Iuxtapapillary microperimetry in ocular hypertension

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Introduction

Photoreceptors are normally present in peripapillary area. Peripapillary atrophy is a zone where photoreceptors are not represented. Glaucmatous neuropaticopathy can also present in some cases a typical area of atrophy (beta peripapillary atrophy).

Iuxtapapillary microperimetry is a psychofunctional test that analyzes retinal sensitivity in a very restricted area. For a good reliability of exam is necessary to well pinpoint the optic disc rim and the eventual peripapillary atrophy. 36 radial stimuli III Goldmann, strategy 4-2, white field. Stimulus duration 200 ms, 3 stimulus per radium Distance from optic rhyme of first stimulus 0.1° Distance from stimulus 0.3°.

Materials and Methods

We examined 18 eyes from 9 subjects affected by ocular hypertension*, 18 eyes of 9 healthy subjects, 8 eyes of 4 glaucomatous patients. All patients underwent a Standard acromatic perimetry, color fundus photograph, peripapillary microperimetry

* According the definition of the European Glaucoma Society.

Results

Mean total sensitivity was 11.40 dB in control group, 9.72 in ocular hypertension group and 5.55 in glaucomatous patients. Mean temporal, nasal, superior and inferior sensitivity was respectively 7.76, 14.8, 10.63 and 12.30 dB in control group, 5.71, 13.82, 9.68, 9.76 dB in hypertensive group and 1.93, 9.72, 5.3, 5.88 dB in glaucomatous patients. All three groups shown a statistically significative difference between global sensitivity and nasal and temporal (p<0.001). Mean sensitivity difference between control and hypertensive group was not statistically significative in all sectors, except for inferior: control 12.30dB, hypertensive 9.76dB, p=0.01 (5% rule*).

Conclusions

White to white perimetry remains the gold standard in glaucoma diagnosis and follow up. Only non conventional perimetries can detect very early glaucoma damages (preperimetric glaucomas).

Microperimetry have a large employ in macular diseases, allowing a direct visualization of anatomic area during the exam. In glaucoma management at the moment it has a pure speculative role of clinical research. Advantage of microperimetry may be the chance of study a very small defect that standard perimeter could not detect because of his stimulus pattern.

Iuxtapapillary area was split in four quadrants: superior from IX to III, nasal from XII to VI, inferior from III to IX and temporal from VI to XII. We analyzed mean sensitivity (dB) of whole peripapillary area (360°), and in each quadrant.

<table>
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<tr>
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<th>TEMPORAL</th>
<th>NASAL</th>
<th>SUPERIOR</th>
<th>INFERIOR</th>
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<tbody>
<tr>
<td>Ocular hypertension</td>
<td>9.72dB</td>
<td>5.71dB</td>
<td>13.82dB</td>
<td>9.66dB</td>
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<td>Control group</td>
<td>11.30dB</td>
<td>7.56dB</td>
<td>14.86dB</td>
<td>10.63dB</td>
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<td>Glaucmatous subjects</td>
<td>5.34dB</td>
<td>1.30dB</td>
<td>9.72dB</td>
<td>5.26dB</td>
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</tbody>
</table>

References


Direct microperimetry of alpha zone and beta zone parapapillary atrophy. Renesch F, Jonas J.B.
Department of Ophthalmology, Medical Faculty Mannheim of the Ruprecht-Karls University Heidelberg, Germany.

The mean stimulus attenuation values in the beta zone of parapapillary atrophy measured 1.00 (SD 2.54) dB, corresponding to an approximate score.