

Huge brachial plexus schwannoma, masking as a cystic neck mass

Jasmine Pei Ying Kho, Narayanan Prepageran

Department of ENT, University Malaya Medical Centre, Kuala Lumpur, Malaysia

Correspondence to: Jasmine Pei Ying Kho. Otorhinolaryngology Department, Pusat Perubatan Universiti Malaya, Lembah Pantai, 59100 Kuala Lumpur, Federal Territory of Kuala Lumpur, Malaysia. Email: dr.kho.m.d@gmail.com.

Abstract: Schwannomas are solitary, benign tumors arising from the nerve sheaths. They are frequently reported in the thorax predominantly in the posterior mediastinum, but are rarely seen to arise from the brachial plexus. Schwannomas are well demarcated lesions with a slow insidious growth. Presented is a case of a large brachial plexus schwannoma, masking as a cystic lesion in the lateral neck. The patient presented with concerns of a cystic mass progressively increasing in size over a period of four years, initially symptomless, but later caused numbness and tingling sensation over his right forearm, tip of right thumb and index finger. Following histological confirmation via fine needle aspiration and magnetic resonance imaging, the patient underwent surgical excision where by the tumor was dissected from its attachment to the nerve sheath. The patient recovered well, and by the third day post operatively, his neurological symptoms resolved completely. Upon follow up in clinic 1-week post-surgery, the scar had healed well, and his numbness or tingling sensation remained in abeyance. This case illustrates that a schwannoma may present insidiously as a cystic lesion and its possible origin may arise from the brachial plexus.

Keywords: Brachial plexus schwannoma; cystic neck mass; neurilemmoma; case report

Received: 18 May 2018; Accepted: 07 August 2018; Published: 04 September 2018.

doi: 10.21037/acr.2018.08.01

View this article at: <http://dx.doi.org/10.21037/acr.2018.08.01>

Introduction

Schwannomas are benign encapsulated tumors, originating from the Schwann cells of cranial, peripheral or autonomic nerve sheaths. Verocay first described schwannoma as a pathological entity in 1908, and coined the term neurinoma in 1910 followed by Stout whom used the term neurilemmoma in 1935 (1). It is reported that 25–45% of schwannomas present in the head and neck region, however primary tumors of the brachial plexus are rare (2). A more common differential for a painless lateral cystic neck mass is lymphangiomatous malformations which histological subtypes include cavernous lymphangioma, capillary lymphangioma and cystic hygroma. It is rare to find a brachial plexus schwannoma, and also uncommon for it to present as a cystic neck mass. Reported is a case of a 56-year-old man with a lateral supraclavicular cystic mass arising from the brachial plexus, histologically proven to be a schwannoma.

Case presentation

A 56-year-old Chinese gentleman presented with a painless cystic right neck swelling, progressively increasing in size over a 4-year period. He had no upper limb weakness nor pain, but complained of tingling sensation over the radial aspect of his right forearm, numbness over the tip of right thumb and index finger as the lesion progressively expanded. He was dominant right-handed worker which interfered with his employment as a designer in the advertisement department.

The mass extended from the lower one third of the right sternocleidomastoid muscle and laterally into the right supraclavicular fossa. It measured 8 cm × 8 cm, was soft, fluctuant, non-pulsatile and mobile. The overlying skin was smooth, not attached and not erythematous. There was no tenderness on palpation, no bruit on auscultation. There were no palpable neck nodes and no significant findings in the flexible scope of the nasopharynx and larynx.

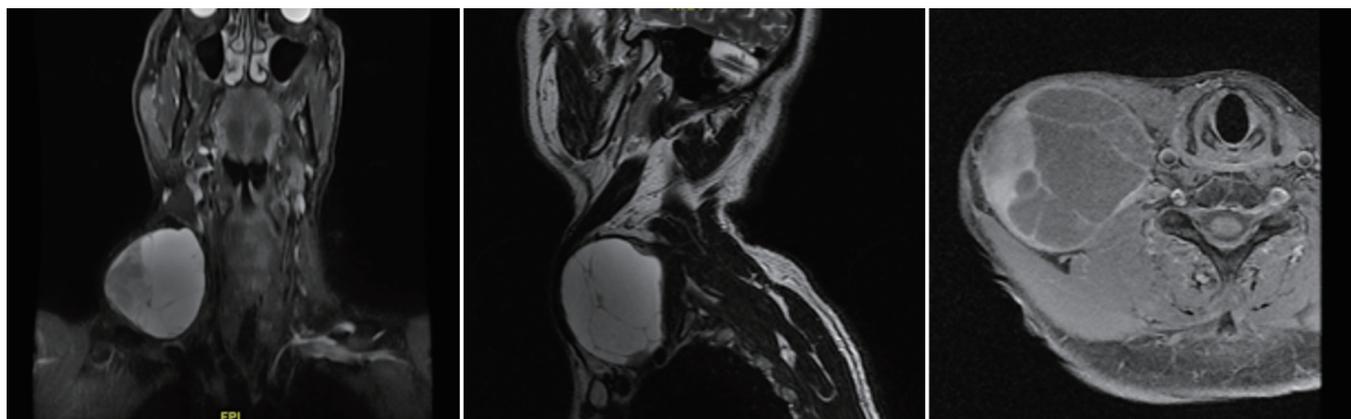


Figure 1 MRI scan showing an enhancing cystic lesion in the right supraclavicular region. Note the multiseptated solid-cystic nature of the mass on the axial cut.

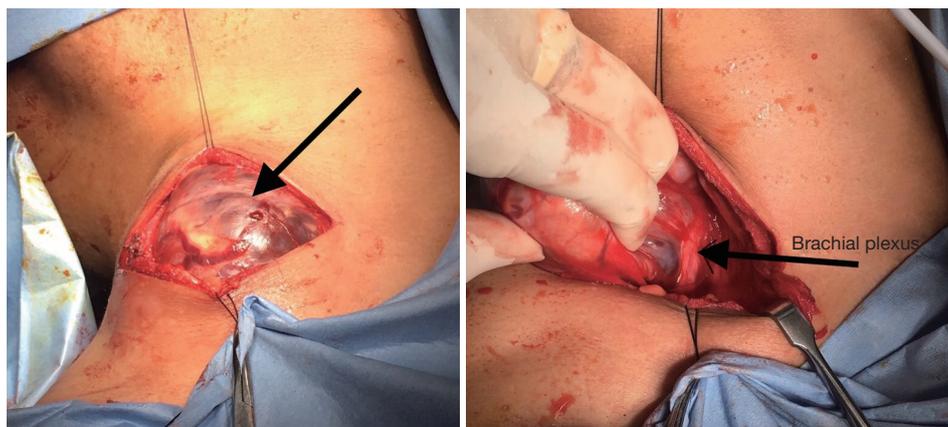


Figure 2 Intraoperative view of the tumor (arrow). The brachial plexus is clearly visualized beneath the mass.

A magnetic resonance imaging scan showed a multiseptated enhancing cystic lesion at the right supraclavicular region measuring 7.9 cm × 7.9 cm × 7.7 cm, with normal exiting nerves (*Figure 1*). A fine needle aspiration showed spindle cell neoplasm consistent with schwannoma.

The patient was advised that surgical excision of the tumour was the most appropriate treatment to which he consented. A curvilinear incision was placed over the mass, the overlying soft tissue was separated and the surface of the lesion was carefully dissected from its attachment to the nerve sheath. The tumor measured 8 cm × 8 cm, was solid-cystic in nature with brownish fluid content. It was compressing the brachial plexus and there was thinning of the lower main trunk. The division and associated nerves were anatomically in continuity and no evidence of any defects was observed (*Figure 2*).

Post operatively, the patient had an uncomplicated recovery with no signs of weakness of the right upper limb. Over the following 3–5 days, the patient reported return of sensation over his right thumb and index finger, and the tingling sensation over his forearm had disappeared.

Discussion

Brachial plexus tumors are rare entities that comprise <5% of all tumors of upper extremities (3). The most common benign peripheral nerve sheath tumor (PNST) arising from the brachial plexus is neurofibromas, which are usually associated with neurofibromatosis type I (4). Schwannomas, are the second commonest PNST, of which, only 5% arise from the brachial plexus (5).

Schwannomas are slow growing, benign, encapsulated

masses arising from Schwann cells. Their indolent nature typical presentation is as a painless, symptomless, solitary mass. Patients may present with nerve compression symptoms, less commonly with radiating pain and sensory or motor deficit (6). In contrast to neurofibromas, schwannomas may demonstrate cystic areas of degeneration and hemorrhagic necrosis (1,7). Grossly, they may be round, oval or plexiform in shape and may have a yellow or gray colour (7). Histologically, areas of dense spindle cells (Antoni A) and loosely arranged cells (Antoni B) may be seen (8).

The recommended approach to investigating a large cystic neck mass, is to initially proceed with a contrasted computed tomographic (CT) scan to differentiate between a vascular and nonvascular tumour (1). Once the mass is confirmed to be nonvascular in origin, it is advised to proceed to perform a fine needle aspiration cytology (FNAC) to distinguish between malignant and benign neoplasms. A magnetic resonant imaging (MRI) will further assist to delineate the features of the mass, help distinguish neurologic or non-neurological tissue and act as a road map during surgery.

Surgical excision, is recommended as the first choice of treatment, for tumors causing neurological deficit, discomfort, progressively increasing in size with a suspicion of malignancy and to prevent or minimize neural damage (7,9). Complete resection of the tumor with preservation of the nerve is the ideal goal. As schwannomas are well encapsulated, it is almost always possible to enucleate and separate the tumor from the nerve sheath (10). Courvoisier reported the first surgical excision of a brachial plexus schwannoma in 1886, which was complicated post operatively with paralysis of the deltoid and biceps muscle (11). Complications reported in most case series are temporary sensory and motor deficit (12).

Schwannomas are reported to be radio resistant, and the potential for malignant change is extremely rare. Where the tumor is inoperable, radiotherapy may be considered as a palliative treatment (13).

Conclusions

Brachial plexus schwannomas are infrequently seen, and may present as a huge cystic neck mass. Aside from a palpable lesion, they are usually symptomless and slow growing. When faced with a fluctuant lateral neck mass, a brachial plexus schwannoma should be considered first on the differential diagnosis. Pathologically they are well encapsulated, which allows for complete excision. Total

surgical removal is the recommended treatment, with preservation of the nerve trunk.

Acknowledgements

The authors would like to thank the Department of Otolaryngology, University Malaya Medical Centre for its continuous support.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Informed Consent: Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

References

1. Prasad R, Kumar V, Manohar SR. Extracranial Schwannomas of Head and Neck. *J Otol Online* 2014;4(2).
2. Chang SC, Schi YM. Neurilemmoma of the vagus nerve. A case report and brief literature review. *Laryngoscope* 1984;94:946-9.
3. Donner TR, Voorhies RM, Kline DG. Neural sheath tumors of major nerves. *J Neurosurg* 1994;81:362-73.
4. Binder DK, Smith JS, Barbaro NM. Primary brachial plexus tumors: imaging, surgical, and pathological findings in 25 patients. *Neurosurg Focus* 2004;16:E11.
5. Ahn KM, Lee HK, Lee KD, et al. A case of neurilemmoma of the brachial plexus. *J Korean Otolaryngol* 2002;8:733-5.
6. Go MH, Kim SH, Cho KH. Brachial plexus tumors in a consecutive series of twenty one patients. *J Korean Neurosurg Soc* 2012 52:138-43.
7. Huang JH, Zaghoul K, Zager EL. Surgical management of brachial plexus region tumors. *Surg Neurol* 2004;61:372-8.
8. Kumar A, Akhtar S. Schwannoma of brachial plexus. *Indian J Surg* 2011;73:80-1.
9. Chen F, Miyahara R, Matsunaga Y, et al. Schwannoma of the brachial plexus presenting as an enlarging cystic mass: report of a case. *Ann Thorac Cardiovasc Surg* 2008;14:311-3.
10. Horowitz J, Kline DG, Keller SM. Schwannoma of the brachial plexus mimicking an apical lung tumor. *Ann Thorac Surg* 1991;52:555-6.
11. Lee HJ, Kim JH, Rhee SH, et al. Is surgery for brachial

- plexus schwannomas safe and effective?. *Clin Orthop Relat Res* 2014;472:1893-8.
12. Ahmadi A, Hirbod H, Cheraghipoor M, et al. Schwannoma of the Brachial Plexus Presented as a Neck Mass: A Case Report and Review of the Literature. *International Journal of Otolaryngology and Head & Neck Surgery* 2015;4:104-7.
 13. Calcaterra TC, Rich JR, Ward PW. Neurilemoma of the sphenoid sinus. *Arch Otolaryngol* 1974;100:383-5.

doi: 10.21037/acr.2018.08.01

Cite this article as: Kho JP, Prepageran N. Huge brachial plexus schwannoma, masking as a cystic neck mass. *AME Case Rep* 2018;2:41.