Editorial

Anterior ischaemic optic neuropathy: What do we know and what do we still need to know?∗

Neuropatía óptica isquémica anterior, ¿qué sabemos y qué nos falta por conocer?


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Anterior ischaemic optic neuropathy (AION) is the most frequent cause of unilateral papillary edema in patients over 45 years of age. Two main entities can be differentiated in AION: the non-arteritic form (NAION) which constitutes 96% of cases and has an estimated incidence in the USA of 2.3–10.2 cases for every 100,000 inhabitants; and the arteritic form (AAION), considered to be an additional expression of giant cell arteritis (GCA) or Horton’s arteritis. Even though this latter form exhibits much lower frequency, it constitutes one of the main ophthalmological emergencies, to the extent that early diagnosis and intervention can determine the involvement of the contralateral eye and accordingly the final visual prognosis. AION is a pathology that routinely appears in emergency services and involves a differential diagnosis with other causes of optic disc edema. In some cases it requires joint responsibility between the ophthalmology, neurology and internal medicine services and this requires adequate training for each specialist who should have sufficient knowledge and resources to act quickly and adequately in each case.

At present, NAION remains a controversial issue in various aspects. The most accepted physiopathology for this process is circulatory insufficiency at the optic nerve head. However, the exact mechanism that causes this insufficiency is not yet known. The most widely accepted theory in idiopathic cases proposes the existence of individual risk factors in the optic disc morphology (“bundled axons”) which give rise to a “compartment syndrome” which expresses in the presence of hypotension with an ensuing blood flow reduction in the short posterior ciliary arteries. However, the existence of atherosclerotic or thrombotic changes at this level has not been confirmed. In what concerns microvascular risk factors, association with diabetes is well known together with hypercholesterolemia and arterial hypertension. The latter is present in 47% of patients according to the Ischemic Optic Neuropathy Decompression Trial. Other potential onset factors are being studied, including drugs such as amiodarone or sildenafil, severe anemia or obstructive sleep apnea, although the direct involvement of these factors has not yet been proved.

A further factor which is subject to debate in NAION is treatment. Multiple studies have been carried out without any achieving sufficient scientific evidence to be universally recommended. Various therapies have been tested, ranging from neuroprotective drugs, surgical decompression or intra-vitreal corticoids and anti-VEGF injections. None of these treatments have been able to demonstrate their efficacy. The application of oral corticoids therapy in the acute phase and with high dosages (1.5–2 mg/kg/day) is the most frequently applied alternative in daily clinical practice. The latest publications by Hayreh et al. on NAION, based on a cohort of


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600 affected patients divided into groups (300 treated with 80 mg/day of corticoids in acute phase and 300 without treatment), it was concluded that the treated group experienced a significant visual acuity and visual field improvement 6 months after beginning treatment as compared to the non-treated group. In contrast, other authors such as Rebolleda et al. affirmed that oral corticoids are not only useless for treating NAION but could also produce significant side effects and advised against said treatment. In the absence of consensus, the decision to treat these patients with corticoids therapy is up to the physician in charge of the patient. On the basis of age, visual acuity, comorbidity and personal experience, the specialist must ponder the most adequate option for each patient.

Treatment with anti-aggregates has not demonstrated with sufficient level of evidence to be useful for prevention of NAION in the contralateral eye. However, as the majority of patients present other associated cardiovascular risk factors, it seems reasonable to implement close controls and establish anti-aggregates treatment if deemed appropriate.

GCA is a granulomatous vasculitis involving medium and large culture vessels in elderly patients. AAION is one of the possible expressions of this disease and its importance resides in that early diagnosis and treatment with high dosage of corticoids will determine the visual prognosis for the contralateral eye. The application of intravenous corticoids has not been demonstrated to be significantly more useful than oral treatments although it enables larger dosages with less side effects. A study by Chan et al. compared different IV prescriptions without finding any outstanding alternative, provided that the doses are above 500 mg/24 h.

The difficulties posed by AAION in daily clinical practice concern the existence of doubtful cases, with borderline numbers of erithrosedimentation rate (ESR) and PCR, in patients without any systemic symptoms that could lead to suspect GCA. In these circumstances, the “better safe than sorry” motto should be taken into account in order to weigh the risks and benefits of establishing therapy. In general and with the exception of patients having comorbidity conditions in which...
high dosages of corticoids could be clearly damaging, it is preferable to treat all minimally suspect cases with the close assistance of internal medicine due to the systemic repercussion and the need for close follow-up for these patients.

A significant amount of research has been carried out and information published about AION but, as discussed above, a number of characteristics are not yet clear and others are still the subject of controversy. Multicenter prospective studies with large sample sizes are required, together with a greater knowledge of the physiopathology of these conditions in order to clarify a number of points. Meanwhile, the physician receiving patients in emergency practices is responsible for taking the decision about the diagnostic and therapeutic procedure to adopt. The preparation of customized protocols in the hospital is highly recommendable due to the large range of medical attention options and the requirements of cooperation between several services (Fig. 1).

REFERENCES


4. Optic nerve decompression surgery for nonarteritic anterior ischemic optic neuropathy (NAION) is not effective and may be harmful. The ischemic Optic Neuropathy Decompression Trial Research Group. JAMA. 1995;273:625–32.