

Upper Lateral Neck Swelling: Rare but Important Differential Diagnosis

A 20-year-old Malay female with no medical illness presented with a painless right upper neck swelling of few weeks duration. It was slowly increasing in size. The mass was located at the upper one-third of right sternocleidomastoid muscle which was firm in consistency. It measured 4 cm x 6 cm. She was treated for cervical lymphadenitis with a few courses of antibiotics. As the mass did not subside, and other ear, nose, throat (ENT) examinations showed normal findings, she was sent for ultrasonography of the neck and fine needle aspiration (FNA) of the mass. A well-defined heterogenous hyperechoic mass splaying carotid arteries was demonstrated. As the lesion was located at the carotid artery bifurcation, a computed tomography (CT) angiography was obtained (Fig. 1).

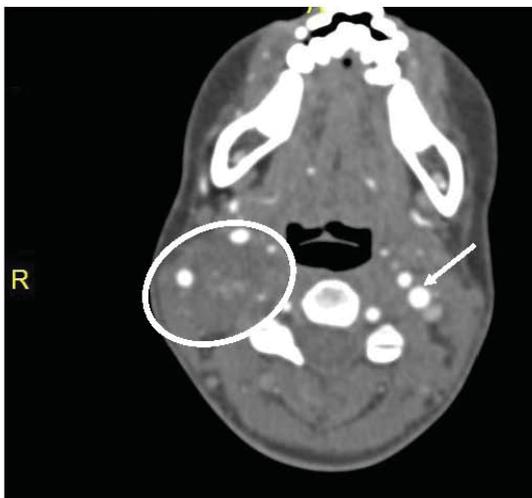


Fig 1. The splaying effect of the mass on the right (in circle) as compared to the left carotid artery branches (arrow).

What is the diagnosis?

- A. Tuberculous suppurative lymphadenitis
- B. Submandibular pleomorphic adenoma
- C. Carotid body tumour
- D. Tail of parotid sialadenosis
- E. Glomus vagale

CT angiogram confirmed the mass measuring 3.1 cm x 2.7 cm x 3.5 cm was located at right common carotid artery bifurcation extending superiorly to the base of skull and inferiorly to the upper border of C4. It was a right carotid body tumour (paraganglioma).

Discussion

Carotid body tumours are a type of rare tumour known as paragangliomas. Paragangliomas can arise at 4 sites in the head and neck region. The sites include carotid body, middle ear (glomus tympanicum), vagus nerve (glomus vagale) and the jugular bulb (glomus jugulare).¹

The average age of presentation is in the fifth decade, but younger age of presentation can occur, especially with the familial type. That is why it was not highly suspected in this case. Besides that, the mass commonly present at the upper lateral neck just below the angle of mandible may lead to the diagnosis of submandibular gland pathology, or cervical lymphadenopathy.^{2,3} If the tumour is suspected earlier, FNA is not advisable as carotid body tumour is a highly vascular lesion. This, in addition to its location, may put the great vessels at risk during needle puncture. However, in cases where the diagnosis is not clear on imaging, despite difficulty in cytodiagnosis, it can still be attempted with adequate care and extra precaution.^{3,4} Carotid CT angiography, magnetic resonance imaging (MRI) and magnetic resonance angiography are needed to demonstrate the tumour circulation, extent of the tumour and to test for cerebral cross circulation. This is very important especially if surgery is being considered.

The common pathognomonic radiological finding is splaying of the carotid arteries. It can be clearly demonstrated on angiography whereby the internal and external carotid arteries are separated by the mass (Fig. 2). This configuration is easy to understand as the mass arises from the carotid bulb which is located at the bifurcation. The slow growth of the mass will eventually separate the arteries.

Five percent of the patients have bilateral tumours and up to 10% of these tumours can be malignant. Surgery and radiotherapy are both options of treatment. Choice of treatment is dependent on the patient and tumour factors.

Answer: C



Fig. 2. Reconstructed 3-D image at anterior view showing a gap between the internal and external carotid as compared to the opposite side

Surgery, if opted for, is usually carried out by a head and neck surgeon together with a vascular surgeon. Complications arise may include bleeding, injury to the vagus and hypoglossal nerves and cerebral infarction if the carotid artery needs to be ligated, and there is poor cross circulation from the contralateral side to the brain. Preoperative embolisation also has its own risk, namely the internal carotid artery thrombosis and cerebral embolisation.⁵ Thus, the mere incidental finding of carotid body tumour does not justify its removal. In our case, surgery was recommended but the patient refused.

REFERENCES

1. John C Watkinson, Mark N Gaze, Janet A Wilson. Rare tumours. Stell and Maran's Head and Neck Surgery. Fourth edition. Oxford: Butterworth-Heinemann.
2. Shibuya Y, Umeda M, Yoshikawa T, Komoru T. Carotid body tumour. *Oral Oncol* 2002;38:313-7.
3. Masilamani S, Duvuru P, Sundram S. Fine needle aspiration cytology diagnosis of a case of carotid body tumour. *Singapore Med J* 2012;53:e35-7.
4. Rosa M, Sahoo S. Bilateral carotid body tumor: the role of fine-needle aspiration biopsy in the preoperative diagnosis. *Diagn Cytopathol* 2008;36:178-80.
5. Barraclough A, Bhamidipathy V, Bray P, Ponosh S. Carotid body tumour. *ANZ J Surg* 2011;81:934-5.

Irfan Mohamad, ¹MD, MMed (ORL-HNS),

Nik Fariza Husna Nik Hassan, ²MD, MMed (ORL-HNS)

¹Department of Otorhinolaryngology-Head & Neck Surgery, School of Medical Sciences, Universiti Sains Malaysia Health Campus, Kelantan, Malaysia

²Speech Pathology Programme, School of Health Sciences, Universiti Sains Malaysia Health Campus, Kelantan, Malaysia

Address for Correspondence: Dr Irfan Mohamad, Department of Otorhinolaryngology-Head and Neck Surgery, School of Medical Sciences, Universiti Sains Malaysia Health Campus, 16150 Kota Bharu, Kelantan, Malaysia.
Email: irfan@kb.usm.my