Eyes from a normal controls, DM patients without DR, NPDR patients, and PDR patients, were analyzed using the described algorithm (Table 1).

Table 1: Subject characteristics

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>DM without DR</th>
<th>NPDR</th>
<th>PDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (± std)</td>
<td>36.0 ± 11.7</td>
<td>62.4 ± 5.9</td>
<td>59.0 ± 7.1</td>
<td>45.6 ± 15.8</td>
</tr>
<tr>
<td>Patients Analyzed (Male : Female)</td>
<td>5 (1 : 4)</td>
<td>7 (3 : 4)</td>
<td>9 (6 : 3)</td>
<td>5 (2 : 3)</td>
</tr>
</tbody>
</table>

4 of the 26 eyes analyzed were excluded: 3 due to regions of very low OCTA signal in the image, leading false large intercapillary areas and 1 due to high noise in the region of the FAZ, leading to wrongly detected vessels. Example output images are shown in Figure 2.

For the quantitative analysis of intercapillary area, the mean of the largest 10 and 20 areas, either including or excluding the FAZ, contained within a 0.75 mm radius centered on the FAZ, were computed. The cohort statistics are summarized in Figure 3 and Table 2. The results are in accordance with previous work, however the presented method is fully automatic and more sensitive to smaller changes than density and total non-perfused area based methods as explained in Figure 4.

Table 2: Repeatability computed as coefficient of variation (CV) for the 5 eyes (1 normal, 2 NPDR, and 2 PDR) having two independent OCTA acquisitions

<table>
<thead>
<tr>
<th></th>
<th>20 with FAZ</th>
<th>20 without FAZ</th>
<th>10 with FAZ</th>
<th>10 without FAZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV</td>
<td>0.2%-6.7%</td>
<td>0.3%-11.0%</td>
<td>0.2%-8.8%</td>
<td>0.2%-16.2%</td>
</tr>
</tbody>
</table>

Further remarks about the study:
- Analysis of only 3x3mm field of views (larger areas proportionally lower A-scan sampling density, making individual vessels hard to resolve and automatic segmentation difficult in pathology)
- Motion correction could further improve results (in this study no correction for vessel discontinuity due to patient motion)

Limitations of the study:
- Small cohort sized, lack of age-matched normals
- Evaluation of data only from a single prototype system

Conclusions
The means of the 10 and 20 largest intercapillary areas, either including or excluding the FAZ, are useful metrics for identifying disease status in patients with DM and DR.

References

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