Brief Report

Anterior ischemic optic neuropathy in a patient with papilledema from idiopathic intracranial hypertension

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ABSTRACT

Patients may lose vision in idiopathic intracranial hypertension from worsening papilledema and optic nerve dysfunction. Acute vision loss may also occur in this context from anterior ischemic optic neuropathy. We report a case of a 29-year-old woman with bilateral moderate papilledema from idiopathic intracranial hypertension who experienced sudden loss of vision in the superior part of the visual field of her right eye. She was found to have a new relative afferent pupillary defect and a stable superior altitudinal defect with optic disc pallor. Papilledema often creates crowding of the optic nerve head and places patients at risk for anterior ischemic optic neuropathy.

1. Case report

A 29-year-old obese woman presented to the emergency room with horizontal binocular diplopia, new headaches and transient visual obscurations. Examination revealed an elevated blood pressure of 146/101, visual acuity of 20/20 in both eyes, a right abduction deficit (75% of normal), moderate bilateral optic disc edema and enlarged blind spots in both eyes on visual field testing. Magnetic resonance imaging (MRI) and magnetic resonance venography (MRV) showed signs of raised intracranial pressure and lumbar puncture in left lateral decubitus position demonstrated an opening pressure of 38 cm of water with normal cerebrospinal fluid contents. She was diagnosed with idiopathic intracranial hypertension (IIH) and was started on acetazolamide 500 mg BID and followed on a monthly basis. She was also started on ramipril for hypertension. Acetazolamide was increased to 750 mg BID at the one-month follow-up and 1g BID at the two-month follow-up due to increasing papilledema (Fig. 1) at which time she reported resolution of the diplopia. A few days after her two-month follow-up, she developed sudden loss of vision in the superior part of the visual field in her right eye. At her three-month follow-up, she had a new right RAPD and a superior altitudinal visual field defect on Humphrey 24-2 SITA-Fast visual field testing (Fig. 2). She was diagnosed with a right anterior ischemic optic neuropathy. There was a reduction in the optic disc edema in both eyes at that time, with mild temporal pallor evident in the right more than the left eye. Her symptoms of headache and transient visual obscurations also resolved. The right superior visual field defect persisted at subsequent follow-ups.

2. Discussion

Non-arteritic anterior ischemic optic neuropathy (NAION) is the most common acute optic neuropathy in older individuals and is associated with systemic conditions such as hypertension, diabetes mellitus, and obstructive sleep apnea. Essentially all individuals who develop NAION have a so-called disc-at-risk, which is an optic nerve with a small or absent physiologic cup. Papilledema often results in obscuration of the physiologic cup in moderate to severe cases and causes a disc-at-risk. This creates the necessary substrate for NAION, which has previously been reported in IIH. Our patient had a previously documented disc-at-risk (cup-to-disc ratio of 0.1) on a routine optometry examination one year prior and the papilledema further increased the crowding at the optic nerve head. She also had several documented elevated blood pressures, which also likely predisposed her to this event.

The diagnosis of NAION was supported by the sudden vision loss, new RAPD, and altitudinal defect, which is the characteristic field defect in this condition. This defect also persisted despite the resolution of papilledema in both eyes. It is important to recognize the diagnosis of...
Fig. 1. Papilledema and Humphrey 24-2 SITA-Fast visual field assessment at the patient's two month follow-up. A) There is moderate to severe optic disc edema, right greater than left, with associated cotton wool spots. OD: right eye; OS: left eye B) Humphrey visual field demonstrating mildly enlarged blind spots in both eyes.

Fig. 2. Optic nerve head appearance and visual fields one month after sudden vision loss from right anterior ischemic optic neuropathy. A) Significantly improved optic disc edema with mild temporal pallor in the right greater than left eyes. OD: right eye; OS: left eye B) Superior altitudinal defect in the right eye and normal visual field in the left eye.
ischemic optic neuropathy since the new visual field deficit may have
been attributed to worsening papilledema or increasing intracranial
pressure resulting in consideration of surgical interventions such as a
shunt.

3. Conclusions

In summary, NAION should be considered as a cause of vision loss in
patients with papilledema especially when the vision change is sudden.
This must be differentiated from visual field defects from worsening
papilledema, which may require surgical intervention.

Author Contribution

Jingyi Ma: Data curation, Methodology, Writing- Original draft,
Writing- Original draft preparation. Jonathan Micieli:
Conceptualization, Methodology, Writing- Reviewing and Editing.

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Declaration of competing interest

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