Intraretinal Crystalline Deposits in Neovascular Age-Related Macular Degeneration

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Abstract

Intraretinal crystalline deposits can present in a variety of conditions, both common and uncommon. This poster discusses a rare case of crystalline deposits related to neovascular ARMD. Crystal deposit differentials and management will be examined.

I. Case History

• Patient demographics
  o 90 year old white male

• Chief complaint
  o Referred for a low vision evaluation to the Eastern Blind Rehabilitation Center
  o Decreased vision from neovascular Age-Related Macular Degeneration (ARMD)

• Ocular, medical history
  o Ocular history:
    ▪ History of neovascular ARMD OU, OD>OS
    ▪ Diagnosed as legally blind
    ▪ History of 5 Lucentis injections OD, 1 Eylea injection OD
    ▪ Bilateral pseudophake
  o Medical history:
    ▪ Chronic renal impairment
    ▪ Impaired fasting glycaemia
    ▪ Sensorineural hearing loss
    ▪ GERD
    ▪ Hypercholesterolemia
    ▪ Coronary Artery Disease
    ▪ Pernicious anemia
    ▪ Dyspnea
    ▪ Atypical chest pain
  o Social history:
    ▪ (-) smoking, drinking, recreational drug use

• Medications
  o Acetaminophen 500mg (Extra Strength) PRN
  o Aspirin 81mg QAM
  o Furosemide 40mg QD
  o Metoprolol 50mg BID
  o Nitroglycerin PRN
  o Omeprazole 20mg QAM
  o Simvastatin 80mg QAM
  o AREDS2 multivitamin BID
II. Pertinent findings

- Clinical
  - BCVA 10/160- OD, 10/100+ OS (Feinbloom) with 9:00 o’clock eccentric view
  - Anterior Segment
    - Mild lower lid ectropion OU
    - 1+ corneal guttatta OU
    - 1+ corneal endothelial pigment
  - IOP – 12mmHg OD, 11mmHg OS
  - Dilated Fundus Exam
    - Lens: PCIOL clear, S/P YAG OU
    - Vitreous: Posterior vitreous detachment OU
    - Discs: C/D ratio 0.35H/V OD, 0.40H/V, healthy rim tissue
    - Vasculature: normal caliber
    - Macula:
      - OD - central edema/thickening and disciform scarring, choroidal neovascular membrane (CNVM)/sub-RPE heme superior to macula, intraretinal heme superior temporal to macula, exudates temporal to macula
      - OS – soft, confluent drusen, calcified drusen, intraretinal crystalline deposits (ICDs) nasal to macula
    - Posterior Pole:
      - OD – flame heme along inferior arcade
      - OS – choroidal nevus 3/4DD in size 3DD inferior temporal to ONH (-) fluid/orange pigment
    - Periphery: flat and intact 360° (-) holes, tears, detachments OU
- Physical
  - None
- Laboratory studies
  - Urinalysis – elevated RBC
- Imaging
  - Posterior segment fundus photos – highly reflective ICDs nasal to macula
  - Posterior segment fundus autofluorescence - highly reflective ICDs nasal to macula
  - Macular scan OCT – highly reflective ICDs in the outer retinal layers

III. Differential diagnosis

- Primary
  - Intraretinal crystals due to neovascular ARMD
- Differentials
  - Renal diseases: oxalosis and cystinosis
  - Tamoxifen
  - Talc Retinopathy
  - Calcified macular drusen
  - Bietti’s crystalline dystrophy
IV. Diagnosis and discussion

- For this particular case of crystalline deposits, many differential diagnoses could be ruled out based on the careful history and location of the ICDs.
- Tamoxifen retinopathy was ruled out as the patient was not using this medication.
- It was clear this patient’s ICDs were not due to talc retinopathy as the crystals were not within the blood vessels, as well as a negative history of drug abuse.
- The Bietti Crystalline Dystrophy clinical presentation can vary from diffuse to regional ICDs of the retina and cornea that appears during the 2nd to 3rd decade of life. This hereditary dystrophy can be ruled out as this patient has a negative history for vision loss at a young age.
- Calcified drusen can be seen as highly reflective deposits of the retina considered to be a manifestation of drusen regression. This patient did present with calcified drusen OS, however, the OCT also shows differentiation of the calcified drusen from ICDs.
- Cystinosis and oxalosis are both diseases of the kidneys that result in crystal deposits throughout the body due to decreased renal function. These deposits are most commonly found at the level of the RPE. No indications of either of these diseases were found in the patient’s urinalysis.
- Although rare, an association between ICDs overlying or appearing adjacent to areas of neovascular ARMD in the outer layers of the retina has been established. As all of the differentials for ICDs were ruled out and there is a positive history of neovascular ARMD, there is a strong likelihood this interesting finding is due to this correlation.

V. Treatment, management

- The etiology of the ICDs associated with neovascular ARMD is unclear, but may represent the degeneration of Mueller cells.
- These deposits are relatively a benign finding, therefore monitoring of the condition is reasonable.
- Communication with the patient’s primary care physician about careful monitoring of his/her patient’s renal function is necessary, as it may play a role in the crystalline appearance.
- Very little literature and research about crystalline deposits associated with neovascular ARMD was found, making this an intriguing case.

VI. Conclusion

- While ICDs may be a benign finding correlated with neovascular ARMD, it is important to consider the detrimental differentials known to cause the crystalline appearance in the retina.
Bibliography


