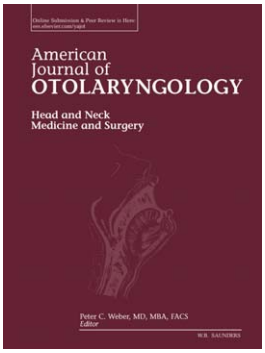

A Blue Middle Ear Mass: Cholesterol Granuloma Mimicking a Glomus Tumor and Endolymphatic Sac Tumor

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Abstract

Cholesterol granuloma (CG) is the most common benign lesion of the petrous apex, however, it can grow significantly large and become destructive causing a diagnostic dilemma. This case presents a 25-year-old female with 2-year history of left-sided progressive and profound hearing loss, a transient left-sided facial paralysis and cranial nerve 10 palsy who presented with a blue middle ear mass. Her diagnosis did not become apparent until direct visualization intraoperatively. The objective of this case study is to highlight the destructive capabilities of CG and the importance to keep it in the differential diagnosis of a large, erosive, expansile skull base lesion in order to avoid overly aggressive resection or other unnecessary treatment.

Case Description

25-year-old female with 2-year history of progressive left-sided profound hearing loss and left facial paralysis. Her past medical history was significant for hypertension but no family history of hearing loss or other genetic disease.

Physical exam revealed anacusis of left ear with a reddish-blue lesion in the hypotympanum extending to the posterosuperior quadrant. Right ear was normal. She also had House-Brackmann III/IV left facial paralysis, diminished gag reflex and left true vocal fold paresis. Audiogram showed profound sensorineural hearing loss on left with type B tympanogram. CT temporal bone (Fig. 1) and MRI (Fig. 2-3) below demonstrated a 4-cm skull base lesion centered at the jugular foramen invading the labyrinth, cochlear and endolymphatic sac with extension to the foramen magnum and middle ear (ME) space. This lesion was markedly hyperintense on both T1 and T2 signals without gadolinium enhancement. The internal jugular vein was intimately involved with the mass on MRA/V which suggested the possibility of a glomus jugulare tumor.

Differential diagnosis includes cholesterol granuloma, glomus tumor and endolymphatic sac tumor (ELST). Preoperative angiography was considered but it was not performed. Patient was taken to the operating room in conjunction with neurosurgery team for resection of the petrous apex tumor with possible translabyrinthe versus transcochlear versus foramen magnum approach. She underwent a translabyrinthe approach resection of the mass. Intraoperatively, the cystic mass was seen posterior to the posterior semicircular canal, replacing the endolymphatic sac and the entire petrous apex (Fig. 4). Chocolate-brown fluid was aspirated and the lesion was decompressed along with removal of the cyst wall (Fig. 5). A tubed silastic sheet was placed within the cystic cavity to prevent accumulation of the CG.

Discussion

Cholesterol granuloma (CG) is the most common cystic lesion of the petrous apex[1]. It is an intraosseous inflammatory cyst with chocolate-brown fluid secondary to blood degradation products from intralesional hemorrhage[2]. Its pathogenesis remains controversial. The two main hypotheses include the obstruction-vacuum theory and exposed marrow theory[3]. In the obstruction-vacuum theory, mucosal edema of chronic otitis media and eustachian tube dysfunction result in interruption of the air circulation of the air cells. Resorption of the trapped gas leads to a vacuum seal which in turn causes