Sixth Nerve Palsy

Sixth nerve palsy, abducens nerve palsy, or lateral rectus palsy is a disorder associated with dysfunction of cranial nerve VI (the abducens nerve) which is responsible for contracting the lateral rectus muscle to abduct (i.e. turn out) the eye. The inability of an eye to turn outward results in an esotropia of which the primary symptom is double vision or diplopia in which the two images appear side-by-side. The condition is commonly unilateral, but can also occur bilaterally.

Characteristics

In general terms, the most common causes of VIth nerve palsy in adults are:

- More common:
  - Vasculopathic (diabetes, hypertension, atherosclerosis), trauma, idiopathic.
- Less common:
  - Increased intracranial pressure, giant cell arteritis, cavernous sinus mass (e.g. meningioma, aneurysm, metastasis), multiple sclerosis, sarcoidosis/vasculitis, postmyelography or lumbar puncture, stroke (usually not isolated).

In children, a VIth nerve palsy could be due to traumatic, neoplastic (most commonly brainstem glioma), as well as idiopathic. Benign and rapidly recovering isolated VIth nerve palsies can occur in childhood, sometimes precipitated by ear, nose and throat infections.

Differential diagnoses

Differential diagnosis is rarely difficult in adults. Onset is typically sudden with symptoms of horizontal diplopia. Limitations of eye movements are confined to abduction of the affected eye (or abduction of both eyes if bilateral) and the size of the resulting convergent squint or esotropia is always larger on distance fixation - where the lateral recti are more active - than on near fixation - where the medial recti are dominant. Abduction limitations which mimic VIth nerve palsy may result secondary to surgery, to trauma or as a result of other conditions such as myasthenia gravis or thyroid eye disease.

In children, differential diagnosis is more difficult because of the problems inherent in getting infants to cooperate with a full eye movement investigation. Possible alternative diagnosis for an abduction deficit would include:

1. Mobius syndrome - a rare congenital disorder in which both VIth and IIIrd nerves are bilaterally affected giving rise to a typically expressionless face.
2. Duane's syndrome - A condition in which both abduction and adduction are affected arising as a result of partial innervation of the lateral rectus by branches from the IIIrd oculomotor cranial nerve.
3. Cross fixation which develops in the presence of infantile esotropia or nystagmus blockage syndrome and results in habitual weakness of lateral recti.

Management

The first aims of management should be to identify and treat the cause of the condition, where this is possible, and to relieve the patients symptoms, where present. In children, who rarely appreciate diplopia, the aim will be to maintain binocular vision and, thus, promote proper visual development. In adults initial treatment may include Fresnel prisms, occlusion, or even BOTOX injections.

Thereafter, a period of observation of around 9 to 12 months is appropriate before any surgical intervention, as some palsies will recover without the need for surgery.

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