CASE STUDY

Chorda Tympani Neuroma

Neurinoma de la cuerda del timpano

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Clinical Case

This was a 45-year-old woman that initially consulted for a progressive hearing loss and dizziness of some 6 months of evolution. There were no notable relevant antecedents, while in the physical examination the otoscopy showed a greyish image that protruded in the posterior tympanic areas (Fig. 1a). The preoperative audiology reflected a mixed right hearing loss with a mean loss in conversational airway frequencies of 45 dB. Facial function was intact. The patient did not report any changes in her sense of taste.

Radiological study using computed axial tomography (CAT scan) revealed a mass in the right tympanic box adjacent to the third segment of the facial nerve but independent of it (Fig. 1b and c). This mass occupied the epitympanum, surrounding the ossicular chain, without lytic images at this level. Differential diagnosis, using this technique, was considered from cholesteatoma, jugulotympanic glomus and neurinoma of the facial nerve.

Magnetic resonance imaging (MRI) excluded the possibility of cholesteatoma. CT and MR angiography studies were carried out, but they were inconclusive as to ruling out glomus.

Based on the findings presented, we decided to operate on the patient to remove the lesion described. Under general anesthesia, with neuromonitoring of the facial nerve, the external auditory canal was accessed using a retroauricular approach and performing an atriotomy and enlargement of the posterior tympanic framework, thus exposing the tumor completely (Fig. 2). The mass, along with ossicular chain surrounded by it, was excised. The tympanic defect was reconstructed with temporal fascia and columnelization was performed with tragal cartilage over the stapes, which appeared mobile.

The surgery went without complications and the patient was discharged on the third postoperative day, presenting a grade II right facial paresis due to the manipulation of the tumor adjacent to the third section of the facial nerve. The pathological anatomy was Schwannoma.

In the follow-up at 24 weeks, the dizziness had disappeared, while the grade II facial paresis remained. Audiometry reflected mild mixed hearing loss with a loss in conversational frequencies for the airway of 30 dB. The patient did not refer any changes at all in her sense of taste.

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Discussion

In contrast to neurinomas arising in the facial nerve, a neurinoma in the chorda tympani constitutes an extremely rare entity.\(^1\) We performed a search in Medline through PubMed, using the terms "chorda tympani" and "neurinoma" or "Schwannoma" as keywords; this search returned only a few results.\(^1\)\(^-\)\(^8\)

The neurinoma is a slow-growing benign tumour that stems from the myelin-producing cells in the peripheral area of the nerve sheath, appearing in the middle aged, with a slight predilection for females.\(^2\)\(^-\)\(^4\) Neurinomas are considered to appear more often in pure sensory nerves or in the sensory fibres of mixed nerves.\(^5\)\(^-\)\(^7\) The relative frequency of appearance of these lesions in all the segments of the motor component of the facial nerve and their very rare incidence in its sensory branch is a paradox. Magliulo et al.\(^7\) even present the hypothesis as to the possible origin of facial nerve neurinomas from the chorda tympani, which would become indistinguishable as it increased in size and surrounded the nerve.

The most usual presentation in the literature, just as in this case, is hearing loss and (much less often) other symptoms such as tinnitus, vertigo or otalgia. Affecting the sense of taste (not present in our case) is rare.\(^4\)\(^,\)\(^6\)\(^,\)\(^7\) The most common finding in the physical examination is a ballooning of the superior-posterior area of the tympanic membrane.\(^4\)\(^,\)\(^6\)

Radiological diagnosis is based on high-resolution computed tomography (HRCT), that makes it possible to identify the trajectory of the facial nerve, as well as to study the integrity of the adjacent bone tissue (fallopian canal, mastoids and ossicular chain).\(^3\)\(^,\)\(^4\)\(^,\)\(^7\) Gadolinium enhanced magnetic resonance is a key part of delimiting the total extension of the tumour, thanks to the possibility of studying soft tissue. Using this technique we can observe a mass that captures contrast dye, outside of the path of the facial nerve and adjacent to it but independent of it. According to our experience and that of the previous researchers, both techniques are complementary in planning the most appropriate surgical approach for each case.\(^1\)\(^,\)\(^2\)\(^,\)\(^7\)

Once complementary studies have been performed, the differential diagnosis should include entities such as jugular glomus, otic polyp cholesteatoma, rhabdomyosarcoma, squamous cell carcinoma, adenocarcinoma, metastatic carcinoma and facial nerve tumour.\(^7\)

The treatment of choice is radical excision of the lesion; when this is performed early, it prevents affectation of the facial nerve and provides the best possible results.\(^2\)\(^,\)\(^5\)\(^,\)\(^7\) It has been indicated that unilateral resection of the chorda tympani does not cause any change at all in the sense of taste, because, due to its slow growth,\(^6\) the rest of its afferents (contralateral chorda tympani, greater superficial petros nerve, glosopharyngeal nerve and vagus nerve) are capable of generating compensatory mechanisms.\(^1\) The audiometric improvement that our patient experienced could be due to the liberation of the incus--stapedial joint that had been engulfed by the neurinoma. The biopsy of this lesion is contraindicated because, if it is a lesion dependent on the facial

**Figure 1**  (a) Otoscopy image showing a mass that protrudes in the posterior-superior section of the right ear. (b) Coronal and (c) axial cuts of a bone series from computed axial tomography showing a lesion that occupies the meso and epitympanic areas, and that surrounds the ossicular chain.

**Figure 2**  Surgical image of atriotomy. Exposition of the entire malleus (+) and of the mass (*).
nerve, biopsy could provoke a permanent motor deficit in the nerve.

The diagnosis of neurinoma of chorda tympani, just as in the case of any other rare entity, can only happen when its suspicion is kept in mind.3

**Conflict of Interest**

The authors have no conflicts of interests to declare.

**References**