Ultra-Widefield fluorescein angiography of patients with biopsy proven sarcoidosis and uveitis.

The Retina Society
Cole Eye Institute

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Financial Disclosures

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On widefield angiography, biopsy-proven sarcoidosis patients display a wide array of findings.

101 sarcoid patients were evaluated with 79 having biopsy-proven sarcoidosis.

Biopsy-proven patients demonstrated retinal patterns of focal or diffuse leakage, as commonly understood.

However other biopsy-proven patients demonstrate profound nonperfusion or occult choroidal lesions.

The treating clinician should bear in mind this diversity of presentation when considering workup and treatment of uveitis patients.
Purpose

- Although sarcoidosis is thought to have a distinctive profile on posterior imaging, patients often do not have confirmatory biopsies.
- This paper identifies common ultra-widefield FA patterns in those with positive biopsies in order to assist the workup of uveitis patients based on the FA.

El Ameen JOVR 2015
Duker Ophthalmology 1998
Dyer Cureus 2016
Methods

- Retrospective IRB approved study of 101 patients
- 79 patients were identified with biopsy proven positive sarcoidosis
- 24 of these patients were found to have widefield retinal imaging suggestive of posterior segment involvement
- These patients were categorized
  - (1) diffuse leakage (greater than one quadrant)
  - (2) focal leakage (focal leakage less than or equal to one quadrant)
  - (3) non-perfusion
  - (4) choroidal lesions (unremarkable fluorescein angiogram as well as distinctive punched out hypocyanescent spots on indocyanine green testing)
- Optic nerve hyperfluorescence was also evaluated
Results

- 8 patients (32%) had a hyperfluorescent optic nerve, including all 5 of the diffuse leakage patients.
- 22 patients (88%) were undergoing treatment with prednisone or immunomodulatory systemic therapy.

<table>
<thead>
<tr>
<th>Fluorescein Angiographic Appearance</th>
<th>Patient Count</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Diffuse Leakage</td>
<td>5</td>
<td>20.8</td>
</tr>
<tr>
<td>Focal Leakage</td>
<td>13</td>
<td>54.2</td>
</tr>
<tr>
<td>Retinal Non-perfusion</td>
<td>3</td>
<td>12.5</td>
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<tr>
<td>Choroidal Lesions</td>
<td>3</td>
<td>12.5</td>
</tr>
</tbody>
</table>
Results – Diffuse Leakage

(A) FA demonstrates diffuse leakage throughout retina, with predilection for perivenular phlebitis.

(B) Fundus photography with mild attenuation of retinal vessels and inferior exudates.

(C) OCT demonstrating epiretinal membrane across the fovea.
Results – Focal Leakage

(A) FA demonstrates focal leakage in the right papillomacular bundle.

(B) Fundus photography with unremarkable fundus appearance.

(C) ICG does not reveal significant choroidal pathology in the area of leakage.

(D) OCT features a small pigment epithelial detachment and otherwise attached retina.

(E) OCTA demonstrating no flow voids in the parafoveal retinal vasculature. There is a small triangular area of flow void in the choriocapillaris slab.
Results – Nonperfusion

(A) FA demonstrates nonperfusion to majority of retina.
(B) Fundus photograph demonstrating profound vascular attenuation.
(C) FA with attention paid to the macula, demonstrating very narrow area of perfusion surrounding the optic nerve.
(D) OCT with signs of ischemia and atrophy of inner retina with loss of organization of outer retina, as well as ERM.
(E) OCTA demonstrating significant flow voids throughout the macula.
Results – Choroidal Lesions

(A) FA demonstrates minimal retinal vessel leakage, but hyperfluorescent staining of punched out lesions in the retina.

(B) Fundus photograph presenting discrete punched out chorioretinal lesions with pigment mottling.

(C) OCT of healthy appearing macula and fovea without intraretinal fluid.

(D) OCTA centered inferiorly demonstrates flow voids in the choriocapillaris slab.
Which is the patient with sarcoid?

All of these patients have biopsy proven sarcoidosis.
Conclusions

- Biopsy-proven sarcoidosis patients display a wide array of findings.
- On UWFA, this can be either focal or diffuse leakage, as commonly considered.
- But sarcoid patients can also present with profound nonperfusion or occult choroidal lesions.
- The treating clinician should bear in mind this diversity of presentation when considering workup and treatment of uveitis patients.