Chewing Oscillopsia

A Case of Voluntary Visual Illusions of Movement

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- A 60-year-old man had a history of frontal headaches and chewing-related oscillopsia. Examination disclosed a retro-orbital epidermoid cyst that had eroded through the lateral orbital wall and under the temporalis muscle. The illusion of movement was due to mechanical displacement of the tumor mass and eye by contraction of the temporalis muscle. Removal of the cyst produced complete remission of the oscillopsia.

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The illusion of rhythmic movement of the viewed world is a frequent symptom of acquired nystagmus. Oscillopsia occurs in a wide variety of lesions of the posterior fossa and can result from movement disorders affecting one or both eyes. Although most often coincident with ocular movement disorders seen at rest, it is sometimes apparent only during head movements. The majority of the responsible lesions are untreatable, although cessation of nystagmus-producing drug administration will eliminate drug-induced oscillopsia, and suboccipital craniotomy has been reported to alleviate oscillopsia associated with the Arnold-Chiari malformation. We treated a patient with unusual symptoms and an unusual cause of monocular oscillopsia and voluntary monocular nystagmus due to a surgically curable retro-orbital tumor.

REPORT OF A CASE

A 60-year-old man was in good health until three years prior to admission, when he noted intermittent right frontal headaches. Subsequently he noted slight bulging of the right temporal area and by one year prior to admission the headaches occurred daily. Six months prior to admission he noted that when chewing or clenching his jaw the visual image from his right eye would move horizontally to the left. If he bit down rhythmically the visual image would oscillate to the left and back to the right on relaxing his jaw. This was particularly bothersome if he attempted to eat while driving a car. If he maintained jaw tension he had horizontal diplopia. Covering either eye eliminated the diplopia. The initial medical examiner felt that the patient's complaints were hysterical in nature. On referral to the neurology clinic, results of general medical and neurologic examinations were unremarkable except for a soft 4-mm bulging of the right temporalis muscle. Visual fields and acuity were normal. There was slight proptosis of the right eye and on left lateral gaze there was horizontal diplopia due to incomplete adduction of the right eye. When the patient clenched his jaw, however, the right eye moved approximately 2° laterally to the right with an accompanying sensation of the world moving to the left, producing the previously described oscillopsia. The degree of movement was greater (~4°) when gritting his teeth during left lateral gaze. Skull roentgenograms disclosed extensive erosion of the temporal bone and lateral orbit with bony sclerosis around the edge of the erosion (Fig 1). A computed tomographic (CT) scan revealed an isodense lesion with faint peripheral calcification in the right infratemporal retro-orbital area (Fig 2). There was erosion of the sphenoid wing and the lateral orbital wall with medial displacement of the lateral rectus and optic nerve and erosion into the middle cranial fossa. At operation the mass was found to be deep to the right temporalis muscle and consisted of amorphous friable yellowish white material occupying a space of approximately 3.5 x 3.5 cm. There was erosion into the middle and anterior cranial fossae to the level of the dura without intradural extension. There was no infiltration of the lateral rectus muscle. The mass was completely removed and histologically confirmed to be an epidermoid cyst. The oscillopsia continued for about ten days postoperatively during which time there was gradually decreasing swelling in the operation site. Six months postoperatively there was complete abatement of the chewing-related oscillopsia and monocular nystagmus. The patient denied headaches and his only deficit, a frontalis muscle paresis on the side of the surgery, was resolved six months postoperatively.
Ophthalmoplegia is a frequent symptom of intrinsic brain-stem and peripheral vestibular abnormalities. Unless an offending drug or an Arnold-Chiari malformation can be identified, the symptom is usually not amenable to treatment and varies with the course of the underlying disease. Headache and proptosis frequently accompany retro-orbital epidermoid tumors. The skull roentgenogram findings of a radiolucent defect with scalloped, sclerotic edges seen in this case are typical of epidermoid tumors. The CT scan appearance in this case of a low to isodense mass with smooth, sharp borders is also typical of epidermoid tumors. 

Both dermoid and epidermoid cysts have been commonly regarded as resulting from sequestration of epithelial elements at the time of closure of the neural groove. Microscopically, both lesions are lined by stratified squamous epithelium; dermoid cysts also contain hair follicles and sebaceous glands or sweat glands. The more common nonmidline occurrence of epidermoid cysts has suggested, to some authors, that trauma may be the cause in some cases.

Although oculomotor nerve involvement is a common finding in many types of orbital tumors, to our knowledge ophthalmoplegia has never been reported. In this case chewing-induced ophthalmoplegia and headache were the initial symptoms of a retro-orbital epidermoid cyst. The neurophysiologic mechanisms underlying posterior fossa origins of ophthalmoplegia are uncertain, whereas the mechanism in this case was fairly straightforward. The left-gaze diplopia was caused by incomplete right-eye adduction due to mechanical compression on the right lateral rectus by the tumor mass. The ophthalmoplegia was due to mechanical displacement into the orbit of the tumor mass by the intermittently contracting temporalis muscle. The tumor in turn exerted mechanical traction on the lateral rectus, causing rhythmic lateral deviation of the globe (Fig 3).

References