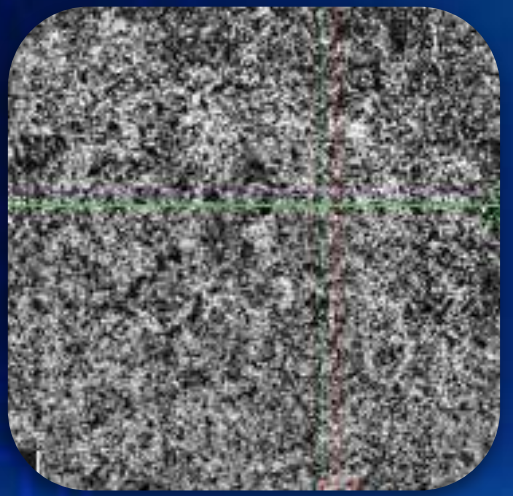
OCT & OCTA Blur the line between "Dry" and "Wet" AMD



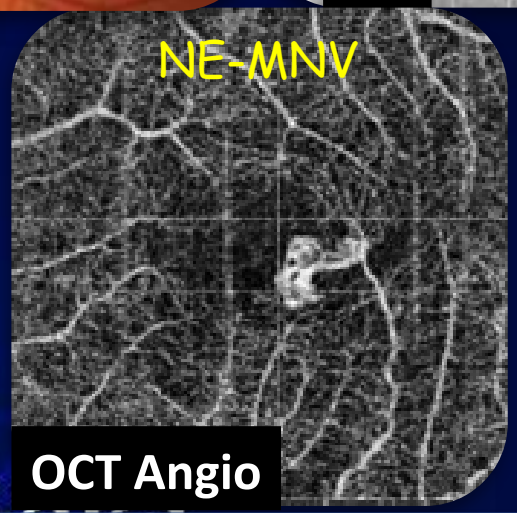




SRF without evidence of NV or polyps

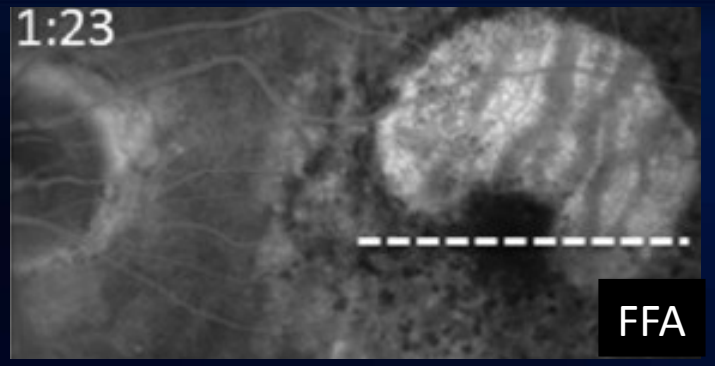


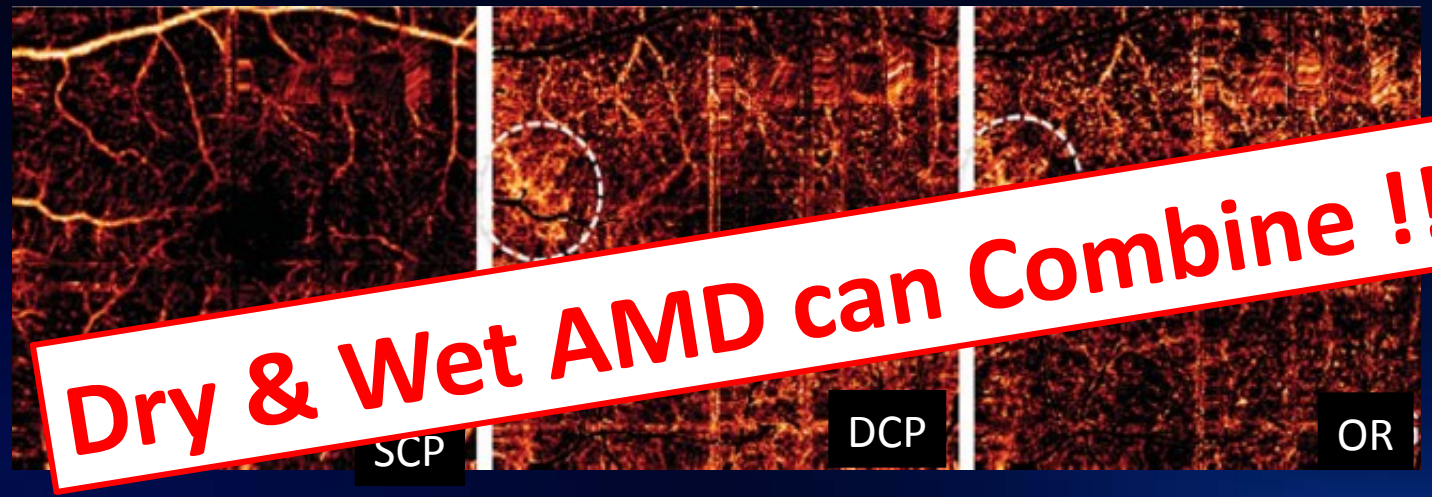
"Dry" and "Wet" can Combine



"Dry" but potentially "Wet"

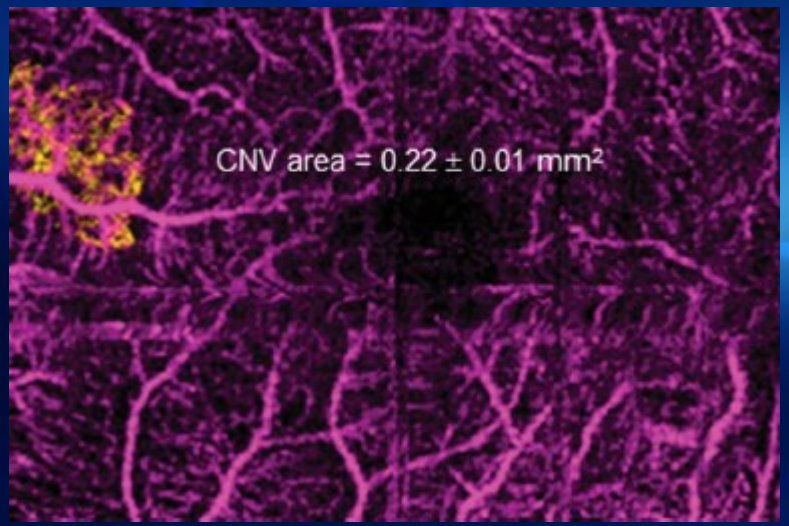
"Wet" but actually "Dry"





Dry & Wet AMD can Combine !!

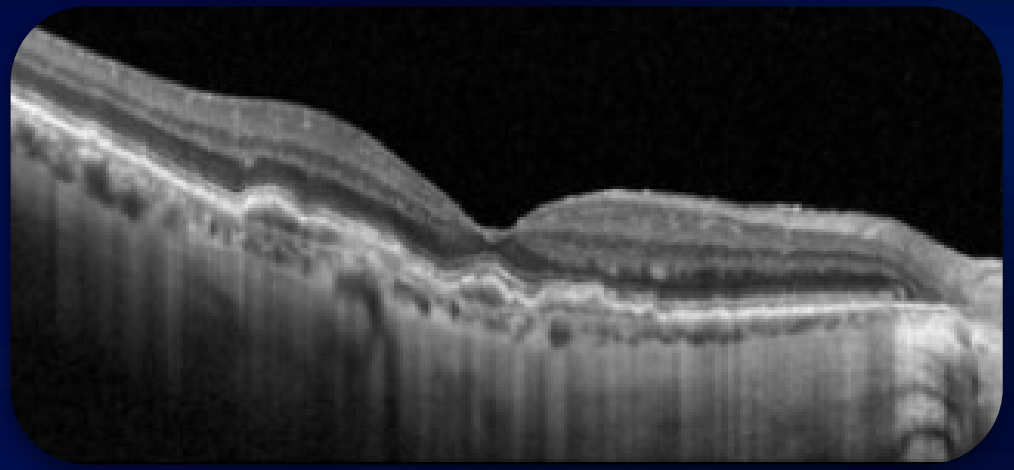
68-years old man .
PH : defective vision and central scotoma
Recent metamorphopsia
BCVA : 0.5.

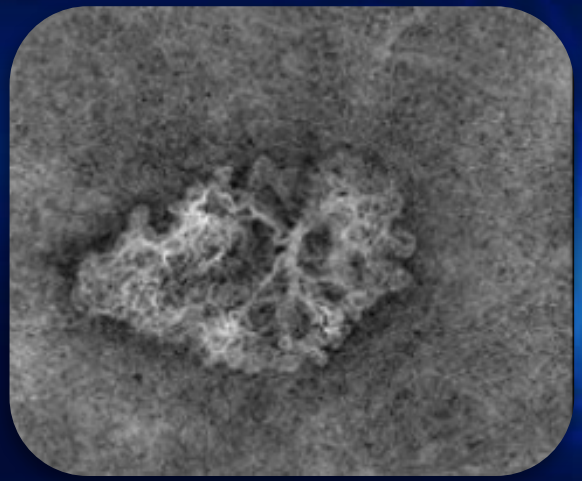


Non-exudative MNV

- Treatment- naïve type-1 NV in the absence of signs of exudation
  (No detectable macular fluid on structural OCT , No leakage on FFA).

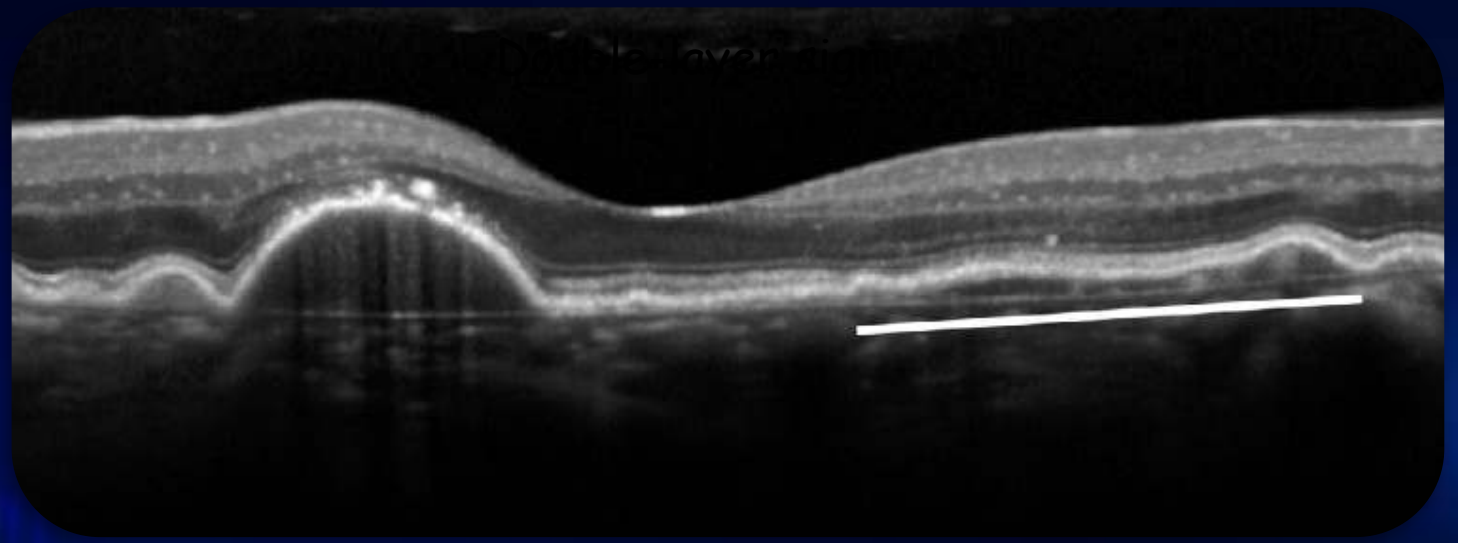
- Synonymous : Non-exudative , Pre-clinical , Silent , Quiescent NV .

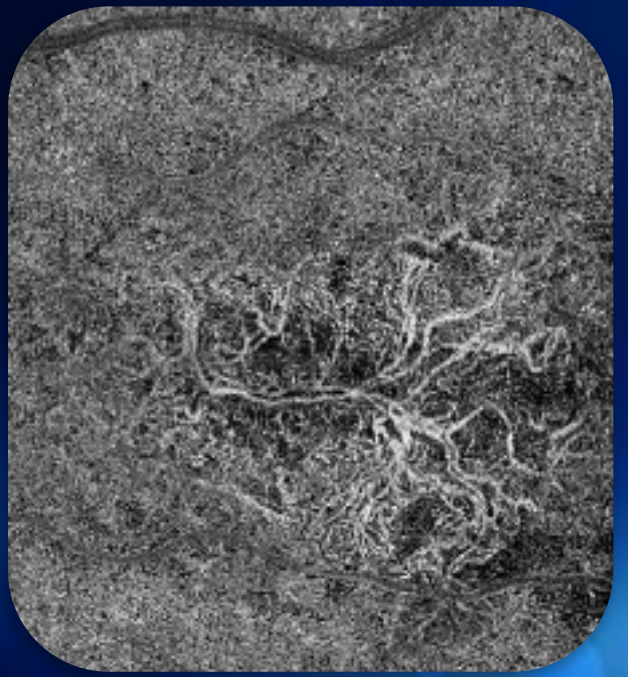


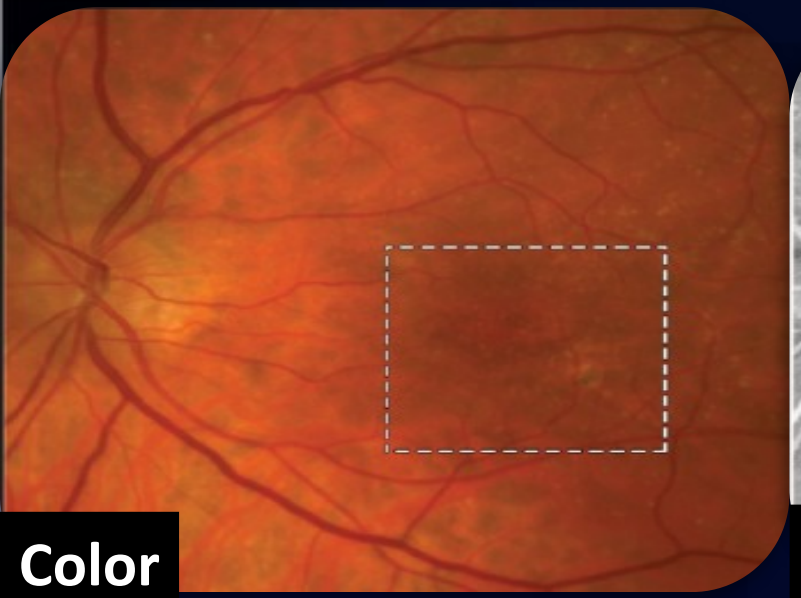


Shallow Irregular RPE Elevation (SIRE)

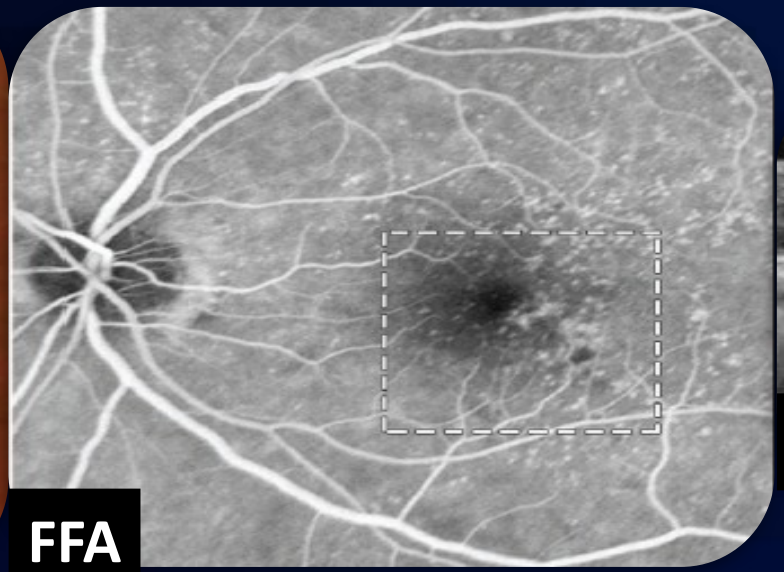
25% : quiescent , non-exudative type 1 MNV



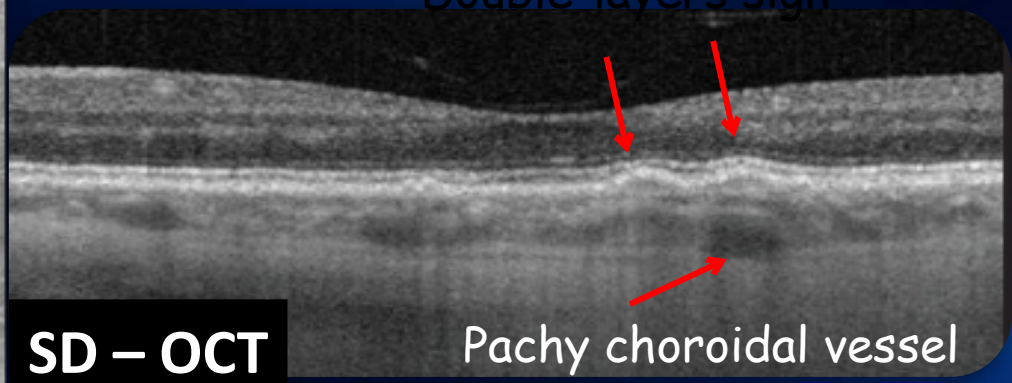




Color



FFA



SD – OCT

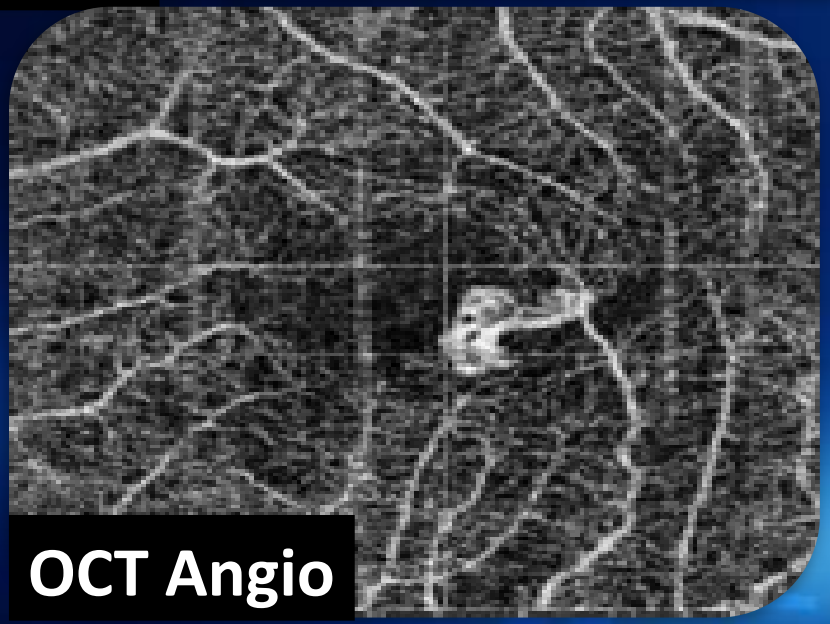
C/O Metamorphopsia

65-years-old man

BCVA 0.5

Intermediate AMD !!

Prevalence : 11 - 27 %
Cases of Early and Intermediate AMD.



OCT Angio

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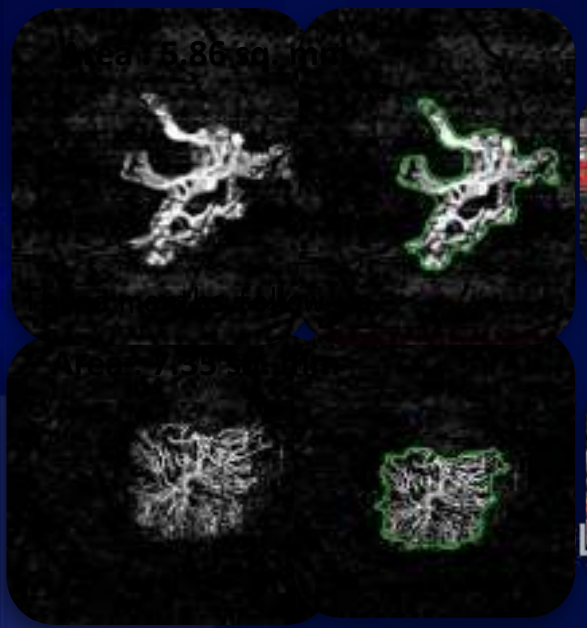
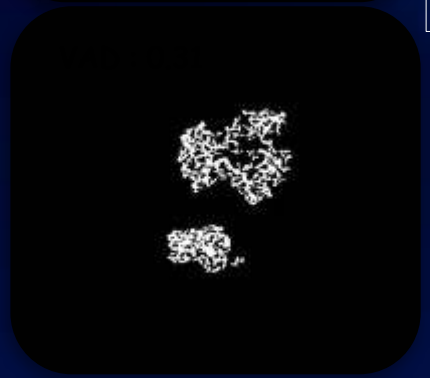
Roiseman I et al Ophthalmology 2016 ; 123 : 1309-1319.

To Treat or Not to treat ?!

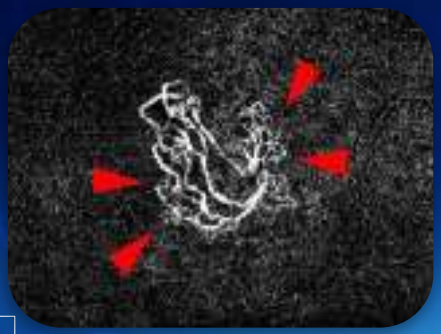
- Non-exudative MNV : X14 2-year risk of exudation.
- Prophylactic Anti-VEGF : NO benefit in preventing exudation or vision loss.
- Grow in size but don't exuade.
- VAD , CC perfusion : if *DECREASED !!* ; risk of near-term exudation.
- Rationale : nutritionally – deprived RPE : VEGF upregulation.

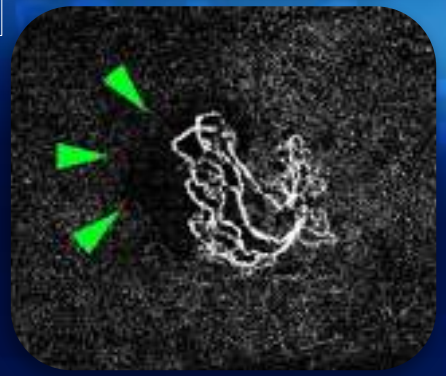


Grow but Not Exude



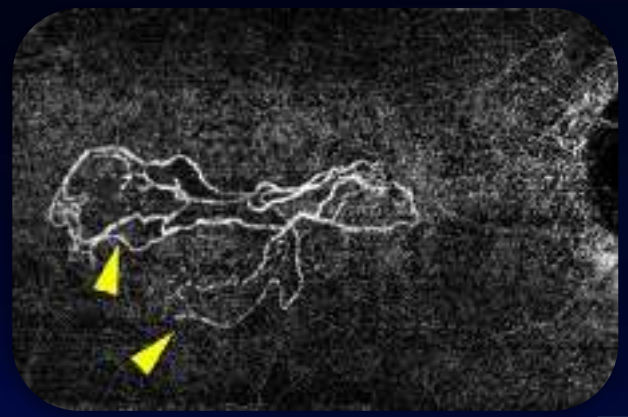
Two months follow-up

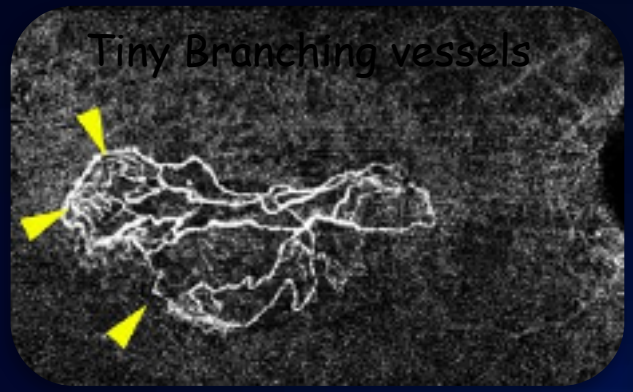


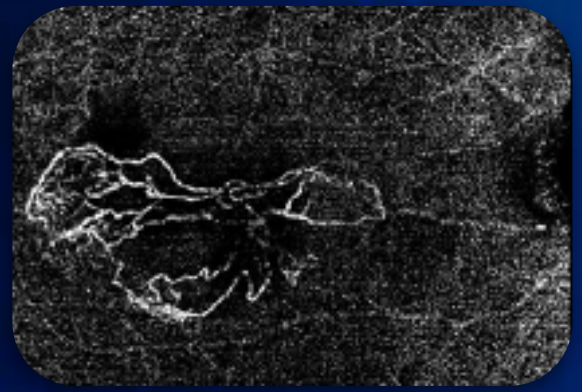


OCTA Biomarkers

Warrants Anti-VEGF to avoid IRF (poorer visual outcome)

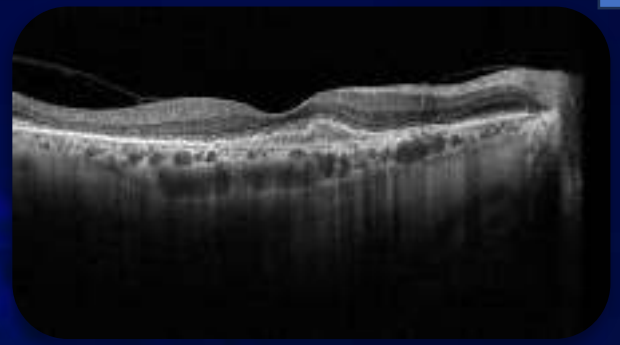


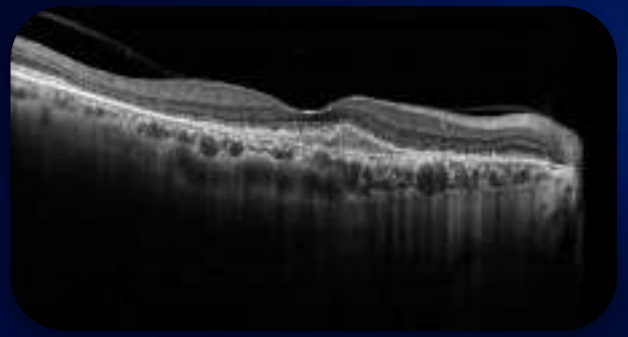


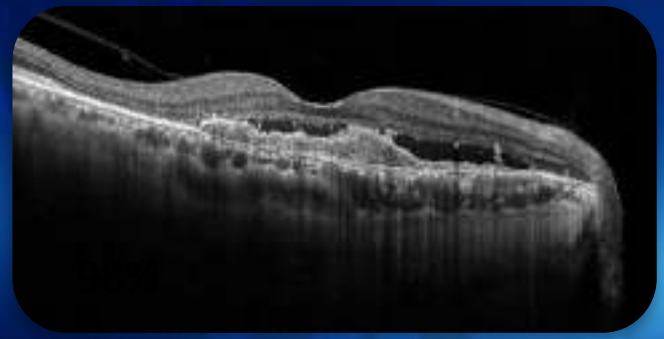


4 Weeks

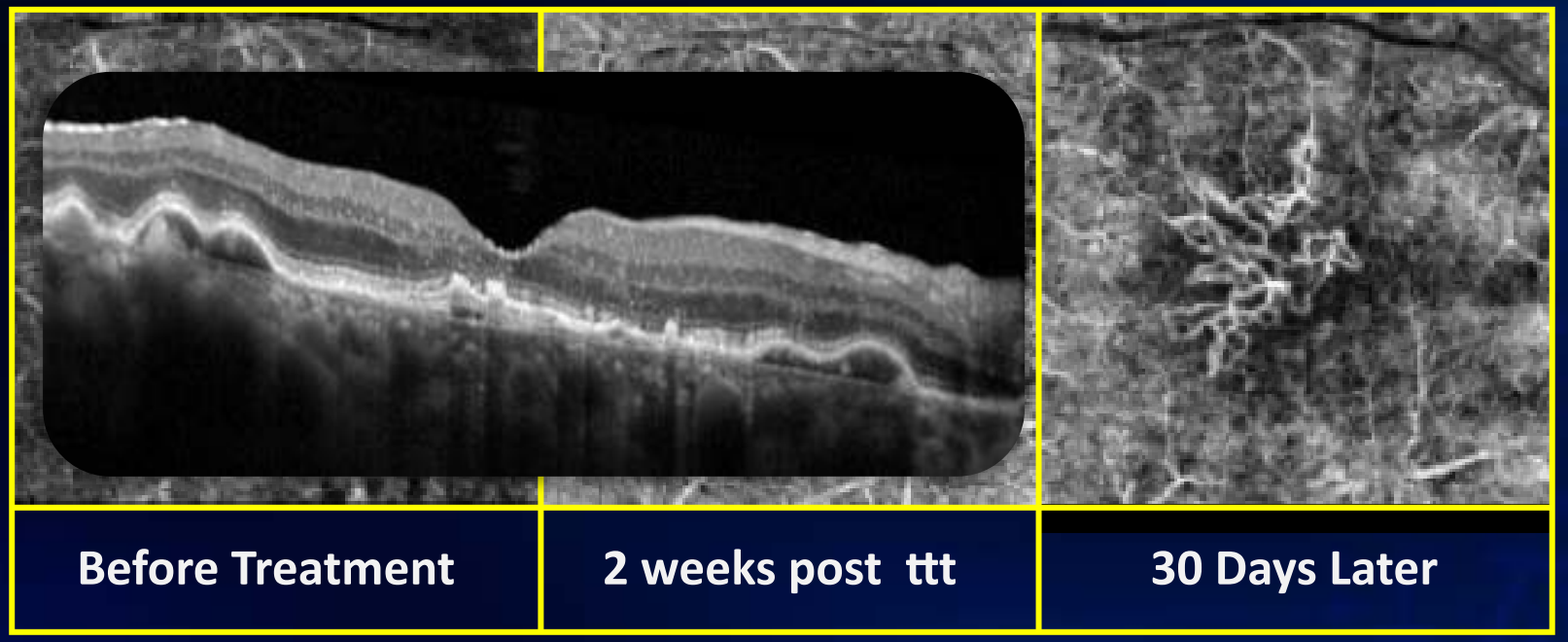
9 Weeks







Asymptomatic , exudation-free growth



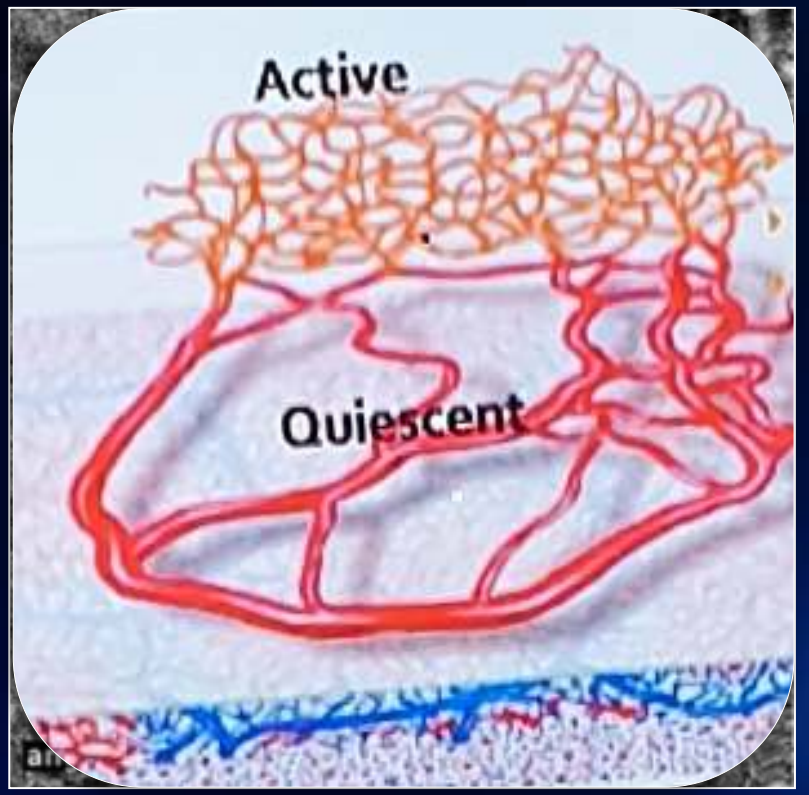
Rapid Regression

Re-growth

Vascular Anatomy of CNV

Peripheral vessels

- Tiny , anastemosis
- Immature vessels (NO pericytes surrounding endothelial cells).
- Responsive to Anti-VEGF

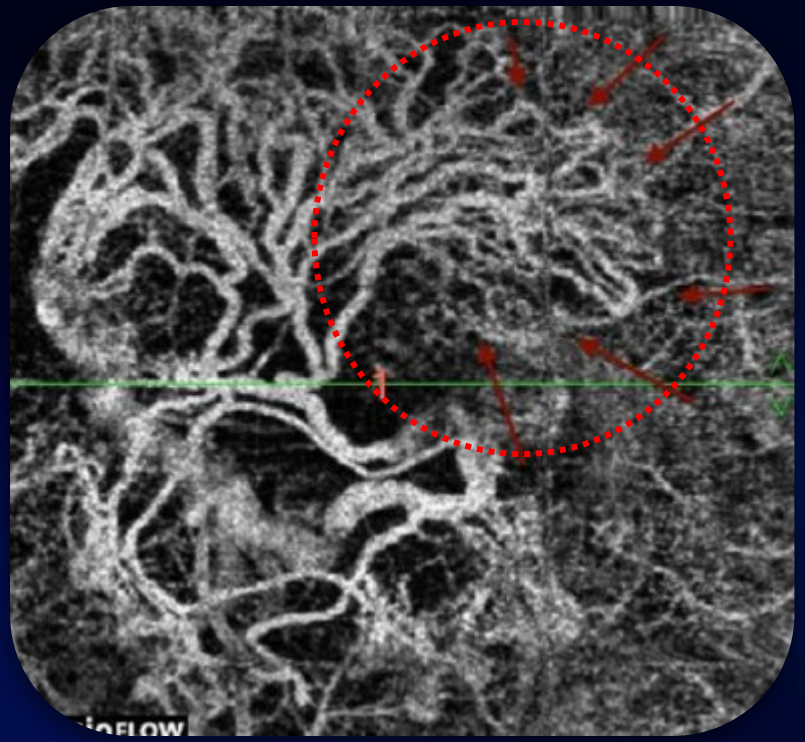


Trunk vessels

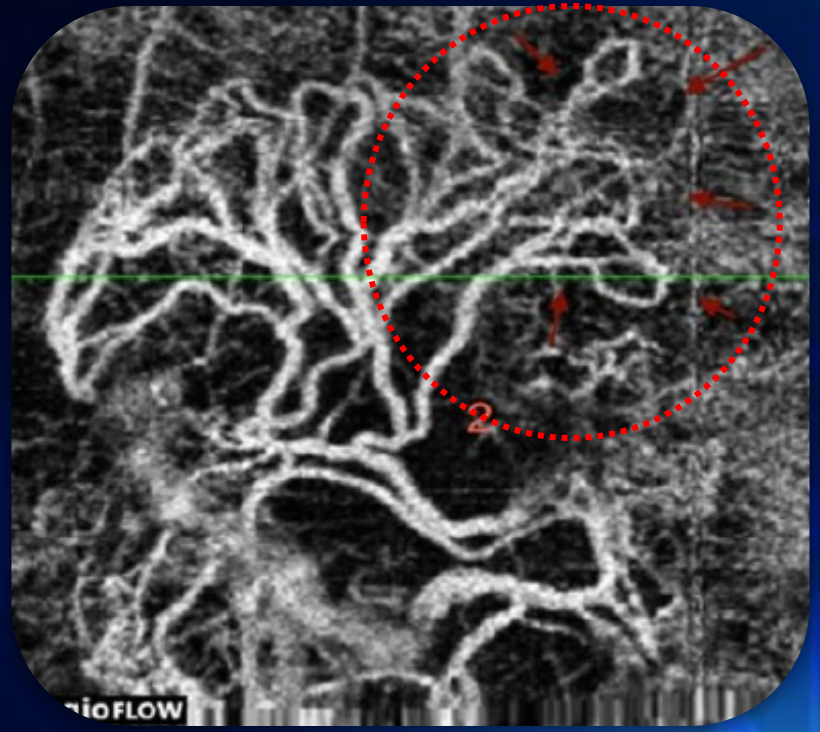
- Large
- Mature vessels (pericytes surrounding endothelial cells
- Resistant to Anti-VEGF

Pericytes are indicator of vessel maturation

Anti - VEGF Therapy



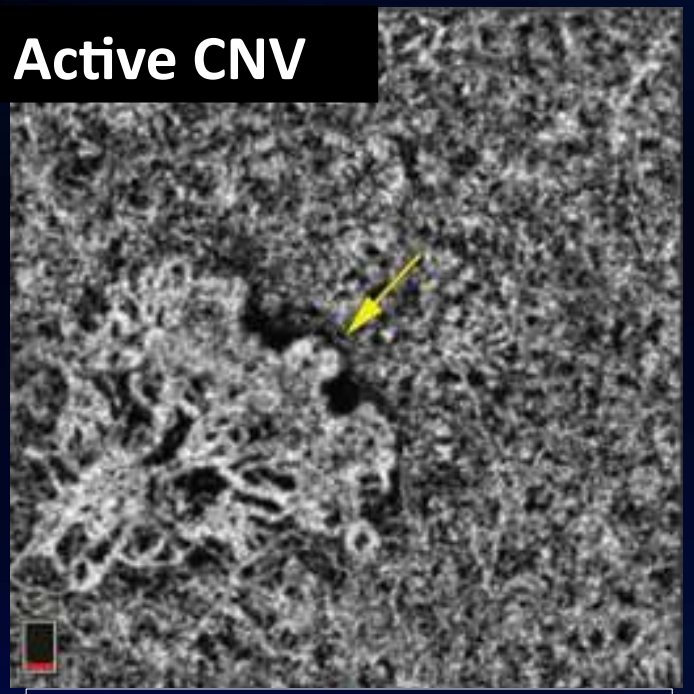
Baseline



Post IV Injection

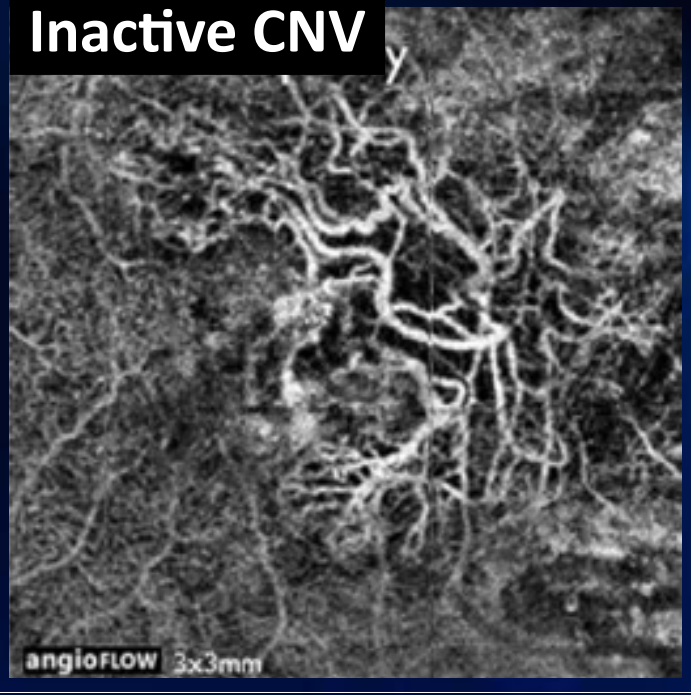
Regression of Anastemosis

Active CNV



Extensive Arborization,
Tiny capillaries , Halo
Looping , Anastomoses

Inactive CNV

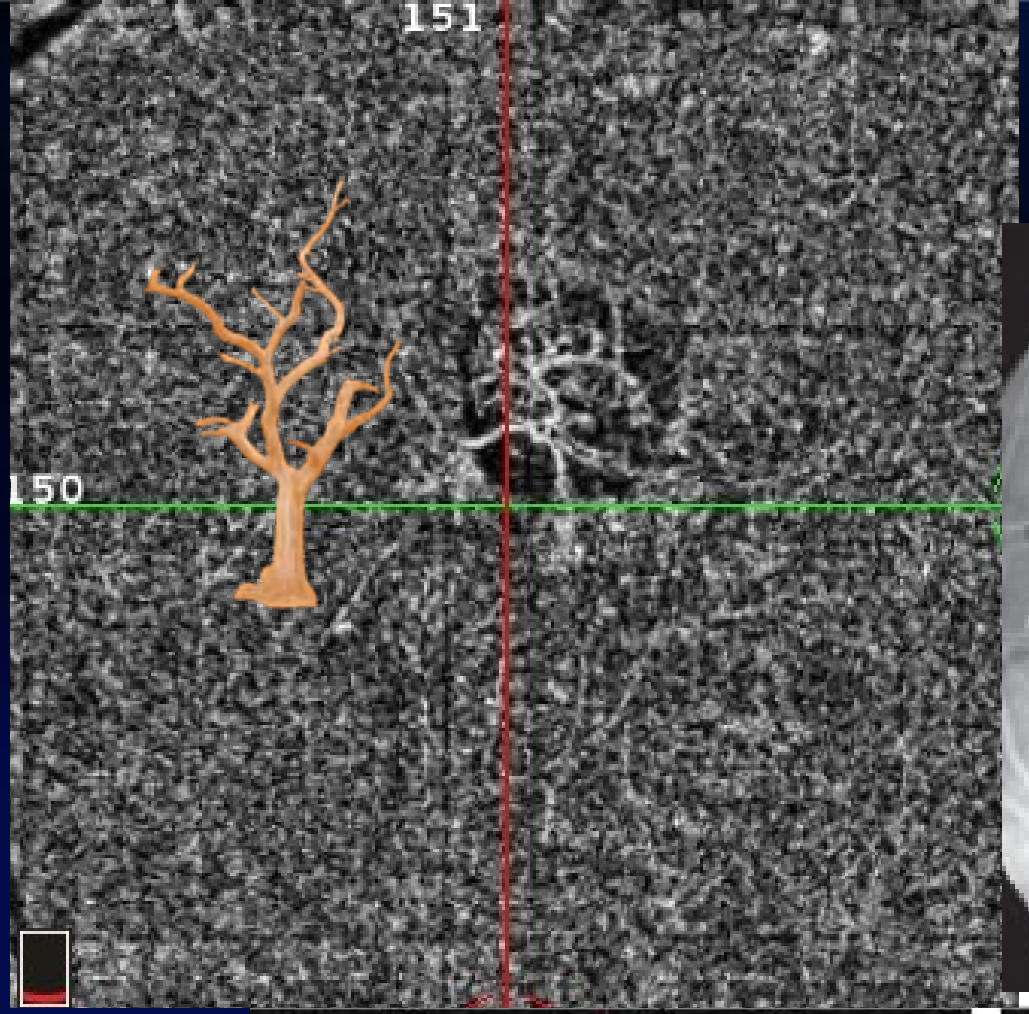


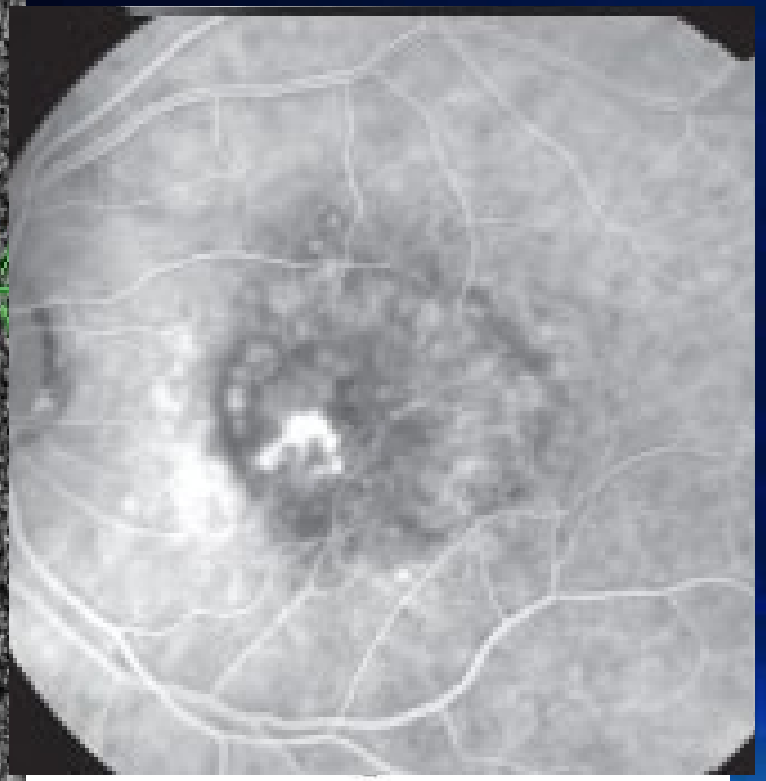
Large linear vessels
Dark spaces , No anastomoses
Decreased density

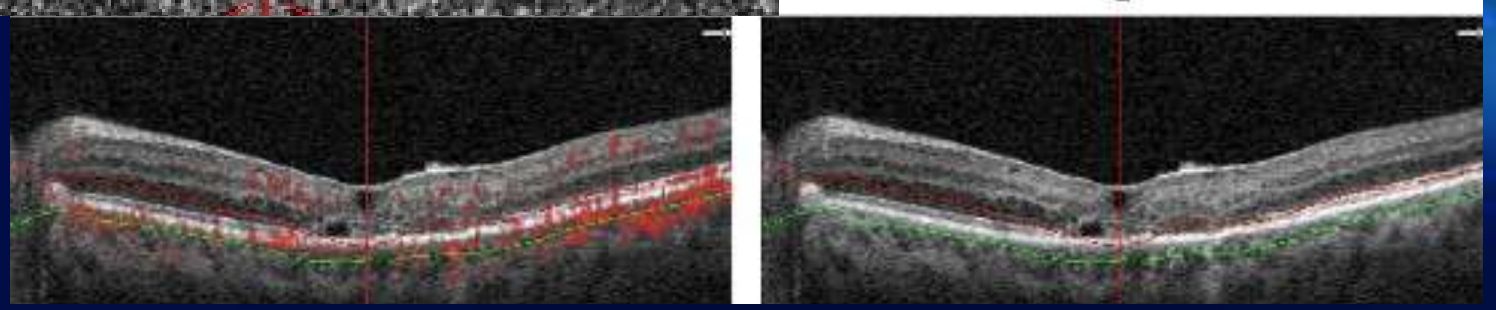
Blooming Tree

Dead Tree

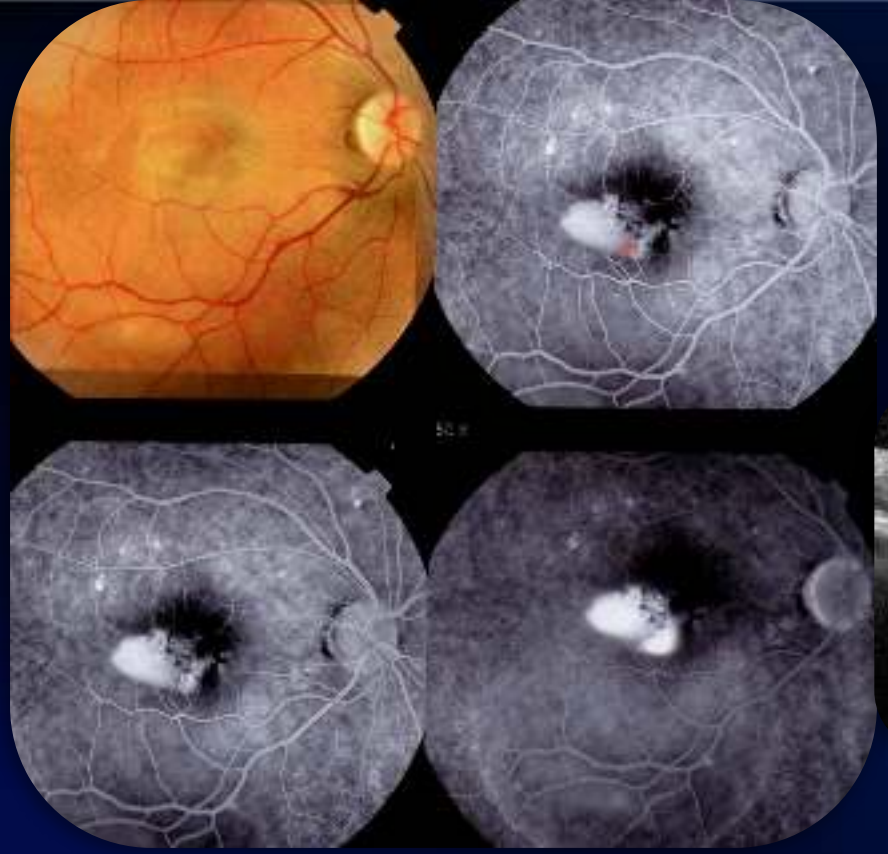
Following repeated IVR (X6)



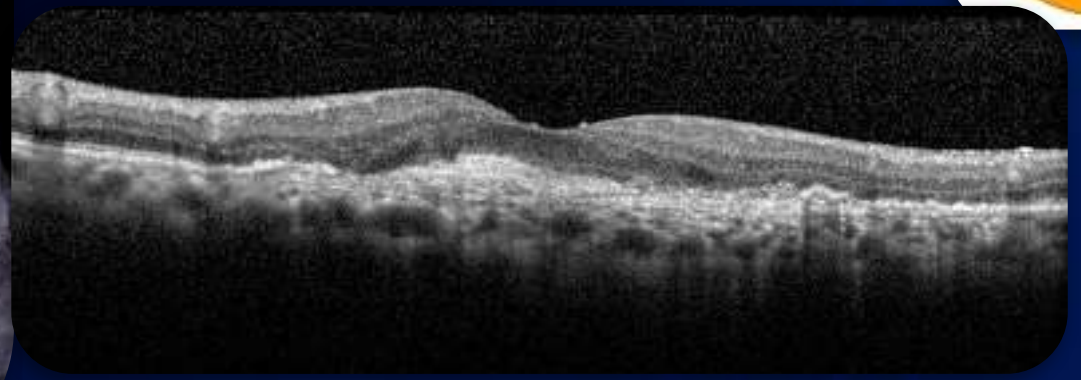




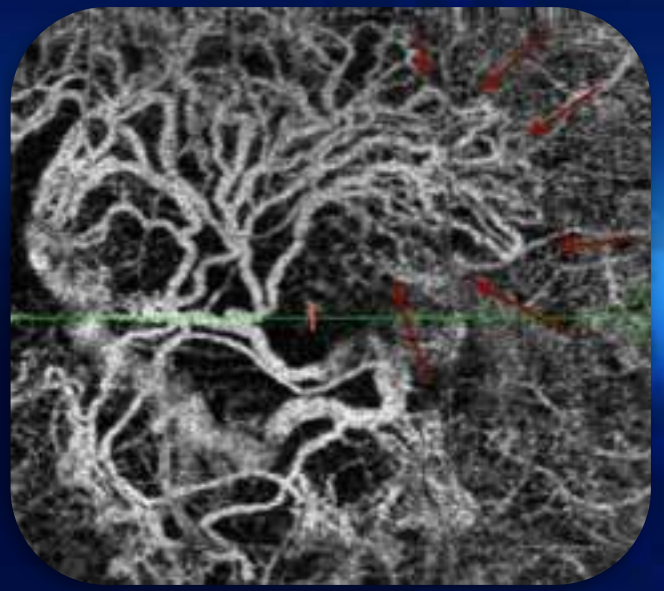
To inject or not to inject ??



Male 76 years old
Anti-VEGF X5
BCVA 0.1

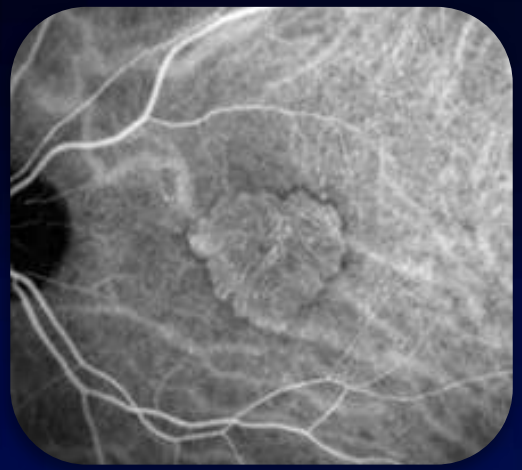


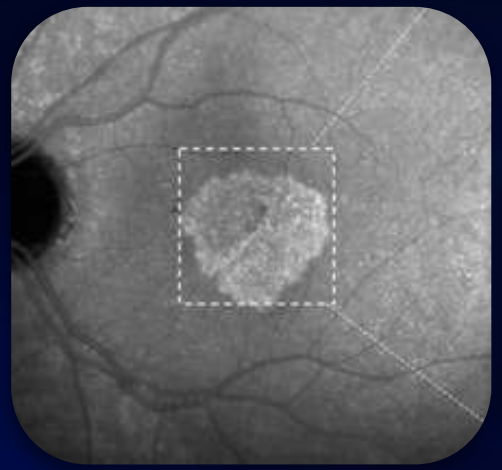
- RPE pump removes fluid as quickly as it leaks.
- Tight outer BRB prevents leakage from type 1 CNV from diffusing through the RPE layer.



NON-EXUDATIVE MNV

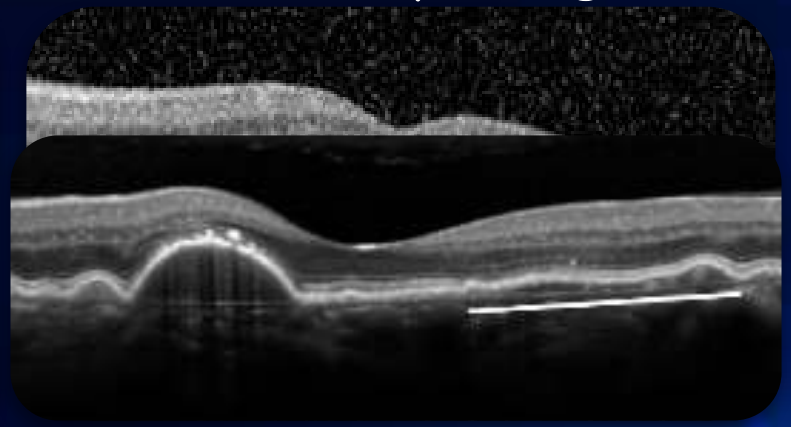
Multi-modal Imaging





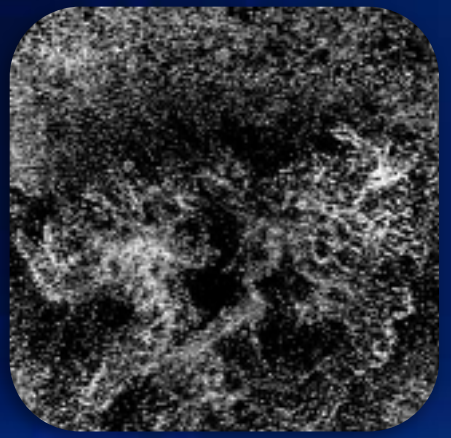
ICGA

SIRE
Double- layers sign

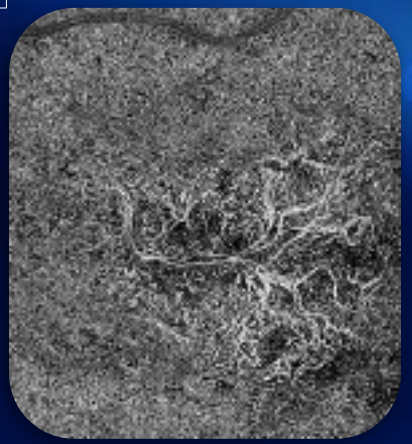


OCT

Type – 1 NV



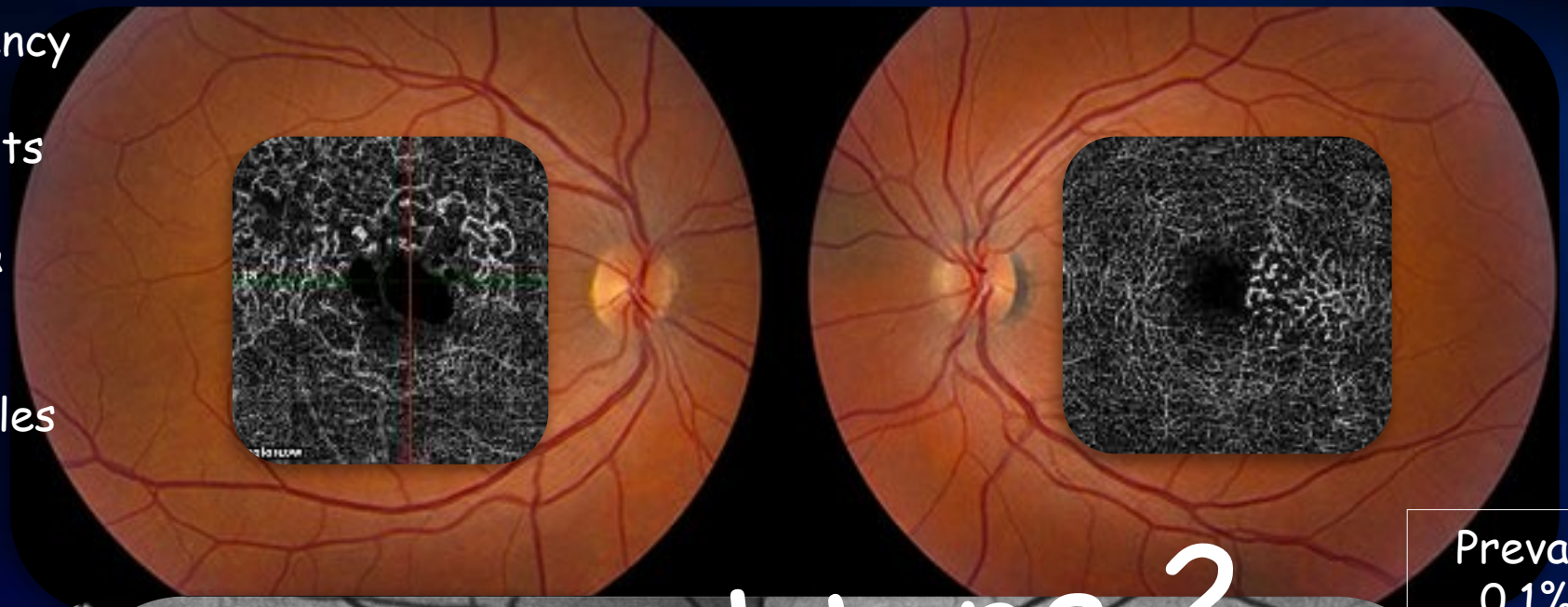
OCTA



25% : quiescent , non-exudative type 1 MNV

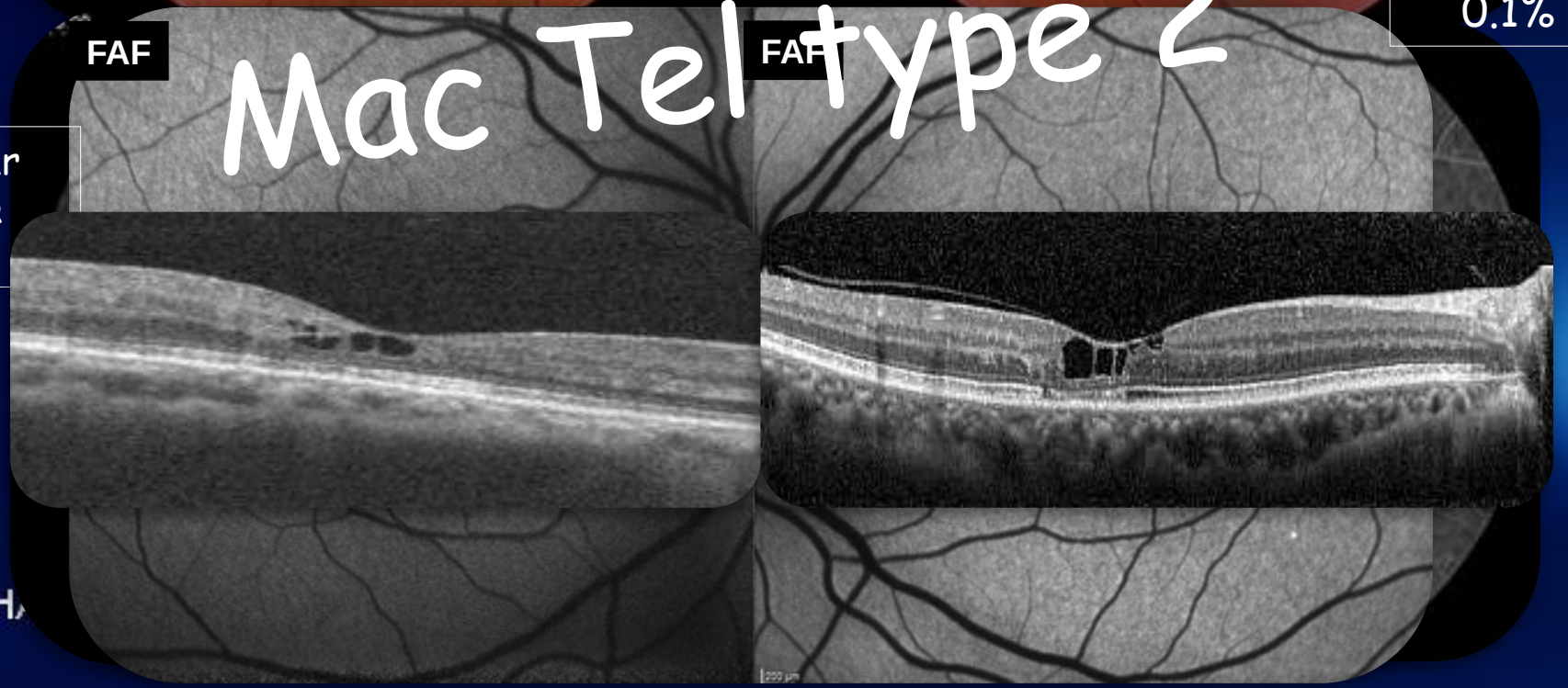
Mac Tel type 2

- Loss of transparency
- Crystalline deposits
- RPE hyperplasia & migration
- Right-angles venules
- Blunted venules



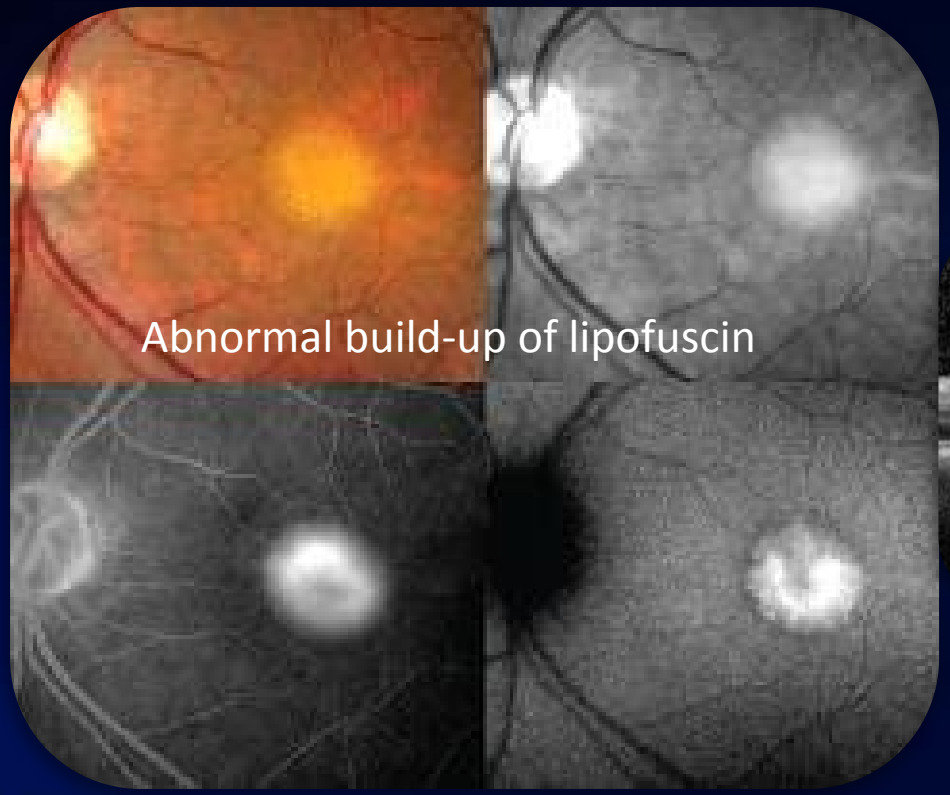
Prevalence :
0.1% , > 40 years

Depletion of macular Pigment (Lutein & Zeaxanthin)

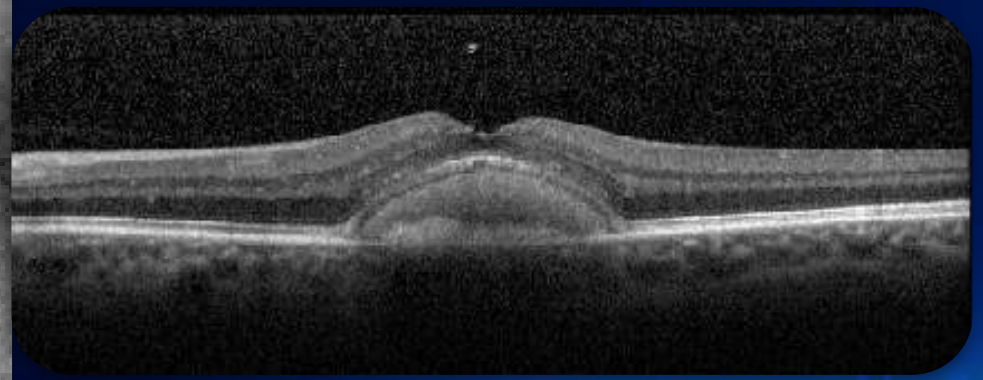


Adult-onset Vitelliform Degeneration

Foveo- macular Vitelliform Dystrophy

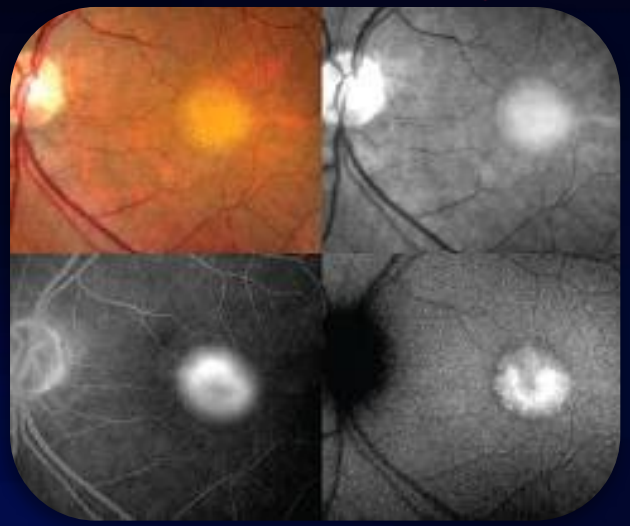


Gass 1974 ; Peculiar Macular Dystrophy
Form of Pattern Dystrophy



Fourth – Sixth decades
Asymptomatic or mild symptoms
Drop of vision : secondary CNV
Misdiagnosed as Wet AMD

THE CHALLENGE



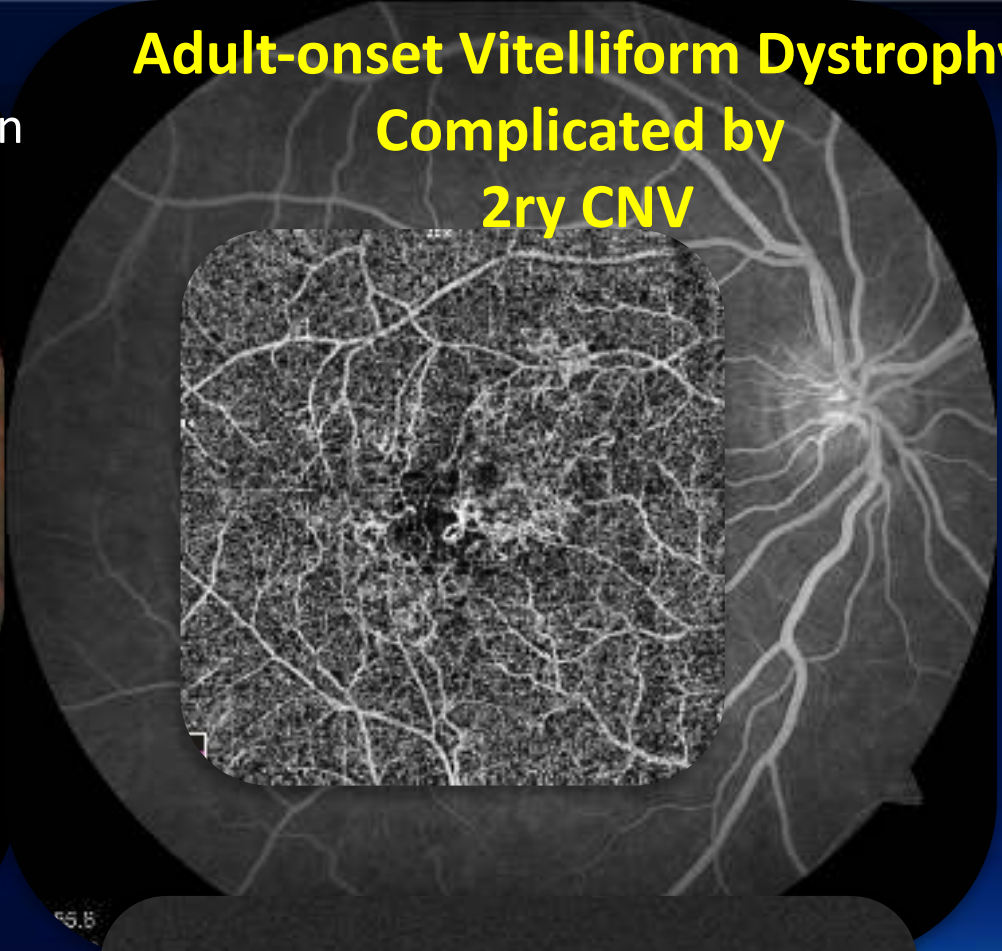
Adult-onset Vitelliform Degeneration

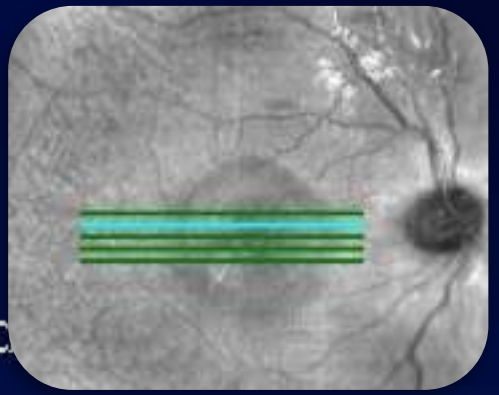
Foveo- macular Vitelliform Dystrophy

Complicated by CNV : 12% in 6-years follow-up.
Change course , management and prognosis .
Diagnostic Challenge , both Vitelliform lesion and CNV are hyper-fluorescent .
Early diagnosis , prompt treatment is mandatory

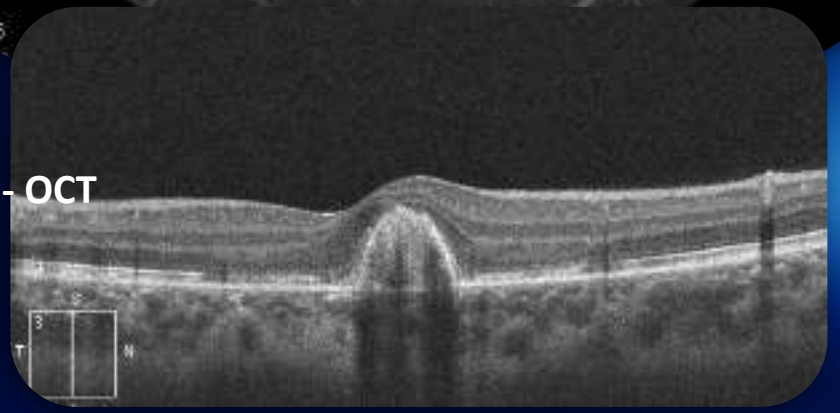
65 years old male , recent drop of vision

Adult-onset Vitelliform Dystrophy Complicated by 2ry CNV





EDI - OCT



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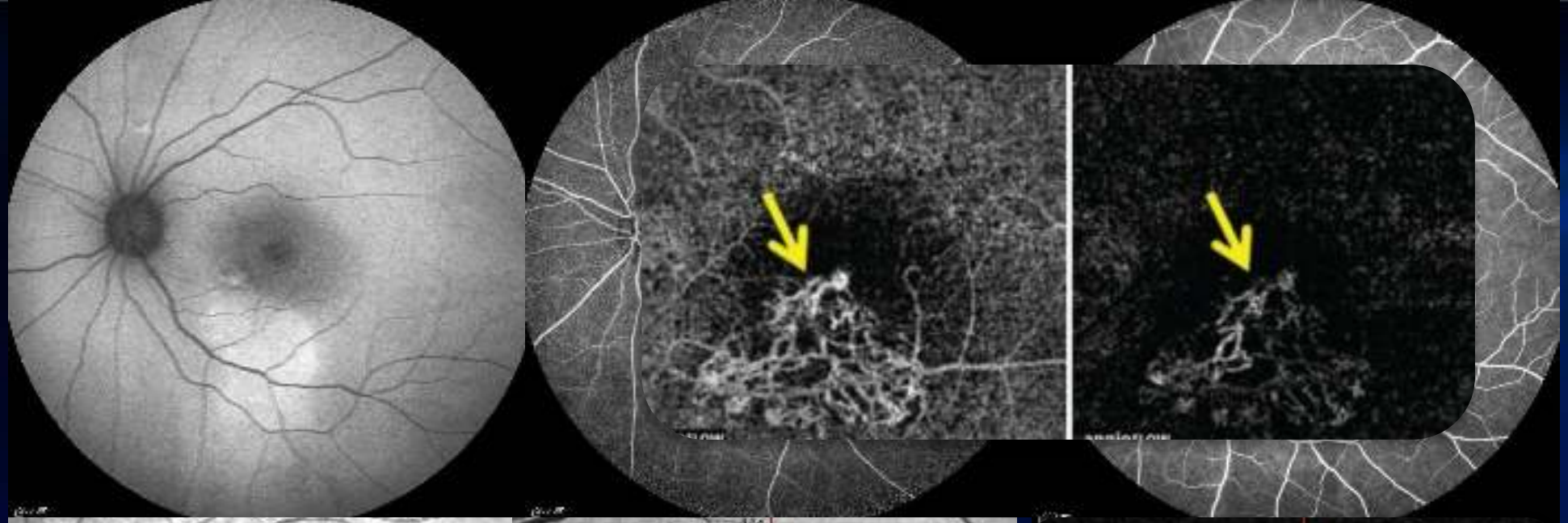

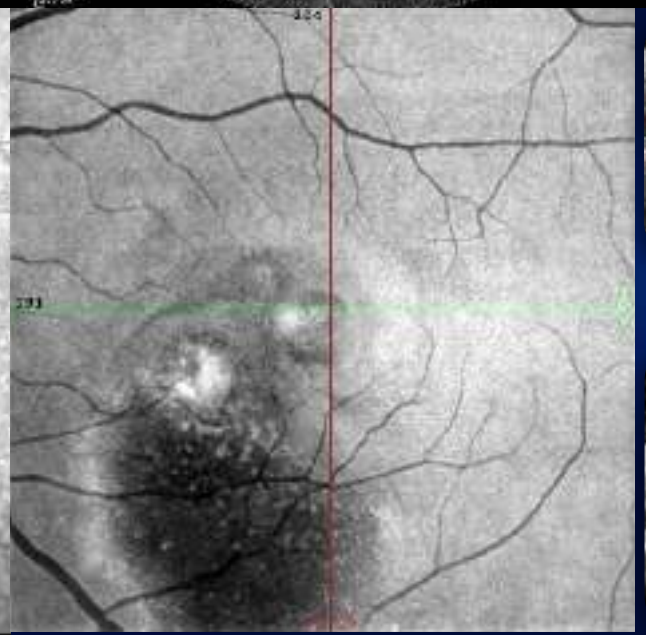

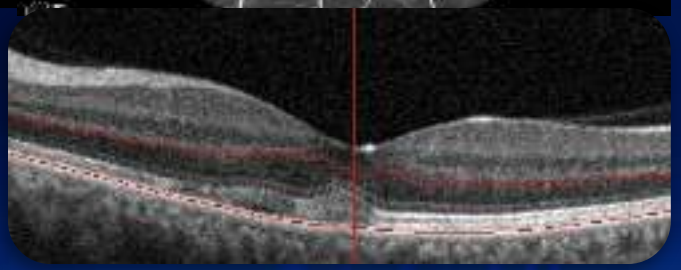

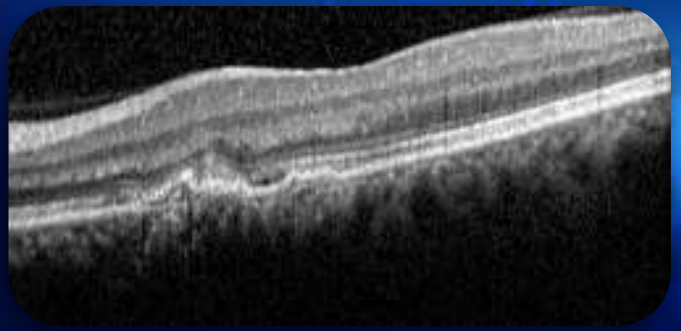

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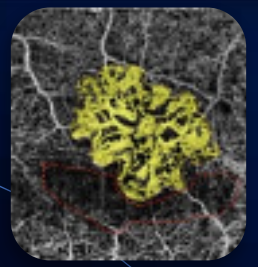
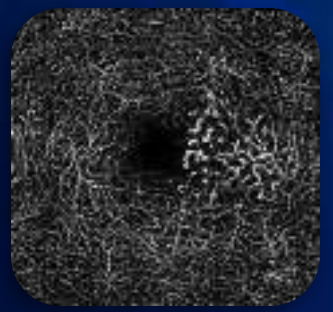
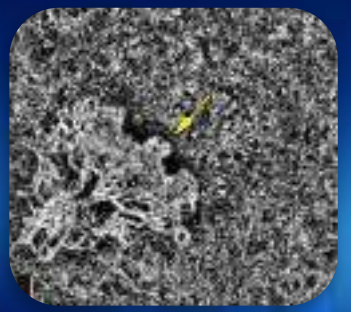
CNV Morphology
Flow area and
Segmentation



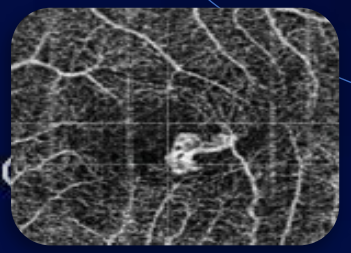
Mimicking
Conditions



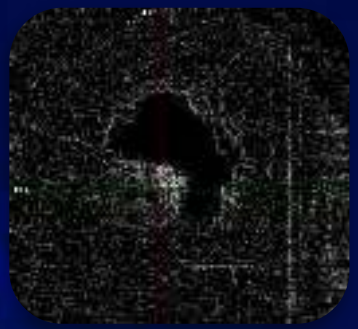
CNV Activity



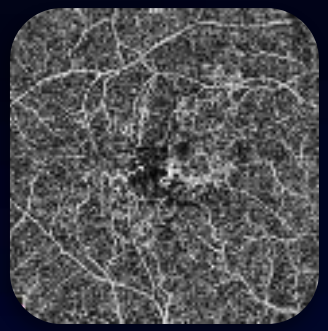
Non-exudative
CNV

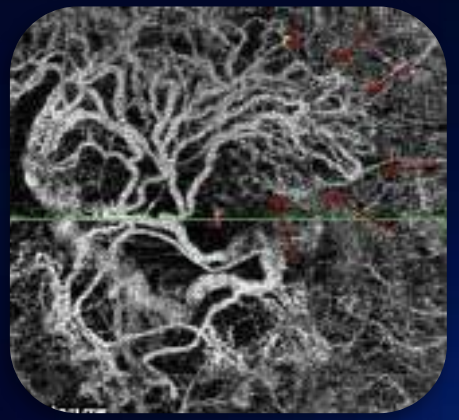


CNV at edge of
GA



2ry CNV Macular
Dystrophy





OCT Angio ADD !

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THANK YOU!

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