

Choroidal Neovascular Membrane in African-American Population



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Abstract

Choroidal neovascularization is a rare finding among dark-skinned populations. In its setting, it is important to include various differentials including polypoidal choroidal vasculopathy. Additional testing may be indicated in order to make the final diagnosis.

Background

Choroidal neovascularization is a major cause of vision loss in the human population, even though rare in African-Americans. Choroidal neovascularization starts from the development of blood vessels that begin in the choroid and cause a break in Bruch's membrane into the sub-RPE/sub-retinal space. It presents as a build-up of blood or serum beneath the RPE. Patients will typically present with loss of vision, metamorphopsia, scotomas, or photopsias. Funduscopic findings include lipid exudation, subretinal fluid/blood, retinal pigment epithelial detachments, or fibrosis. Diagnosis usually includes either OCT imaging, fluorescein angiography, or indocyanine green angiography. In the African-American population, these neovascular patterns can be indicative of polypoidal choroidal vasculopathy.

Case History

A 58 year-old African American male presented to the St. Louis VA with the chief complaint of mildly blurry vision in the left eye. Entering visual acuity was 20/20- OU. All entrance testing was normal. Intraocular pressure was 12mmHg OD and 18mmHg OS. Slit lamp examination revealed 1+ nuclear sclerotic cataracts OU. Dilated fundus examination revealed 0.3 CDR OU. The left eye showed superior temporal and nasal PEDs adjacent to the optic nerve head. OCT was performed which confirmed the findings of PED superior, nasal, and temporal to optic nerve OS. The patient was referred for fundus photography, fluorescein angiography, and indocyanine green angiography. Fluorescein angiography showed pooling late in the areas of the PED around the ONH. ICGA revealed neovascular nets corresponding to areas of the PED.

Differential Diagnoses

1. Age-Related Macular Degeneration
2. Uveal effusion syndrome
3. Vogt-Koyanagi-Harada disease
4. Optic pit with subsequent serous retinal detachment
5. Polypoidal Choroidal Vasculopathy

Discussion

Choroidal Neovascular Membrane:

- Rare in African-Americans
- Study by Pieramici et al found only 1.4% of patients with CNV to be African-American¹

Polypoidal choroidal vasculopathy:

- Pathogenesis largely unknown – abnormality of choroidal circulation
- Controversial if subset of AMD
- Most commonly diagnosed between 60-70 years of age
- Unilateral or bilateral, more common in non-Caucasian populations

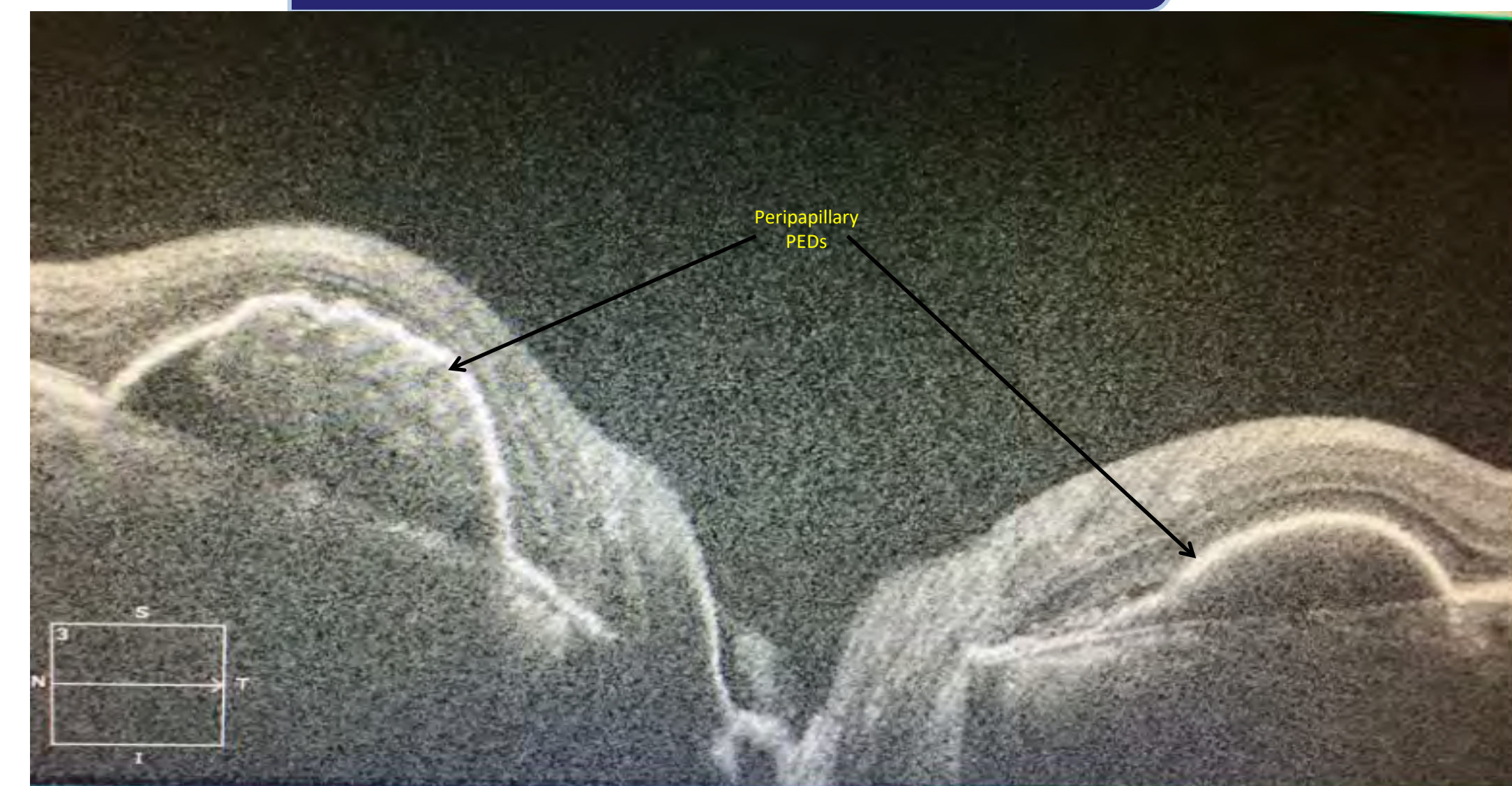
Clinical findings of PCV:

- Orange-red lesions of the RPE, variable in size
- serous and serosanguineous detachments of RPE and neurosensory retina most commonly around the optic nerve or central macula
- Characterized as active or inactive
- Active: PED, subretinal hemorrhage, fluorescein leakage, subretinal fluid, vision loss of 5 or more letters
- Classification: quiescent, exudative, or hemorrhagic

Retinal photos

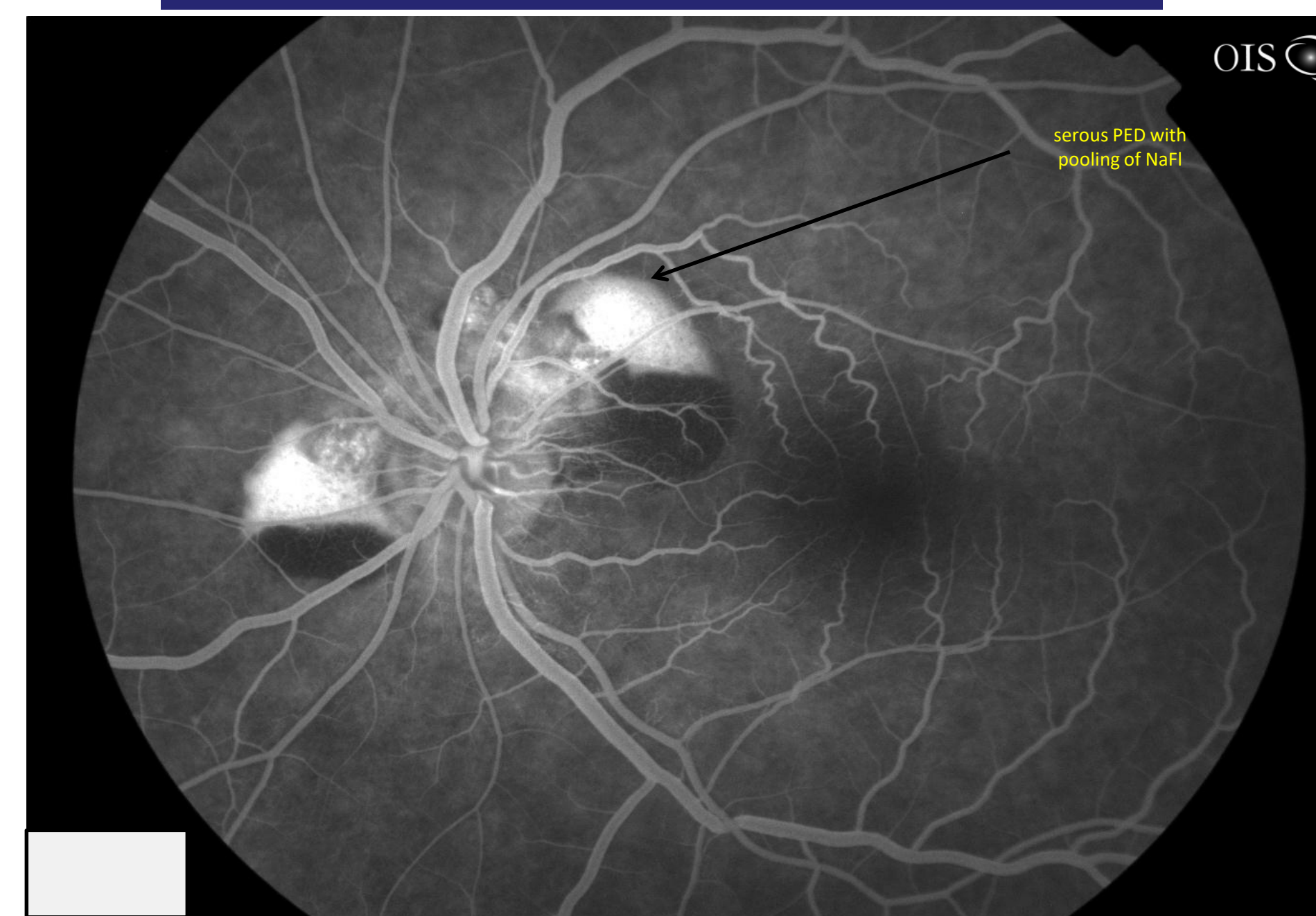


OCT



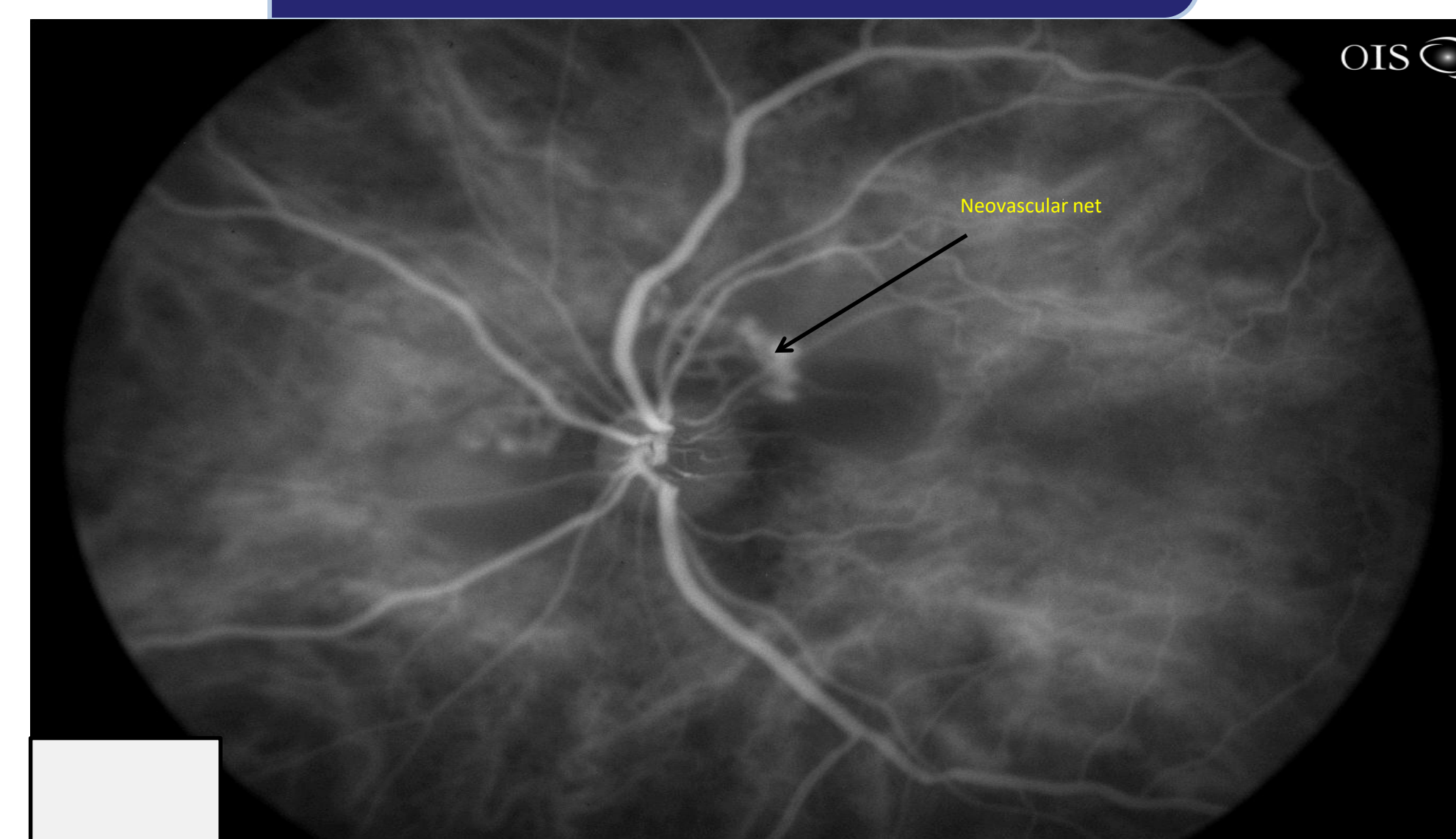
OCT showing juxtapapillary PED with moderate sized heterogeneous serous RPE detachment

Fluorescein Angiography



FA showing serous PED displaying confluent filling and pooling of NaFl at 1:00 and 8:00

Indocyanine Green Angiography



ICG showing juxtapapillary CNVM displaying lacy network at 1:00 and 8:00

PCV Clinical Findings on Ancillary Testing

•OCT findings:

- RPE detachment
- “String of pearls”: hyperreflective area under RPE and above Bruch's
- Dome-like elevations of RPE with underlying moderate reflectivity
- Double layer sign: two hyperreflective lines indicating RPE and Bruch's

•Fluorescein Angiography:

- Difficult to appreciate due to pigment in the fundus obscuring inner choroid
- Branching choroidal vessels

•Indocyanine Green Angiography:

- Absorb/emits near-infrared light which penetrates RPE, increases view of choroidal lesions
- Single or multiple grape-like hyperfluorescent polypoidal lesions with or without branching vascular network

•Orange-red subretinal nodules + hyperfluorescent on ICG → **pathognomonic for PCV**

Treatment

- Thermal Laser Photocoagulation
- Photodynamic Therapy
- Anti- VEGF injections
- Combination Therapy

Everest Trial: Combination therapy and verteporfin PDT monotherapy were superior to ranibizumab monotherapy in the treatment of PCV
 Our patient received a series of Eylea injections spaced six weeks apart.

Conclusion

Though choroidal neovascularization is rare in darkly pigmented populations, it is important to expand the differential diagnoses list when it is detected. In order to make the appropriate diagnosis it is often necessary to order additional ancillary testing including indocyanine green angiography. This can be particularly useful because the best possible treatment option as well as prognosis can change depending on the final diagnosis. It is especially important to consider polypoidal choroidal vasculopathy in the African-American population presenting with choroidal neovascularization in the peripapillary and macular region.

References

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