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3. Abducent nerve palsy secondary to microvascular ischemia

The sixth cranial nerve (ie, the abducent nerve) innervates the lateral rectus muscle, which is responsible for abducting the eye. Abducent nerve palsy, commonly known as sixth nerve palsy, is one of the most common ophthalmological nerve palsies, and usually presents unilaterally.^{1,2} It is typically characterized by binocular horizontal diplopia with incomitant esodeviation (ie, the eye is turned in) and worsens with gaze toward the weakened lateral rectus muscle. Patients can develop a compensatory face turn in the direction of the symptomatic lateral rectus muscle.^{1,3}

Abducent nerve palsy in adults can be due to a number of causes. In patients with vascular risk factors, the deficit is usually attributed to microvascular disease; in this setting, spontaneous recovery after a few months is the rule. Trauma, or more specifically skull base fractures, can also produce abducent nerve palsy. In this case, however, the prognosis is less optimistic.¹ Neoplasms might cause physical compression of the abducent nerve, resulting in unilateral or bilateral palsies. Elevated intracranial pressure can also result in unilateral or bilateral abducent nerve palsy owing to its long and ascendant course. Meningitis, subarachnoid hemorrhage, and multiple sclerosis are less frequent causes.

Diagnosis

When assessing a patient with diplopia, the first step is to determine whether the diplopia is monocular, in which the diplopia persists if one eye is closed, or binocular, in which the diplopia resolves if one eye is occluded. Monocular diplopia is typically secondary to a refractive error or media opacity within the eye.⁴

Upon examination, it is important to perform a careful neurologic assessment to determine whether there is involvement of other cranial nerves or neural structures, as management varies considerably in these clinical scenarios. The finding of an associated neurologic deficit also helps to localize the lesion. For example, combined ipsilateral sixth, seventh, and eighth nerve palsies suggest a lesion in the cerebellopontine angle. Fundoscopic assessment of the optic disk is of paramount importance to check for papilledema.^{4,5} As well, an assessment of vascular risk factors should be ascertained.

If there is indication of bilateral or additional nerve palsies, focal signs, papilledema, or a previous history of cancer, imaging should be performed immediately. Magnetic resonance imaging with gadolinium is the preferred method.⁵ As the abducent nerve can also be affected by changes in the cerebrospinal fluid, a lumbar puncture should be considered for the appropriate patients.

Photographs showing the patient in A) right gaze, B) primary gaze, and C) left gaze.



The differential diagnosis of abducent nerve palsy includes disorders such as spasm of the near reflex, myasthenia gravis, childhood esotropia, retraction syndrome, and thyroid eye disease.

Treatment

Abducent nerve palsy resulting from infectious, inflammatory, or neoplastic causes should receive appropriate therapy for the underlying condition. Adults usually do not need treatment for abducent nerve palsy caused by ischemic vascular disease, as this condition is self-limiting. Spontaneous recovery is common in unilateral, microvascular, isolated, and nontraumatic cases. A recovery rate of 71% at 3 to 4 months after onset has been reported for abducent nerve palsies caused by vascular diseases, such as diabetes mellitus, systemic hypertension, and atherosclerosis.¹ However, a thorough workup should be performed if an obvious identifiable cause is not found, with possible referral to an ophthalmologist.

Ms Chan is a second-year medical student in the Michael G. DeGroote School of Medicine at McMaster University in Hamilton, Ont. **Dr Teichman** is a third-year ophthalmology resident in the Department of Surgery, Division of Ophthalmology, at McMaster University. **Dr Rodriguez** is an Assistant Professor in the Department of Surgery, Division of Ophthalmology, at McMaster University.

Competing interests

None declared

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