

Bitter sweet tympani

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Abstract

During cholesteatoma surgery, the chorda tympani nerve must often be divided. We present an interesting case of a patient whose severe dysgeusia due to cholesteatoma resolved following section of the chorda tympani nerve.

Key words: Chorda Tympani Nerve; Taste; Cholesteatoma; Otologic Surgical Procedures

Case report

A 70-year-old man was referred to the maxillofacial clinic by his general practitioner. He presented with a five-week history of relatively acute onset dysgeusia. He complained that everything he ate or drank tasted salty. The patient was so troubled by his symptoms that he developed a marked loss of appetite and subsequent weight loss. These symptoms led to depression requiring medication. Over this period, he experienced no other symptoms, in particular, no change of olfaction or hearing. He smoked three cigars a day and drank two units of alcohol a week. The patient had a history of hiatus hernia and a previous myocardial infarction.

Initial assessment showed no abnormalities, and the blood tests performed were all normal.

Despite the patient's medication, there was no significant change in his symptoms of altered taste, and he lost a further 19 kg in weight over only six weeks. He was referred to the ENT department nine months later.

On examination, the right ear showed a large plug of wax obscuring the tympanic membrane. This was removed to reveal a large attic retraction pocket filled with cholesteatoma. Rinne's test was positive on the left but negative on the right. Weber's test lateralised to the right using a 512 Hz tuning fork. The remainder of the ENT examination was unremarkable.

The patient's audiogram showed normal hearing on the left and a 40/50 dB mixed hearing loss on the right from 250 Hz to 8 kHz.

Informed consent was obtained for a right mastoid exploration procedure.

A month later, the patient underwent a right modified radical mastoidectomy with incus transposition. Operative findings showed a large attic cholesteatoma with erosion of the long process of the incus. The chorda tympani nerve was stretched by disease. During removal of the cholesteatoma, the chorda tympani nerve had to be divided.

At follow up a month later, the patient described complete resolution of his dysgeusia. His depression had resolved, he had regained his appetite and had started gaining weight. His hearing showed a significant improvement, with closure of the air–bone gap. The patient's antidepressant medication was stopped and he had no further sequelae.

Discussion

The chorda tympani nerve carries taste sensation from the anterior two-thirds of the tongue. The fibres of the nerve pass through the facial canal just posterior to the middle ear. During its passage through the middle ear, the nerve is in close relationship with the tympanic membrane and exits the base of the skull to enter the infratemporal fossa. The greater superficial petrosal nerve mediates taste from the palate. Lingual branches of the glossopharyngeal nerve carry taste fibres from the posterior third of the tongue. The fibres from the pharyngeal plexus of the vagus nerve form special visceral afferents for the base of tongue and epiglottis. This complex network ensures that injury to any one of these nerves is unlikely to produce a permanent disturbance in taste sensation.

It has been shown that, in cases of cholesteatoma, the chorda tympani nerve undergoes structural changes.¹ When removing disease in the middle ear, the surgeon should attempt to preserve the chorda tympani nerve. However, if it is stretched, it should be transected in an attempt to prevent any further taste disturbance.² The contralateral chorda tympani³ and glossopharyngeal⁴ nerves are thought to compensate taste function in the case of unilateral section.

Changes in gustatory function following middle-ear surgery have been studied extensively. However, there are no published case reports showing marked dysgeusia caused by a stretched chorda tympani nerve due to chronic otitis media, with or without cholesteatoma. Studies have shown reduction of gustatory function as measured by electrogustometry,⁵ but this test correlates poorly with the patient's symptoms. There is a published case of a chorda tympani neuroma masquerading as a cholesteatoma, but without taste disturbance.⁶ It appears that chronic loss of gustatory function is well compensated for.

Many studies have noted that, post-operatively, patients with inflammatory disease of the middle ear appear to experience fewer taste disturbance symptoms than patients with non-inflammatory disease. These authors have postulated that, in inflammatory conditions, ultrastructural changes within the chorda tympani nerve may cause chronic loss of function pre-operatively and therefore less noticeable symptoms post-operatively.^{7,8} Others have shown that the mechanism of chorda tympani nerve injury

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may be important; peri-operative stretching of the nerve was more likely than transection to cause symptoms, especially, again, in cases of non-inflammatory conditions.⁹

This case highlights the fact that taste is a highly complex function. Taste function, as measured by electrogustometry, appears to deteriorate with ageing as well as with increasing inflammation of the middle-ear cleft. However, our case shows that, rarely, cholesteatoma may give rise to dysgeusia; this phenomenon has not been previously reported. In this situation, removal of the inflammatory process, with section of the chorda tympani nerve, can result in resolution of this unpleasant symptom.

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