Lowering of IOP by Improved Drainage through the Ciliary Muscle

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INTRODUCTION

The ciliary muscle CM serves three important functions, all of which contribute to IOP. 1) It is a key component in accommodation; 2) It is the first structure along the pathway of uveoscleral drainage of aqueous humor and it provides resistance to this drainage; 3) It connects to the scleral spur and when contracted it maintains patency of the collapsible Schlemm’s canal (SC) to directly affect trabecular outflow facility.

Our working hypothesis is that the CM mediates resistance in the aqueous humor drainage pathways by way of its dynamic movements as it maintains various accommodative states. Thus voluntary CM contractions and relaxations should facilitate outflow through the uvea as well as the trabecular meshwork and lower IOP voluntarily.

METHODS

TESTS

Measurement

- Non-accommodating: 0 diopters
- Accommodating: 3 diopters
- Alternating accommodation: 0 diopters, 3 diopters alternating at 1 min intervals

MATERIALS

Grand Seiko Auto-refractor
Zeiss Cirrus OCT

RESULTS

 change in IOP (right eyes)

#### Pupil diameter (mm)

<table>
<thead>
<tr>
<th>Group</th>
<th>CCT (mm)</th>
<th>AC depth (mm)</th>
<th>AC diameter (mm)</th>
<th>angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 yo</td>
<td>0.57</td>
<td>3.22</td>
<td>12.08</td>
<td>46.2</td>
</tr>
<tr>
<td>40 yo</td>
<td>0.56</td>
<td>2.92</td>
<td>12.05</td>
<td>37.8</td>
</tr>
<tr>
<td>60 yo</td>
<td>0.54</td>
<td>2.67</td>
<td>11.94</td>
<td>34.5</td>
</tr>
</tbody>
</table>

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REFERENCES