

Primary jugular foramen meningioma

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Section: Head & neck imaging

Area of Interest: Head and neck

Procedure: Contrast agent-intravenous

Imaging Technique: CT

Imaging Technique: CT-Angiography

Special Focus: Neoplasia Case Type: Clinical Cases

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Patient: 27 years, female

Clinical History:

A 27-year-old female patient presented with a slowly growing swelling on the left side of the neck over the last three years.

Imaging Findings:

Computed tomography (CT) scan of the neck with intravenous (IV) contrast showed a 41 x 58 x 67 mm ill-defined partially calcified heterogeneously enhancing soft tissue mass arising within the left jugular foramen. A small intracranial extra-axial component was seen resting on the left petrous bone. The main bulk of the lesion lied within the left carotid sheath, encasing carotid vessels with no definite infiltration. Medial displacement of left parapharyngeal fat was noted.

CT carotid angiography revealed encasement of the left common carotid artery, internal carotid artery (ICA) and external carotid artery (ECA) by the lesion, yet with no definite infiltration. Other intracranial vessels were of average calibre with adequate distal arborisation and no evidence of occlusion or filling defects.

Surgical biopsy was performed with histopathological analysis revealing a Psammomatous meningioma grade I.

Discussion:

Jugular foramen meningiomas are very rare, benign, but locally aggressive tumours that account for approximately 0.7% to 4% of all posterior fossa meningiomas [1, 2] and represent the third most common tumour of the jugular foramen after paraganglioma and lower cranial nerve (CN) schwannoma. Jugular foramen meningiomas (JFMs) are either primary or secondary. Primary JFMs are centered on the jugular foramen and may invade the infralabyrinthine temporal bone and middle ear. They can extend intracranially into the cerebellopontine angle (CPA) and extracranially into the upper neck. Secondary JFMs represent extension into the jugular foramen of primary intracranial meningiomas (i.e. CPA or petroclival meningiomas). These tumours can potentially expand inferiorly through the jugular foramen into the parapharyngeal space. A case of 2ndry JFM can be viewed on EuroRad (Case 12746). Meningiomas arise from arachnoid villi, which are predominantly found along the sigmoid sinus, superior and inferior petrosal sinuses, torcula, and jugular foramen. It is presumed that primary JFMs arise from arachnoid lining cells situated within the jugular foramen [3].

The mean age of tumour presentation is the fourth or fifth decade of life. JFMs can present with a variety of

symptoms depending on tumour size and location. Initial clinical manifestations include progressive lower CN deficits, hearing loss, and tinnitus. Less common complaints are headache, vertigo, facial pain, facial nerve palsy and visual loss [4, 5].

On CT, meningiomas appear iso- or slightly hyper-dense and may contain intratumoral calcification. On MRI, meningiomas are iso- or hypointense on T1W and hyperintense on T2W images [6]. Meningiomas demonstrate significant, usually homogeneous, enhancement on post contrast imaging.

Surgical removal is the ideal primary treatment. The surgical approach should optimise resection while minimising morbidity. To achieve this goal, the surgeon needs to consider the age of the patient, the location and extension of the tumour, and the function of the lower CNs [3].

There is a wide differential for jugular foramen tumours. An understanding of their radiological features, anatomical location and underlying pathology helps establish the final diagnosis.

This case is of interest due to its rarity, and it is important to consider meningioma in the differential diagnosis of jugular foramen tumours.

Differential Diagnosis List: Primary jugular foramen Psammomatous meningioma grade I., Jugular paraganglioma (glomus jugulare), Lower CN schwannomas

Final Diagnosis: Primary jugular foramen Psammomatous meningioma grade I.

References:

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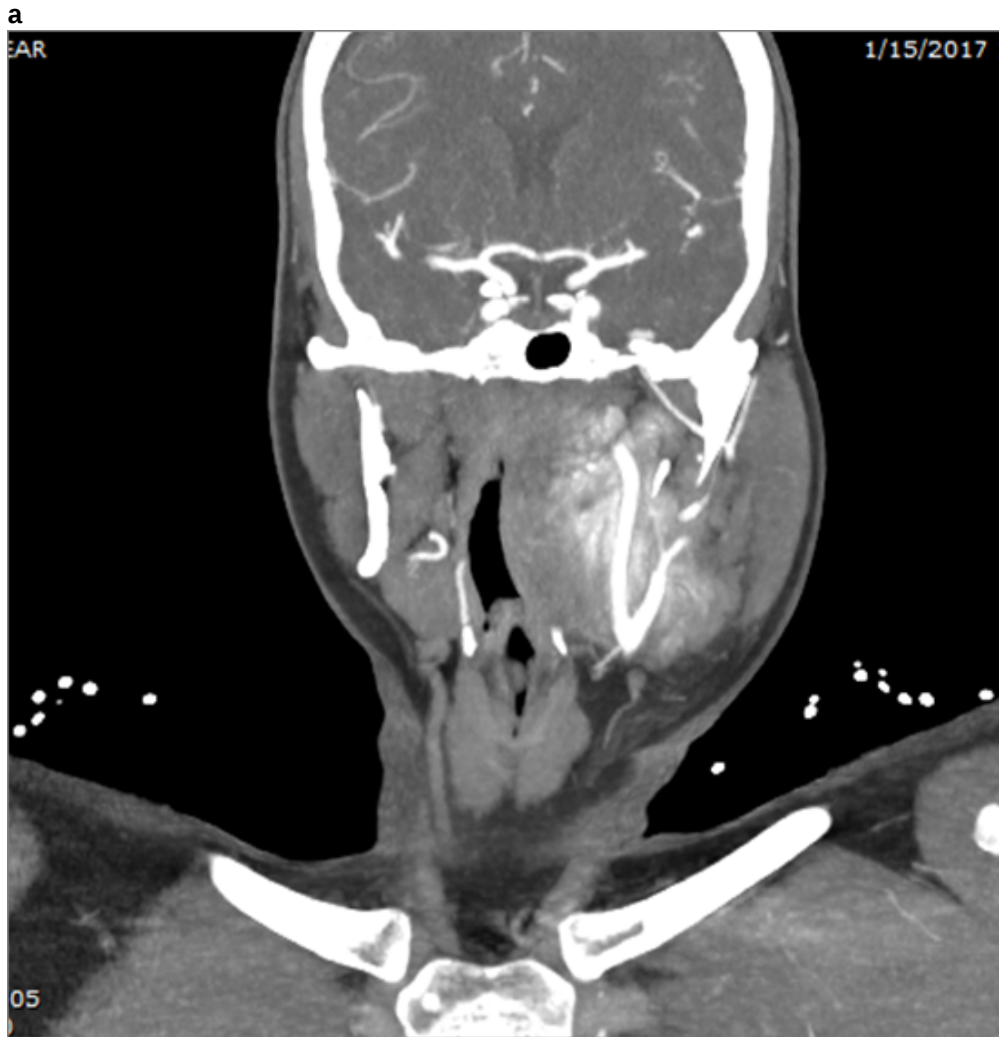
Figure 1

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Description: This demonstrates a 41 x 58 x 67 mm ill-defined partially calcified heterogeneously enhancing soft tissue mass arising centred from the carotid space. **Origin:** Department of radiology, Ain Shams university, Cairo, Egypt

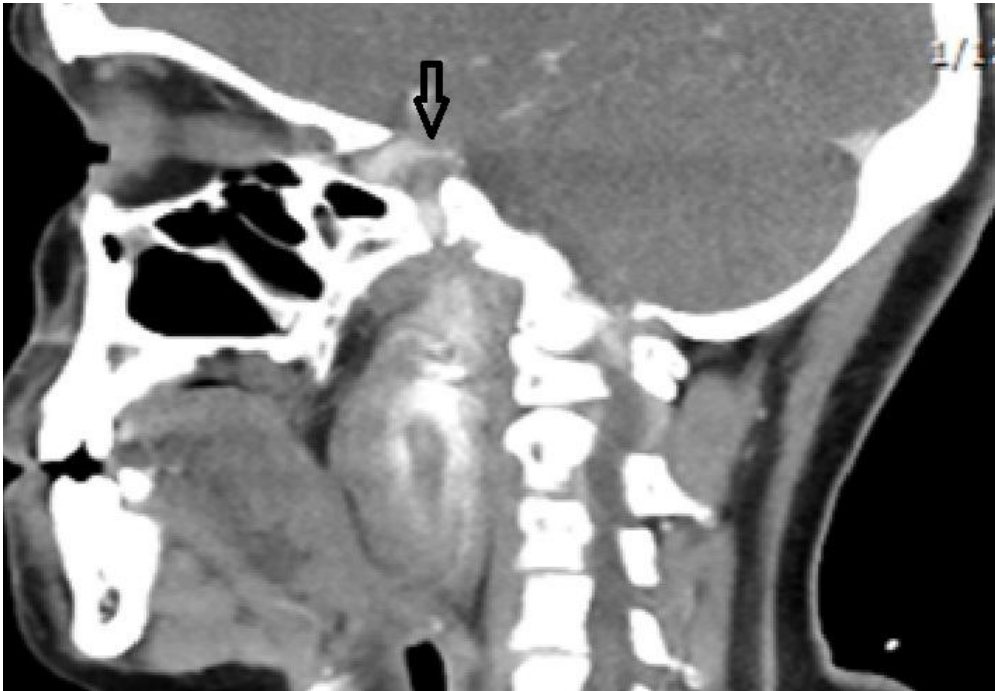
Figure 2



Description: This image reveals encasement of the left common carotid artery, ICA and ECA by the soft tissue lesion, with no definite infiltration noted. **Origin:** Department of radiology, Ain Shams university, Cairo, Egypt

Figure 3

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Description: This image shows the small intracranial, extra-axial component of the lesion adjacent to the left petrous bone. **Origin:** Department of radiology, Ain Shams university, Cairo, Egypt