Multimodal imaging in a case of optic disc drusen with peripapillary choroidal neovascular membrane

Ashish Markan, Aastha Takkar, Mohit Dogra, Basavaraj Tigari

DESCRIPTION

A young male child in his early teens presented to our retina clinic with painless progressive diminution of vision in his left eye (LE) from the last 1 month. He was diagnosed with LE optic neuritis elsewhere and treated with high-dose corticosteroids. The patient was referred to our centre in view of his poor response to treatment. The best-corrected visual acuity (BCVA) in the right eye was 6/6 and LE was 6/60. Anterior segment examination in both eyes was within normal limits. Fundus examination in the LE revealed lumpy and hyperaemic disc associated with peripapillary subretinal exudation.

Multimodal imaging was carried out to evaluate the cause of lumpy disc and subretinal exudation (figure 1A–H). Short wavelength fundus autofluorescence revealed hyperautofluorescent lesions within the optic nerve head (figure 1B). Optical coherence tomography (OCT) through the optic nerve head revealed a lumpy bumpy appearance of the disc surface (figure 1C). In addition to this, a
vertical line scan showed the presence of hyporeflective structures with hyper-reflective borders within the substance of the optic nerve head (figure 1F). Ultrasonography revealed the presence of calcific lesions within the optic nerve head (figure 1H). All these findings were suggestive of optic disc drusen (ODD). Fundus fluorescein angiography showed peripapillary leakage in the early phase, which increased progressively both in intensity and area in the late phase (figure 1D,E). The findings were consistent with the classic choroidal neovascular membrane (CNVM). Corresponding OCT revealed subretinal hyper-reflective structure and subretinal fluid in the peripapillary region. OCT-angiography revealed the presence of abnormal vascular membranes in the outer avascular retina (figure 1G). Multimodal imaging in this case revealed ODD as the cause of swollen hyper-aemic disc. ODD were associated with peripapillary CNVM, thus causing extensive subretinal exudation.

The patient was treated with three doses of anti-vascular endothelial growth factors (anti-VEGF) agent, which resulted in marked resolution of subretinal exudation (figure 1I,J). The final BCVA improved to 6/9 at 3-month follow-up.

ODD are calcific deposits found in the optic nerve head, likely seen in congenitally small or crowded optic discs.\(^1\) The likely pathogenesis involves compromised blood supply and reduced axoplasmic flow leading to the formation of calcific excrescences. Though these patients are asymptomatic, some of them can develop transient visual obscurcation or visual field defects. ODD are known to progressively increase in size with age, which correlates with increased progression of visual field losses. Some of the complications associated with ODD are anterior ischaemic optic neuropathy, retinal vascular occlusions, retinal haemorrhages and rarely, peripapillary CNVM.\(^2\) Though there is no definitive treatment for ODD, it is important to differentiate it from true disc oedema and avoid any unnecessary neurological examinations.

CNVM associated with ODD is a very rare complication, but can cause significant visual impairment. Several treatment options, such as laser photocoagulation, photodynamic therapy and anti-VEGF, have been tried over the years with variable success rates.\(^3,4\)

It is important to identify ODD to avoid misdiagnosis and unnecessary investigations. Timely follow-up of patients with ODD is necessary to identify visually disabling complications associated with ODD.

**Contributors** AM: prepared the manuscript, and edited the images. ATK: reviewed the manuscript, literature search and final editing of the manuscript.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent for publication** Consent obtained directly from patient(s).

**Provenance and peer review** Not commissioned; externally peer reviewed.

Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

**ORCID iDs**
Ashish Markan http://orcid.org/0000-0003-1454-2655
Mohit Dogra http://orcid.org/0000-0003-1909-9787

**REFERENCES**