

OPTIC NERVE SWELLING: A GUIDE FOR GENERAL OPHTHALMOLOGISTS

“Doctor, I cannot see clearly”

“Doctor, I’m having a headache”

These are the usual complaints of patients who come to seek help. Optic nerve (ON) swelling is either unilateral or bilateral. Papilloedema is a term specifically for bilateral ON swelling. The approach to this condition should be aimed at finding the underlying pathology and delivering the correct treatment. Timely diagnosis may be vision and sometimes even life-saving.

The aetiology of ON swelling varies from infectious, inflammatory, demyelinating, metabolic and infiltrative. The diagnosis is made on clinical grounds, but haematological tests and neuroimaging are sometimes necessary to identify the cause. The list of differentials is inexhaustible, and includes multiple sclerosis, toxic optic neuropathy, space-occupying lesions and vasculitis to name a few.

The age of patients, duration, travel history and drug intake may also provide clues. Headache, reduced vision and symptoms of raised intracranial pressure has to be enquired. The presence or absence of pain on eye movements, and progression of the symptoms from the start should also be noted, as pain usually indicates an underlying inflammatory pathology and chronicity also suggests inflammatory or infiltrative causes. Hypertension, dyslipidaemia or diabetes mellitus are the commonly associated systemic illnesses related to certain condition such as non-arteritic ischaemic optic neuropathy (NAION), whereas temporal vessel pulsation and headaches, with or without myalgia point towards an arteritic optic neuropathy (AION). In children who present with poor vision in both eyes, be especially mindful of any recent illnesses, fever or vaccinations. It is also worth noting if patients consume large amount of alcohol, or if their diet lacks certain essential vitamins as toxic /nutritional optic neuropathy may arise from metabolic instability.

On examination, spontaneous venous pulsations, retinal vasculature morphology and the presence of retinal haemorrhages or cotton wool spots are indications of the severity of the ON swelling. Vision can be intact or reduced, depending on central visual field involvement. Any anterior or posterior segment inflammation should be noted. Examination of the contralateral eye is important to determine if it is involved, and if so,, either concurrent or previously, as may be evidenced by optic disc pallor. Careful and methodical neurological and cranial nerve examination is mandatory, as this may yield some findings which may direct any further investigation and imaging.

It is also imperative to record both the distance and near vision, and check for an afferent pupillary defect (RAPD), colour vision/ red desaturation test, contrast sensitivity and the size of the blind spot using automated visual field testing. Dyschromatopsia or red desaturation can be indicative of optic neuropathies. The presence of an RAPD suggests how severely the nerve fibre is affected, and its absence would suggest a more acute episode, or the ON swelling is merely a reaction to some other pathology. In cases of retrobulbar optic neuritis, the ON swelling is not clinically apparent and is usually suspected on history and confirmed on radiological imaging.

Patients are suspected to have NAION will need to have their lipid profile, blood sugar level and blood pressure checked, while a suspected inflammatory cause will definitely require inflammatory markers as an aid to making the diagnosis and for monitoring response to treatment.

Patients should undergo neuro-imaging to look for dilated ventricles (an indication of high intracranial pressure), midline shifts, infiltration or abscess, and changes associated with multiple sclerosis (on MRI). Sometimes, an idiopathic

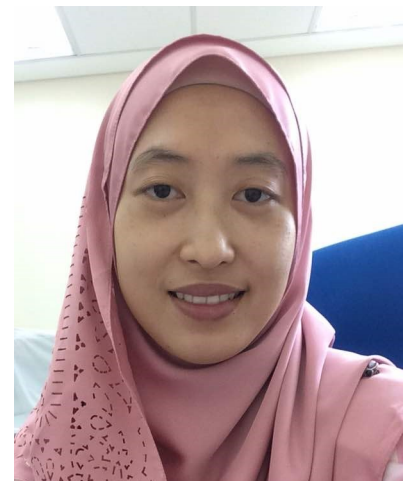
intracranial hypertension presents with slit-like ventricles. It is important to inform the radiologists of the clinical findings and possible diagnoses to direct their investigation and narrow the differentials. Some clear-cut conditions such as NAION and AION usually do not require radio-imaging but rather are concluded on clinical grounds alone.

Once high ICP has been excluded, and no obvious cause can be determined from blood investigations, or confirmatory diagnoses need to be made, a lumbar puncture should be performed. The aim is to look at the opening pressure and to obtain a sample of cerebrospinal fluid for cytology, microbiology and biochemistry. A high opening pressure may suggest idiopathic intracranial hypertension, and may actually provide temporary relief for this particular condition. The urgency of getting results from the CSF sample should be emphasized.

In conclusion, there are various causes of ON swelling and we as ophthalmologists should be aware of the differentials in each age group. In many cases, comprehensive management will involve ophthalmologists, neurologists, neurosurgeons and physicians. Identifying the correct diagnosis is more often than not, sight and life-saving.

References:

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