BIOMETRY OF THE DOMINANT EYE
– variations in eye ball diameters and eye dominance of healthy adults.
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Motivation:
Eye dominance has primary role in binocular functionality. Despite there is many researches about psychophysical aspect of eye dominance, we found insufficiency of investigation which examine eye dominance in biometric aspect. In our work we concentrate on myopic patients, with the same refractive error in both eyes and with anisometropia. We supposed that eye dominance might be connected with refractive error and biometric differences in dominant and non-dominant eye.

Purpose:
- To investigate the relation between eyesight dominance and biometric differences in dominant and non-dominant eye in myopic patients
- To present new in vivo ultrasonography methodology.

Participants:
- Healthy young adults, Age: 18–40 y
- Free from eye surgery, amblyopia, strabismus and other
- Visual acuity for distance and near: 0.9 or better for each eye.

Results:

<table>
<thead>
<tr>
<th>Analyzed groups:</th>
<th>D-N</th>
<th>Difference in Refractive Error between Dominant Eye and Non-dominant eye less than 0.75 Dptr in Spherical Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-N n=21</td>
<td></td>
<td></td>
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<tr>
<td>Right eye dominance</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Left eye dominance</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Average Age</td>
<td>24.3</td>
<td></td>
</tr>
<tr>
<td>Sphere of Spherical Equivalent of the right eye</td>
<td>-3.68 ± 1.04 D</td>
<td></td>
</tr>
<tr>
<td>Sphere of Spherical Equivalent of the left eye</td>
<td>3.64 ± 0.93 D</td>
<td></td>
</tr>
</tbody>
</table>

- The assumption of normality was tested with Shapiro-Wilk test.
- The difference between dominant and non-dominant eye was tested with one-way ANOVA.

Methods:
Eye dominance was tested with three methods:
1. The Miles test – a subjective test for distance
2. The convergence near-point test – an objective test for near
3. The Porta test – a subjective test for near

Conclusions:
- Eye dominance correlate with axial length and intraocular pressure.
- 34/39 cases had more myopic dominant eye. At 10/34 difference were higher than 0.75 Dptr in Spherical Equivalent.
- More myopic eyes had higher intraocular pressure.
- In groups: Right Eye Dominant (24 subjects) and Left Eye Dominant (15 subjects), dominant eye had higher refractive error, longer axial length and longer anterior and posterior segments.
- Difference in eye intraocular pressure between dominant and non-dominant eye can influence axial length.
- The most significant result we found in anterior segment in Right Dominant group p=0.058
- There is no correlation between eye and hand dominance.

References: