Acute Macular Neuroretinopathy Associated with Acute Promyelocytic Leukemia

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I have no financial interests or relationships to disclose.
Summary

- **Purpose:** To describe the first reported case of AMN associated with acute promyelocytic leukemia (APL) in a young Asian-Indian male.

- **Observations:** We review the clinical and multimodal imaging findings in our patient that are characteristic of AMN.

- **Conclusions and Importance:** Ophthalmologists should be aware of leukemia associated with AMN and consider hematologic work-up when assessing patients with AMN without the prototypical history or risk factors.
Case

- 37 y.o. M no past ocular history referred to retina clinic for evaluation of scotoma in right eye
- Recent hospitalization with new diagnoses of APL after presenting with fatigue and fever in setting of pancytopenia
  - APL treatment: ATRA, idarubicin, arsenic trioxide
  - Ophthalmology initially consulted as inpatient for papilledema secondary to ATRA therapy
  - Hospital course had been complicated by DIC, pneumonia, ARDS
<table>
<thead>
<tr>
<th></th>
<th>OD</th>
<th>OS</th>
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<tbody>
<tr>
<td>VA (sc)</td>
<td>20/20</td>
<td>20/20</td>
</tr>
<tr>
<td>Pupils</td>
<td>4-&gt;3 mm, no rAPD</td>
<td>4-&gt;3 mm, no rAPD</td>
</tr>
<tr>
<td>IOP</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>EOM</td>
<td>Full</td>
<td>Full</td>
</tr>
<tr>
<td>Visual Field</td>
<td>Full</td>
<td>Full</td>
</tr>
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<td></td>
<td>OD</td>
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<tr>
<td>----------------</td>
<td>-----------------------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Lids/Lashes</td>
<td>Unremarkable</td>
<td>Unremarkable</td>
</tr>
<tr>
<td>Conjunctiva/Sclera</td>
<td>White, quiet</td>
<td>White, quiet</td>
</tr>
<tr>
<td>Cornea</td>
<td>Trace PEE</td>
<td>Trace PEE</td>
</tr>
<tr>
<td>AC</td>
<td>Deep, quiet</td>
<td>Deep, quiet</td>
</tr>
<tr>
<td>Iris</td>
<td>Round</td>
<td>Round</td>
</tr>
<tr>
<td>Lens</td>
<td>Clear</td>
<td>Clear</td>
</tr>
<tr>
<td>Vitreous</td>
<td>Clear</td>
<td>Clear</td>
</tr>
<tr>
<td>DFE</td>
<td>Intra-retinal hemorrhage superonasal to the macula and superior to the disc, pigment mottling within the macula</td>
<td>Intra-retinal hemorrhage nasal to the disc, pigment mottling within the macula</td>
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Dilated Fundus Exam

A: Right eye
B: Left eye
Right eye, OCT Macula

- Thinning of the outer nuclear layer and disruption of the ellipsoid zone corresponding to the lesions seen on NIR
Left eye, OCT Macula

- Thinning of the outer nuclear layer and disruption of the ellipsoid zone corresponding to the lesions seen on NIR
Right eye, OCT-A, deep capillary plexus

- Loss of the deep capillary plexus with attenuation of signal on both the enface and cross-sectional images in the regions corresponding to the NIR defects
Proposed Mechanisms

- Thrombocytopenia and anemia $\rightarrow$ focal ischemia at level of deep capillary plexus
- Increased leukoblasts due to APL $\rightarrow$ hyperviscosity $\rightarrow$ venous stasis $\rightarrow$ exacerbation of underlying hypoxia
- DIC $\rightarrow$ thrombotic microangiopathy $\rightarrow$ retinal microvascular ischemia
Conclusions

- Include AMN in differential for leukemic patient with vision loss and scotoma
- Consider hematologic work up for patients with AMN that lack other commonly associated risk factors
- OCT-A can be useful when considering AMN diagnoses for assessing ischemia within DCP
References