A case of orbital apex syndrome

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Section: Head & neck imaging
Area of Interest: Ear / Nose / Throat Case Type: Clinical Cases
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Patient: 72 years, male

Clinical History:

A 72-year-old man complained of a gradual loss of visual acuity in his right eye in conjunction with a right frontal headache involving the orbit. He had been suffering from recurrent sinusitis for decades, but never underwent endonasal surgery.

Imaging Findings:

Cranial MRI showed a smoothly marginated, T2-hyperintense lesion in the right orbital apex, lateral to the optic nerve (Fig. 1). Complementary CT slices at the same level showed an ovoid lesion in the anterior clinoid process with soft-tissue attenuation and some rim sclerosis (Fig. 2). A small pneumatised ethmoid cell was seen medial to the optic canal. There were also circumscribed swellings of the mucous membranes in the sphenoid sinus and ethmoid cells, indicative of chronic sinusitis. The patient was referred to an ophthalmology department for further treatment.

Discussion:

Orbital apex syndrome may be caused by inflammatory, infectious, neoplastic, traumatic, or vascular conditions. Optic neuropathy and ophthalmoplegia are the diagnostic hallmarks [1]. These findings may be accompanied by localised pain in the nasal quadrants of the orbit. MRI and CT are the preferred modalities for evaluating the orbital apex. Often, both methods have to be used in combination, especially in lesions involving the bone [2]. Rhinogenic optic neuropathy secondary to sinus pathologies has been infrequently described in the literature [3]. Many of these cases have been attributed to mucoceles of the Onodi cells [4]. These pneumatised cells have been first described by the Hungarian rhinolaryngologist Adolf Onodi at the end of the nineteenth century. They are a variant of the utmost posterior part of the posterior ethmoid cells that extend supero-laterally to the sphenoid sinus, and may be located in close proximity to the optic canal [5]. Aeration of the anterior clinoid process is also often due to an Onodi cell [2]. Optic neuropathy caused by an Onodi cell mucocele or sinusitis is quite unusual [3]. However, the risk of a poor visual outcome is high. Therefore, therapeutic management should not be delayed, especially when signs of inflammation are present. Surgical treatment, either endonasal or transcranial, is often required to prevent permanent damage to the optic nerve [6].

Differential Diagnosis List: Onodi cell mucocele, Sphenoid mucocele or sinusitis, Carotid artery aneurysm

Final Diagnosis: Onodi cell mucocele
References:

Figure 1

Description: Transverse images show an ovoid, hyperintense lesion (arrow) lateral to the optic nerve.

Origin:
Description: Soft-tissue attenuation cavity in the right anterior clinoid process (bright arrow), lateral to the optic canal. Medially to the canal, there is an aerated ethmoid cell (dark arrow). Origin: