Optical Coherence Tomography Angiography of Brachytherapy Induced Radiation Retinopathy in Choroidal Melanoma Patients

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Purpose:
To report Optical Coherence Tomography Angiographic (OCT-A) findings on choroidal melanoma patients with radiation retinopathy induced by brachytherapy.

Design:
Retrospective observational case series.

Materials and Method:
OCT angiography vessel density analysis using Optovue AngioAnalytics software on choroidal malignant melanoma patients with radiation retinopathy induced by brachytherapy.

- **Patients**
  - Total number: 10
  - Sex: M/F= 4/6
  - Race: All Caucasians
  - Age: mean 67 (56-79)

Result:

<table>
<thead>
<tr>
<th>Severity of RR</th>
<th>Mild: 3 cases</th>
<th>Moderate: 6 cases</th>
<th>Severe: 1 case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vessel density</td>
<td>Mean: 38.2%</td>
<td>Mean: 39.8%</td>
<td>Mean: 37.1%</td>
</tr>
<tr>
<td>Average CFT</td>
<td>717 µm (597-564)</td>
<td>720 µm (570-580)</td>
<td>714 µm (676-689)</td>
</tr>
<tr>
<td>OCT</td>
<td>None to minimal CME</td>
<td>Moderate CME</td>
<td>Severe CME</td>
</tr>
</tbody>
</table>

Table 1: Severity of radiation retinopathy

- In 10 eyes with radiation retinopathy, OCT-A showed an overall reduction of 6.41% vessel density in superficial layer and 9.65% in deep layer of the retina in 6x6mm macular scan when compared to the opposite eye.

Conclusion:
- Vascular density reduction of 9.35% in superficial and 10.34% in deep retinal layer in parafoveal 3mm circular section.
- In 3 early RR patients without macular edema on OCT, microvascular changes, capillary non-perfusion and vascular density changes were successfully identified by OCTA.

Financial interest disclosure:

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