CASE REPORT

Symptomatic osteoma originated from lamina papyracea

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Abstract We describe a 74-year-old woman with osteoma of the lamina papyracea who only presented with 4-month history of an unspecified compression and pain in the medial canthal area of the left eye. The patient reported prompt relief from her pain after resection of the osteoma by endoscopic sinus surgery and she was free of pain clinically with no evidence of recurrence at 12 months followup. Also, we reviewed the literature relevant to the pathophysiology of the osteoma pain.

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1. Introduction

Osteoma is the most common benign lesion of the paranasal sinuses and frequently occurs in the frontal sinus followed by ethmoid, and maxillary sinuses, most rarely in the sphenoid (Mikaelian et al., 1976). It is usually asymptomatic and found only on a coincidental radiographic investigation (Mikaelian et al., 1976). The clinical presentation of paranasal osteomas can vary widely. Symptoms are generally related to the location, size and growth direction of the osteoma (Lin et al., 2003). The most common symptom of paranasal osteomas is pain including headache and facial pain (Atallah and Jay, 1981). Other symptoms include facial deformity, anosmia, rhinorrhea or secondary sinusitis (Huang et al., 2001). However, it is not enough to know that the pain is caused by osteoma. We examined a patient with osteoma of the lamina papyracea who presented only with sensation of compression and pain in the medial canthal area of the left eye that ceased after resection of the osteoma by endoscopic sinus surgery. Also, we reviewed the literature relevant to the pathophysiology of the osteoma pain.

2. Case report

A 74-year-old woman presented with 4-months history of an unspecified compression and pain in the medial canthal area of the left eye. The character of pain was atypical, dull, and pressure-like. There were no precipitating or aggravating factors. She had no history of eye or nose problems. There was no trauma history or significant past medical history. She first went to the ophthalmologist. There were no abnormal physical findings including funduscopic examination and eye movements. Neurological examination results were normal. The patient underwent an orbit CT to exclude any other possible causes of pain. CT scans revealed a 0.9 × 0.5 cm, well-defined extremely radiodense lesion in the left lamina papyracea.
without invading the orbit (Fig. 1). There was no significant secondary sinusitis. These findings strongly suggested an osteoma. She was referred to our department by her ophthalmologist for the proper management of the lesion. Sinonasal endoscopic examination did not reveal any mucopus or abnormal secretion in the nasal cavity. Also, there was no deformity or displacement of anatomical structure in the nasal cavity.

Under general anaesthesia, this mass was surgically removed via intranasal approach with endoscope. During a right uncinectomy and anterior ethmoidectomy, the lesion was found at the lamina papyracea (Fig. 2). Complete removal of the lesion was easily done because the lesion was well demarcated from surrounding normal tissues. There were no any complications such as haemorrhage, ocular disturbance or loss of vision. The patient had an excellent postoperative recovery without postoperative bleeding or other complications, and was discharged two days later. The patient reported prompt relief of his pain and at 12 months’ follow-up postoperatively she was free of pain clinically with no evidence of recurrence.

3. Discussion

Although symptoms are generally related to the size of the osteoma and its location, exceptions have been noted. Small osteomas have been reported as causing severe headache and needing surgical excision, while massive osteomas of the ethmoid sinus may remain asymptomatic (Mansour et al., 1999). It rarely invades the orbital cavity, usually from the adjacent ethmoidal or frontal sinuses and results in complications with ocular symptoms, with an incidence of 0.9% to 5.1% of all orbital tumors (Mansour et al., 1999). Orbital symptoms include diplopia, proptosis, exophthalmos, and changes in vision (Mansour et al., 1999). In our case, although the lamina papyracea is a part of ethmoid bone, the osteoma originated from the lamina papyracea that is very uncommon. The patient experienced early an unspecific compression and pain in the medial canthal area of the left eye in comparison with the size.

Osteomas may be detected on certain plain sinus radiographs. However, such films do not offer sufficient details for accurate assessment and optimal surgical intervention.

Figure 1  CT scans revealed a 0.9 × 0.5 cm, well-defined extremely radiodense lesion in the left lamina papyracea without invading the orbit. (A: coronal, B: axial).

Figure 2  During a right uncinectomy and anterior ethmoidectomy, the lesion was found at the lamina papyracea (Fig. 2A, Black arrows: margin of osteoma). After complete removal of the lesion was easily done (Fig. 2B), the lamina papyracea was defected and the periorbita was exposed (Fig. 2B, black arrow).
CT is an effective method for determining the extent of osteomas and invasion of the orbits. MRI is another diagnostic tool that is especially helpful in differentiating inflammatory lesions from neoplasm (Lin et al., 2003).

Surgery is generally accepted for symptomatic osteomas. Whether intranasal endoscopic or external approach, the best decisions must be based on individual presentation, including the location and extent of the osteomas and the nature of any existing complications (Lin et al., 2003). Recently, resection of small and medium-sized osteomas of the paranasal sinuses without evidence of orbital or intracranial extension can be safely and radically performed using endoscopic techniques with very good cosmetics effects (Huang et al., 2001).

Although it is not enough to know that the pain is caused by osteoma (Ishimaru, 2005), there are three possible mechanisms listed below.

First, the osteoma pain could be caused by local mass effects. Osteomas cause various problems and symptoms by producing pressure on neighboring structures. The pressure created by the growth of the tumor can result in pain in the head as well as the face. Bone destruction sometimes occurs because the bone is inherently incapable of remodeling in response to chronic pressure (Mansour et al., 1999).

Second, increased prostaglandin E2 synthesis suggests an important pathophysiological role as a mediator of the osteoma pain. In other types of benign bone tumor, such as osteoid osteoma or fibrous dysplasia, pain is caused by vascular pressure dependent upon the increased synthesis of prostaglandin E2. A similar mechanism may be thought to exist in osteoma, although the role of PGE2 has not been investigated in osteoma (Ishimaru, 2005).

Last, the osteoma could be a kind of referred neuralgia (Trigeminal neuralgia or Nasociliary neuralgia). The sinuses and most of the anterior craniofacial structures are innervated by branches of the trigeminal sensory nerves. Any kind of noxious stimulation of the sinuses and adjacent structures will trigger afferent sensory volleys into the trigeminal ganglion (Blumenthal, 2001). Also, pain is associated with nasociliary neuralgia due to impingement on the anterior ethmoidal nerve (Fenton, 1933).

In our case, we think ocular symptoms were caused by the local mass effects because the osteoma was originated from the lamina papyracea and ocular symptoms were focused on the medial canthal area, although it was small-sized.

References