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Radiology in Focus

Epistaxis as a rare presenting feature of glomus tympanicum

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Abstract
Glomus tumours are the most common primary neoplasms of the middle ear, typically benign and slowly progressive. Pulsatile tinnitus and ipsilateral hearing loss are the most common symptoms at presentation by far; otalgia, aural fullness and otorrhoea being less frequent. A case of primary glomus tympanicum presenting with recurrent epistaxis, previously unreported in the literature, is described and associated imaging presented.

Key words: Epistaxis; Paraganglia, Non-chromaffin; Eustachian Tube

Introduction

Glomus tumours are typically benign and slowly progressive vascular neoplasms that involve the middle ear, mastoid, jugular bulb and skull base. Guild[1] first described middle-ear glomus bodies in 1941 as ovoid structures found predominantly in the adventitia of the jugular bulb and along the course of Jacobson's nerve. Rosenwasser[2] noted the histological similarity of these glomus bodies to a carotid body-like tumour removed from the middle ear and mastoid in 1945 and suggested the tumour arose from the glomus bodies. They have subsequently been known by various names including chemodectomas and non-chromaffin paragangliomas.

Alford and Guilford[3] first classified glomus tumours according to the site of origin of tumour. Glomus tympanicum tumours arise from the middle-ear cavity, whereas glomus jugulare tumours arise from the jugular bulb. Frequently the tumour involves both middle ear and jugular bulb and these are termed jugulo-tympanic. Scott-Brown[4] describes the nature and frequency of primary presenting symptoms in patients with glomus tumours, highlighting a series of 61 cases by Watkins *et al.*[5] Pulsatile tinnitus and ipsilateral hearing loss are the most common symptoms at presentation. Others, less frequent, include otalgia, aural fullness and otorrhoea. Studies of a large case series by Glasscock and Jackson[6] and O'Leary *et al.*[7] confirm these findings. We present a case report on epistaxis as a rare presenting symptom in primary glomus tympanicum, hitherto unreported in the literature.

Case report

A 38-year-old lady of African origin presented to the otolaryngology emergency clinic with a 12-hour history of intermittent epistaxis, mainly from her left nostril. These were short-lived on each occasion and settled within 10-15 minutes with digital pressure to the nose. She gave no history of previous similar episodes. There was no predisposing medical history, nor the use of anticoagulant or non-steroidal anti-inflammatory drugs. On direct questioning there was also a history of two years of left-sided pulsatile tinnitus and hearing reduction. She had visited her family doctor on a number of occasions and had been prescribed antibiotic ear drops for intermittent left sided otorrhoea. This was refractory to treatment and although she was subsequently referred for urgent otolaryngology assessment, she failed to attend her hospital appointment. Whilst providing her history she had a further epistaxis in the consulting room which again settled conservatively. Anterior rhinoscopy revealed no obvious bleeding source. Direct posterior rhinoscopy showed only a small clot overlying the left eustachian tube orifice, which when dislodged revealed fresh blood exiting the eustachian tube.

At otoscopy, a soft, polypoid, flesh-coloured mass was seen, arising from and obliterating the depths of the left external auditory meatus (EAM). Close observation revealed it was pulsatile. There was no discharge nor signs of inflammation in the canal. Pure tone audiometry confirmed a left-sided conductive hearing loss with a bone-air gap of 30 dB across the frequency range.

Imaging was then performed; high resolution computed tomography (CT) (Figure 1(a) and (b)) showed a soft tissue mass filling the tympanic cavity and medial part of the EAM, with opacification of the mastoid air cells. The ossicles were intact and undisplaced, but there was a 'notch-like' erosion of the promontory of the cochlea, and also erosion of bone antero-inferior to the hypotympanum, around the eustachian tube. The cortex of the jugular foramen was intact, and the foramen was separated from the middle ear by normal bone.

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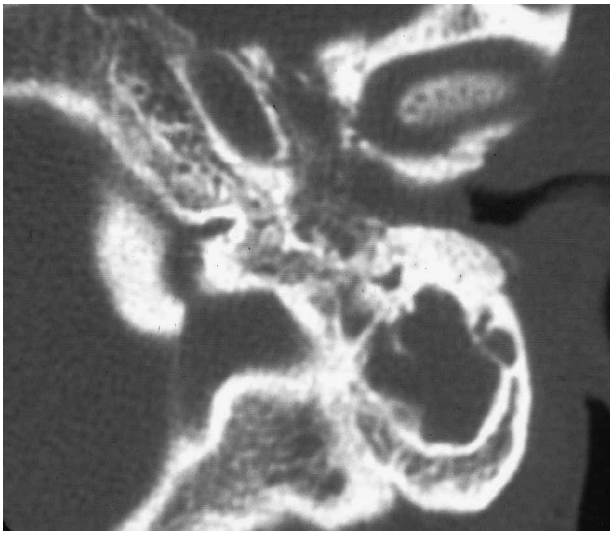
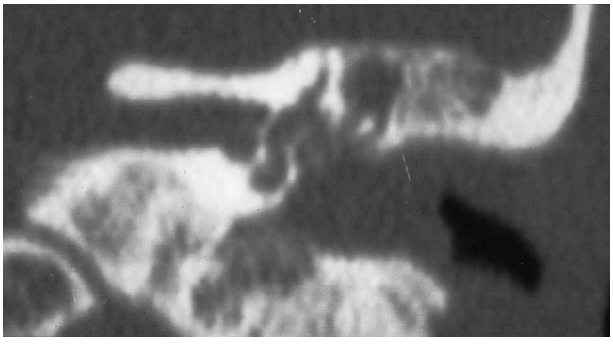
A magnetic resonance image (MRI) scan (Figure 2) showed intense gadolinium-enhancement of the tumour, defining its extent as being throughout the tympanic cavity, aditus and antrum. The tissue in the other mastoid air cells did not enhance, signifying retained secretions. The ossicles were surrounded by tumour, neither displaced nor eroded, a typical finding in this condition. Enhancing tumour could also be seen antero-inferior to the tympanic cavity, in bone lateral to the carotid canal.

- **This presents a case of epistaxis that originated from a glomus tympanicum**
- **Such a problem has not been previously reported**
- **The radiology of this case is presented**

This patient was admitted for angiography (Figure 3) and embolization of the tumour prior to trans-mastoid surgical excision although to date she has declined surgical treatment.



(a)



(b)

FIG. 1

1(a) axial and 1(b) coronal CT of the left petrous bone, showing soft tissue filling the tympanic cavity and medial part of the external canal. There is bone erosion unusually anterior and inferior to the hypotympanum, at the site of the eustachian tube, and obstructive chronic mastoiditis.

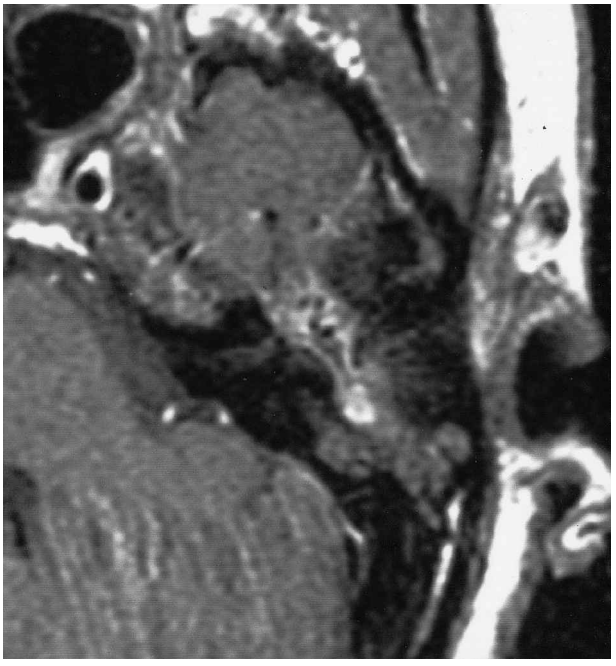


FIG. 2

Axial T1-weighted, post-gadolinium MRI at the level of the attic. Enhancing tumour fills the attic and just protrudes through the aditus into the antrum. The serpiginous low signal within the tumour is due to a large intra-tumoural vessel, typical of paraganglioma. The triangular low signal just behind this is due to the intact malleus and incus.

Discussion

Glomus tumours are the most common primary neoplasms of the middle ear, showing a predominance in females, a slight predominance for the left side and being more common in middle-aged groups.[7] Large series[5,6,7] have reported the relative frequency of primary presenting symptoms of glomus tympanicum, however, none mentioned epistaxis as a presentation. A thorough literature search on the topic, including any reports on the eustachian tube acting as a conduit for blood in epistaxis,

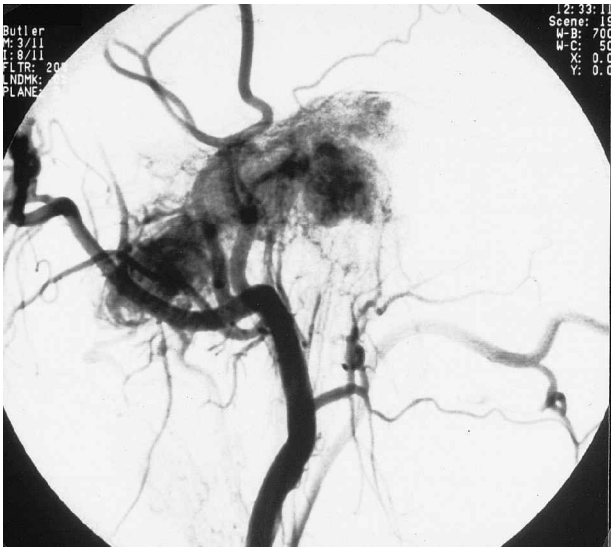


FIG. 3

External carotid angiogram (lateral view). Tumour blush extends further anteriorly than usual.

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has shown only one previous reported case in the radiological literature.[8] Lum *et al.* report a case of recurrent glomus tympanicum presenting with epistaxis following attempted incomplete surgical excision three years previously. Their CT and MRI scans revealed a homogenously enhancing mass extending along the entire course of the eustachian tube, with a portion protruding into the nasopharynx. O'Leary *et al.*[7] revealed in their series of 73 patients with glomus tympanicum, that on imaging up to 25 per cent of these tumours extended anteriorly to the eustachian tube. The possibility therefore, of blood entering the eustachian tube from such a vascular middle-ear mass would not be surprising. Glasscock *et al.*[9] report that tympanicum tumours tend to be diagnosed earlier and are therefore smaller at presentation, as they produce symptoms that are of more concern to the patient. Hence, the more frequent complaints of pulsatile tinnitus, hearing loss, otalgia and otorrhoea. In this case, all these symptoms were also present but, only when epistaxis supervened did the patient present to the otolaryngology clinic. As a consequence, it is possible that the tumour was larger at presentation, having extended to involve the eustachian tube.

This case emphasizes the need for middle-ear examination in unexplained epistaxis, and is to our knowledge the first reported case of a glomus tympanicum tumour presenting clinically in this way. Furthermore, the radiological imaging highlights well the unique features of this patient's presentation.

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