A case of a superior segmental optic hypoplasia (SSOH)-like change of the optic disc induced by transient ocular hypertension

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Introduction

Characteristics of SSOH
- A congenital anomaly of optic nerve head and retina
- Clinically characterized by
  - Superior entrance of the central retinal artery (CRA)
  - Superior peripapillary scleral halo (double ring sign)
  - Pallor of the superior disc
  - Thinning of the peripapillary retinal nerve fiber layer (NFLD)
  - optic disc pallor and a superior peripapillary scleral halo are not necessarily visible in Japanese cases.
  - Normal-tension glaucoma and SSOH are sometimes difficult to differentiate.

Case
- A 21-year-old woman presented with blurred vision of her left eye for 2 weeks.
- Examination of her local ophthalmologist
  - Intraocular pressure: OD -- 50 mmHg; OS -- 59 mmHg
  - Relative afferent pupillary defect OS
  - Anterior chamber cells and flare OS
  - Redness of the optic disc OS
- Treatment of the local ophthalmologist
  - Latanoprost q.d. OU
  - 1% dorzolamide t.i.d. OU
  - 0.1% corticosteroids q.i.d. OS
  - Acetazolamide b.i.d.
- Prognosis
  - No improvement
  - Consultation to our department for further diagnostic evaluation
- Medical history
  - No history
- Family history
  - No family history of glaucoma
  - History of collagen diseases

Ocular examinations

<table>
<thead>
<tr>
<th>OD</th>
<th>OS</th>
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<tbody>
<tr>
<td>Best corrected visual acuity</td>
<td>20/12.5</td>
</tr>
<tr>
<td>Intraocular pressure</td>
<td>22mmHg</td>
</tr>
<tr>
<td>Ocular surface</td>
<td>Normal</td>
</tr>
<tr>
<td>Media</td>
<td>Normal</td>
</tr>
<tr>
<td>Gonioscopic findings</td>
<td>Wide open, High iris insertion</td>
</tr>
</tbody>
</table>

Colour fundus photos
- Blurred optic disc margin OS
- Redness of optic disc OS

Fluorescein angiography OS
- Microaneurysms in the retina OS

Humphrey visual field test 3 months after onset
- No redness of optic disc OS
- Small optic discs OU
- DOE/DO ratio 3.00
- Disc area 2.103mm²
- 2.182mm²

Analysis of optic disc OS
- Heidelberg retinal tomography II
- Moorfields regression classification
  - Enlargement of the optic disc cupping
  - Thinning of the superior neuroretinal rim (nasal-temporal)
  - NFLD (superior–superonasal)

Humphrey visual field test 3 months after onset
- An inferior visual field defect OS 3 months after onset
- The defect was wedge-shaped and oriented to the blind spot.
- The morphological changes of the optic disc were consistent with the visual field defect.

Discussion

Hypothesis of the mechanism of SSOH-like change induced by transient ocular hypertension with redness of the optic disc
- Double ring sign outside the superior margin of the optic disc (green arrow)
- Superior entrance of the CRA
  - From CRA entrance to the superior margin (a): 2.103mm²
  - From CRA entrance to the inferior margin (b): 2.182mm²
  - = 0.87

SSOH-like change of the optic disc

Conclusions

Transient ocular hypertension with redness of the optic disc has the potential risk to develop an SSOH-like change in the disc.