Jugular foramen meningioma – A radiological case review

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Section: Neuroradiology
Area of Interest: Neuroradiology brain
Procedure: Contrast agent-intravenous
Imaging Technique: CT-Angiography
Special Focus: Neoplasia Case Type: Clinical Cases
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Patient: 49 years, female

Clinical History:

49-year-old female patient with a history of painless swelling on the left side of the neck for 6 months with retroauricular pain, tinnitus, left-sided hearing loss, vertigo and headache. On clinical examination, a firm, non-tender swelling was noted. Cranial nerves II to XII were grossly intact except for the VIII nerve.

Imaging Findings:

MRI of the brain with contrast demonstrated dural-based enhancing left cerebello-pontine angle mass with the jugular foramen extension. The intracranial component was producing mild mass effect on the left hemipons and middle cerebellar peduncle and the extracranial component in jugular foramen was encasing the internal jugular vein. MRA of anterior and posterior circulation appeared unremarkable.

CT brain also showed a dural-based left cerebello-pontine angle mass extending into the left jugular foramen with encasement of internal jugular vein. No hyperostosis or erosion of jugular foramen was noted.

CT angiography showed arterial supply of the mass through the maxillary branch of the left external carotid artery, superior cerebellar artery and the postero-inferior cerebellar artery.

Discussion:

Glomus jugulare (Paraganglioma) is the most common tumour that develops in the jugular foramen [1]. The other jugular foramen masses include neural sheath tumours like schwannomas and neurofibromas. Jugular foramen meningiomas (JFM) are exceedingly rare tumours of the fossa jugularis and comprise one of the smallest subgroups of meningioma. Jugular foramen meningiomas accounted for 4.3% of posterior fossa meningiomas [2]. Jugular foramen meningiomas arise from ectopic arachnoid granulations or pacchionian bodies associated with the lower cranial nerves. Jugular foramen meningiomas can be classified as primary if the tumour originates from the Jugular foramen or secondary when the tumour is centred in the posterior fossa, most commonly in the cerebellopontine angle or petroclival region, with extension into the jugular foramen [3]. Simultaneous intracranial and extracranial extension into the cervical spaces is common. In cases with extracranial extension, carotid artery encasement and jugular vein occlusion can be seen [4]. Although the treatment choice is surgery, resection can be associated with compromise of multiple cranial nerves (in particular CN VII and X) and is also associated with an increased local recurrence rate.

MR and CT imaging provide valuable distinction between meningioma and glomus tumour. High-resolution bone window CT is helpful for the diagnosis, but in case of absence of hyperostosis and bone
thickening or permeative? destructive pattern around the jugular foramen, the possibility of jugular foramen meningioma is less likely and this highly favours glomus tumour. On the other hand, if MRI findings on T2WI show iso to hypointense mass with the absence of high velocity flow voids, this appearance can be helpful to make the correct diagnosis of jugular foramen meningioma.

CT angiography enables assessment of the haemodynamics of meningiomas and facilitates its differential diagnosis from other tumours.

Therefore, the imaging technique plays an important role not only for a precise diagnosis, but also regarding prognostic and therapeutic implications.

**Differential Diagnosis List:** Jugular foramen meningioma, Glomus jugulare, Schwannoma

**Final Diagnosis:** Jugular foramen meningioma

**References:**


Description: Meningioma supplied by maxillary branch of left external carotid artery, superior cerebellar artery and postero-inferior cerebellar artery. Origin: Radiology department Jinnah postgraduate medical centre karachi Pakistan
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Description: Meningioma of the left jugular foramen (JF). Enhancing mass in the left cerebellopontine angle extending into the jugular foramen. Origin: Radiology department Jinnah postgraduate medical centre karachi Pakistan
Description: Left jugular foramen mass encasing the internal jugular vein. Origin: Radiology department Jinnah postgraduate medical centre karachi Pakistan
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Figure 5

**Description:** Left jugular foramen meningioma with encasement of internal jugular vein. **Origin:** Radiology department Jinnah postgraduate medical centre karachi Pakistan.

**Description:** Left jugular foramen meningioma with encasement of internal jugular vein. **Origin:** Radiology department Jinnah postgraduate medical centre karachi Pakistan.
Figure 6

Description: Left jugular foramen meningioma with encasement of internal jugular vein. Origin: Radiology department Jinnah postgraduate medical centre karachi Pakistan