Purpose

To study the associations of ocular hypertension (OHT) and open-angle glaucoma (OAG) with the different components of the metabolic syndrome.

Methods

- The ALIENOR (Antioxydants, Lipides Essentiels, Nutrition et maladies Oculaires) Study is a population-based epidemiological study on nutrition and age-related eye diseases. It also aims at assessing the association of eye diseases with genetic, vascular and metabolic factors.
- 963 residents of Bordeaux (France), aged 73 years or more, were included in 2006-2008.
- Glaucoma was classified according to the criteria of the ISGEO Group (2).
- Retinal photographs interpreted in double by two trained technicians and adjudicated by a specialist when inconsistent.
- Suspect for glaucoma if: Vertical Cup:Disc Ratio (VCDR) ≥ 0.65 and/or asymmetry of VCDR ≥ 0.2 and/or Minimal Rim:Disc Ratio (RDR) ≥ 0.65.
- Complementary eye examination in suspects, including visual field and gonioscopy.
- Classification as glaucoma when: structural evidence (VCDR ≥ 0.7 and/or asymmetry of VCDR ≥ 0.2 and/or RDR ≥ 0.65) associated with functional evidence (visual field with a group of 3 contiguous non-edge points ≤ 0.1) associated with functional evidence (visual field with a group of 3 contiguous non-edge points ≥ 0.1) associated with functional evidence (visual field with a group of 3 contiguous non-edge points ≥ 0.1).
- Hypertension: systolic blood pressure >130 mmHg and/or diastolic blood pressure >85 mmHg and/or treated hypertension.
- Hyper-TG: plasma triglycerides >1.67 mmol/l.
- Hypo-HDL: plasma HDL-cholesterol <1.03 mmol/l.
- Hyperglycemia: fasting blood glucose >6.1 mmol/l and/or non-fasting blood glucose >11.0 mmol/l and/or antidiabetic treatment.
- Hypertriglyceridemia (TG): plasma TG >1.67 mmol/l.
- Hypo-HDL: plasma HDL-cholesterol <1.03 mmol/l.
- High waist circumference: waist circumference >102 cm in men and >88 cm in women.
- Associations of OHT and OAG with the different components of the metabolic syndrome were assessed using generalized estimating equations (GEE) logistic regressions, subjects without OHT and OAG being the reference.

Results

- Of 963 subjects, 842 had complete data, representing 1683 gradable eyes.

Table 1. Age- and gender-adjusted associations of OHT and OAG with the metabolic syndrome and its components (odds-ratio [95 % confidence interval])

<table>
<thead>
<tr>
<th></th>
<th>OHT (n=203)</th>
<th>OAG (n=53)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metabolic syndrome</td>
<td>1.2 (0.7-2.1)</td>
<td>1.3 (0.6-2.8)</td>
</tr>
<tr>
<td>Hyperglycemia</td>
<td>1.4 (0.8-2.5)</td>
<td>2.3 (1.1-5.0)</td>
</tr>
<tr>
<td>Hyper-TG</td>
<td>0.8 (0.5-1.4)</td>
<td>0.8 (0.3-1.9)</td>
</tr>
<tr>
<td>Hypo-HDL</td>
<td>1.3 (0.7-2.3)</td>
<td>1.2 (0.4-3.2)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>0.9 (0.5-1.5)</td>
<td>0.6 (0.3-1.3)</td>
</tr>
<tr>
<td>High waist circumference</td>
<td>0.9 (0.6-1.5)</td>
<td>1.5 (0.8-2.8)</td>
</tr>
</tbody>
</table>

As shown in Table 1, after adjustment for age and gender, elevated fasting glycemia was associated with a 2-fold increased risk for OAG.

Association with OHT was in the same direction (OR=1.4), but did not reach statistical significance.

Other components of the metabolic syndrome (hypertension, waist circumference, plasma HDL-cholesterol, plasma triglycerides) were not significantly associated with OHT or glaucoma.

Overall, the metabolic syndrome was not significantly associated with OAG or OHT.

Conclusions

In the present study, OAG was associated with elevated fasting glycemia, but not other components of the metabolic syndrome.

References


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