



Incidental intrathoracic schwannoma post upper respiratory tract infection associated with Horner's syndrome: A case report

Salman Khan^{a,*}, Mahin Rehman^a, Basit Achakzai^a, Amber Khan^a, Imran Khan^b, Nathaniel McElhaney^a, Faraz Siddiqui^a, Apurwa Karki^a

^a Guthrie Clinic, Sayre, Pennsylvania 18840, USA

^b Northwell Health, NY, 11030, USA

ARTICLE INFO

Keywords:

Horner's syndrome
Schwannoma
Intrathoracic

ABSTRACT

Background: Schwannomas may remain asymptomatic, and may be discovered incidentally.

Case presentation: Here we describe a case of a young female complaining of upper respiratory tract symptoms who was incidentally found to have an intrathoracic neurogenic tumor consistent with schwannoma associated with Horner's syndrome. Biopsy of the tumor revealed S100, BCL-2 and CD 99+ compatible with schwannoma. Patient had brachial plexus exploration and dissection of thoracic inlet tumor resected through video assisted thoracoscopic surgery (VATS). Patient did exceptionally well afterwards with no documented Horner's symptoms.

Conclusion: Characterized as a rare case, this patient presented post viral infection and found to have a rare tumor. Successful surgical treatment alleviated her symptoms.

1. Background

Malignant tumors in the mediastinum are unusual, accounting for less than 1% of mediastinal tumors. Of those, neural origin are usually benign in the mediastinum [1]. The most common tumors are located in the posterior mediastinum and are neurogenic such as schwannomas but also may be pleural fibromas. Definitive diagnosis requires tissue sampling [2]. Incidence is extremely rare, with 6% of giant schwannomas originating from the vagus nerve. Currently there are not enough cases to have a prevalence.

Horner Syndrome is associated with mediastinal tumors, which is characterized by obstruction of the sympathetic pathway to the eye and face consisting of ipsilateral myosis, partial proptosis and anhidrosis [3].

2. Case Presentation

Thirty one-year-old female with a past medical history of two miscarriages was seen in the office for an upper respiratory infection and prescribed antibiotics and ordered a two view chest x-ray which showed a 6 cm round mass in the right upper lobe suspicious for pancoast tumor [Fig. 1A and B]. She had been complaining of headaches, right eyelid drooping, dizziness and uneven pupils as her right side was smaller than

left. Subsequently had computed tomography (CT) chest showing small right apical mass with fibrous tumor of the pleura with involvement possibly of the nerve sheath measuring 6 cm × 4.8 cm × 5.7 cm [Fig. 2A and B]. Patient had CT guided lung biopsy which demonstrated S100, BCL-2 and CD 99+ compatible with schwannoma [Fig. 3A–D]. She had positron emission tomography (PET) scan performed which showed intense fluorodeoxyglucose (FDG) uptake in the right apical region with standardized uptake values (SUV) max of 6.7 with no FDG avid thoracic lymphadenopathy, extensive FDG uptake within hypermetabolic fat in the left neck, supraclavicular fossa, and superior right suprarenal fat. Focal FDG uptake localizing to the posterior left neck with SUV max of 3.8. Patient was referred to surgery where she had brachial plexus exploration and dissection of thoracic inlet tumor resected through VATS.

3. Discussion

Neurogenic tumors are the most common type of neoplasia the posterior mediastinum. This consists of schwannomas and neurofibromas along with ganglion neuroblastomas. Benign schwannomas are the most common neurogenic tumor. The origin of this tumor stems from Schwann cells in the nerve sheath. Schwannomas consist of spindle

* Corresponding author. Guthrie Clinic, Sayre, Pennsylvania 18840, USA.

E-mail address: Salman.khan@guthrie.org (S. Khan).

<https://doi.org/10.1016/j.rmcr.2020.101126>

Received 14 February 2020; Accepted 9 June 2020

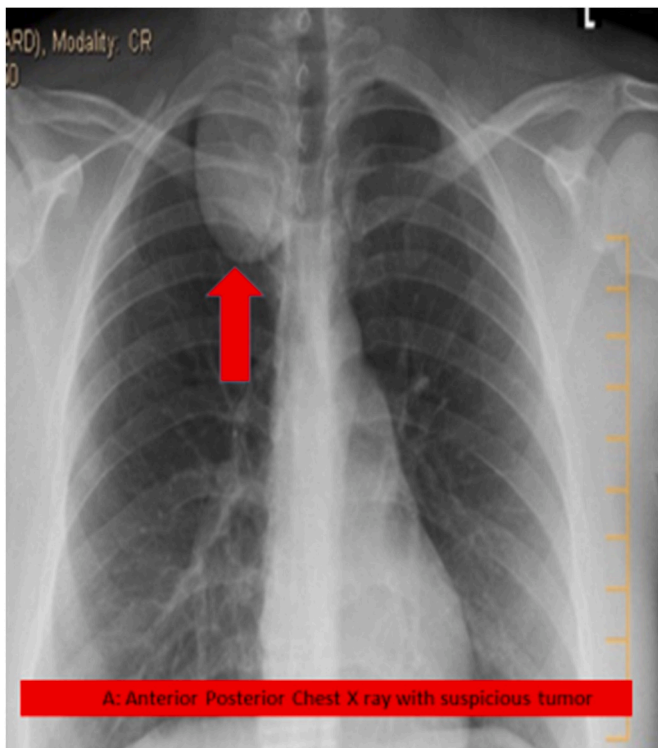
Available online 10 June 2020

2213-0071/© 2020 The Authors.

Published by Elsevier Ltd.

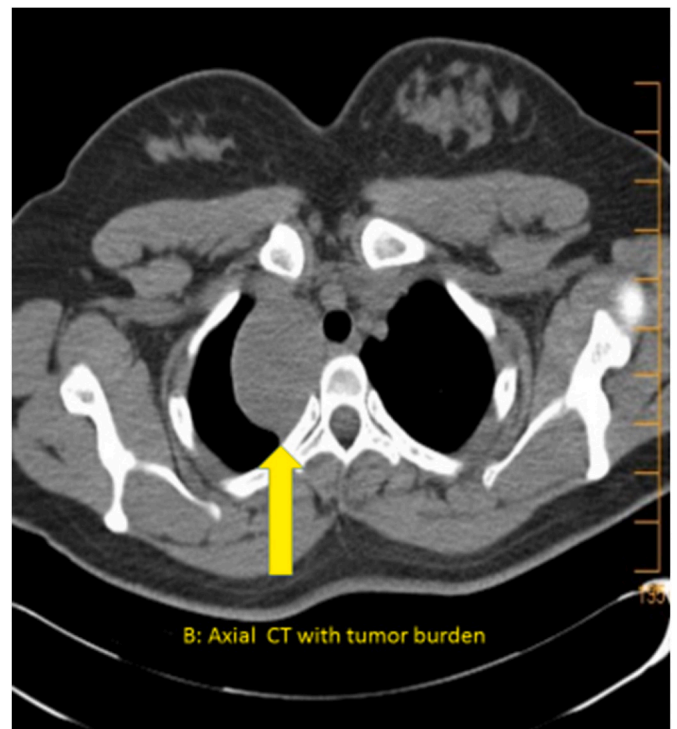
This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



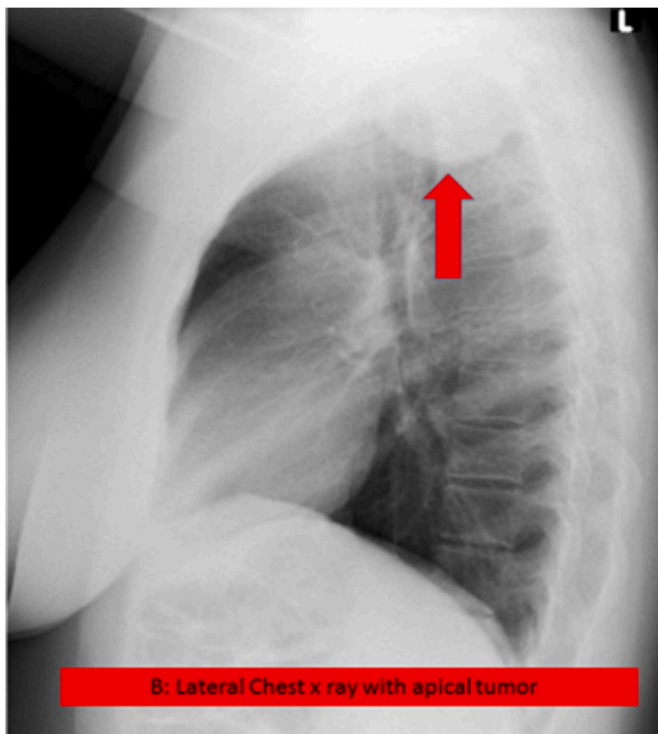
A: Anterior Posterior Chest X ray with suspicious tumor

Fig. 1A. Chest X ray demonstrating apical lung mass.



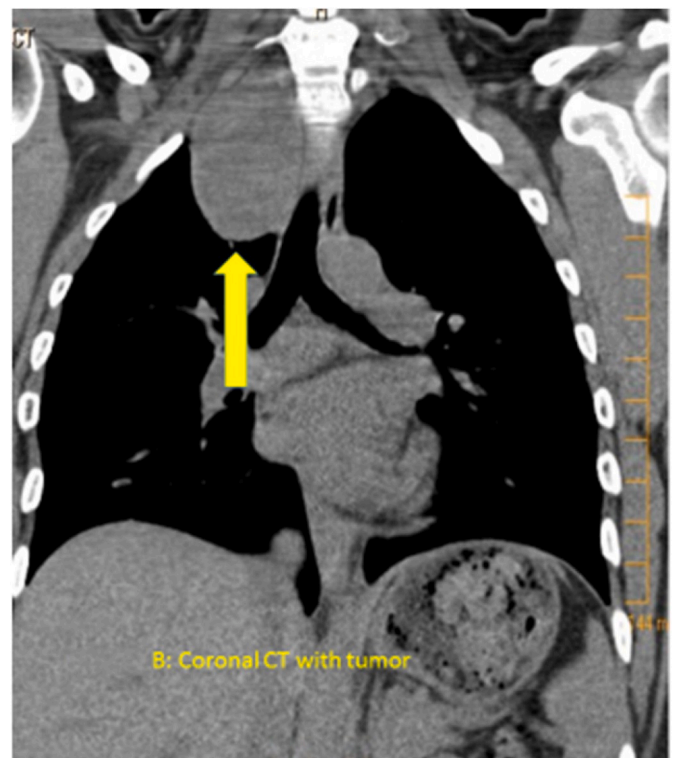
B: Axial CT with tumor burden

Fig. 2A. Axial image of CT Chest showing right lung mass.



B: Lateral Chest x ray with apical tumor

Fig. 1B. Lateral Chest x ray demonstrating apical lung mass.



B: Coronal CT with tumor

Fig. 2B. Coronal CT of the Chest showing tumor not invading the lung space.

cells organized and small fascicles with bipolar oriented or wavy nuclei along cell appendages [4].

Benign and malignant peripheral nerve sheath tumors are often spindle-shaped. Recognition of adjacent nerves as well as well-defined margins in the presence of split fat sign may suggest benign tumor. Imaging features suggestive of malignancy can be larger in size and have

infiltrative margins [5].

This patient developed a rare association of intrathoracic schwannoma that presented itself as Horner syndrome. Although Horner syndrome is a well-known association of sympathetic chain schwannomas of the neck and malignant lung tumors, it is uncommon for her to be presented for benign intrathoracic lesion.

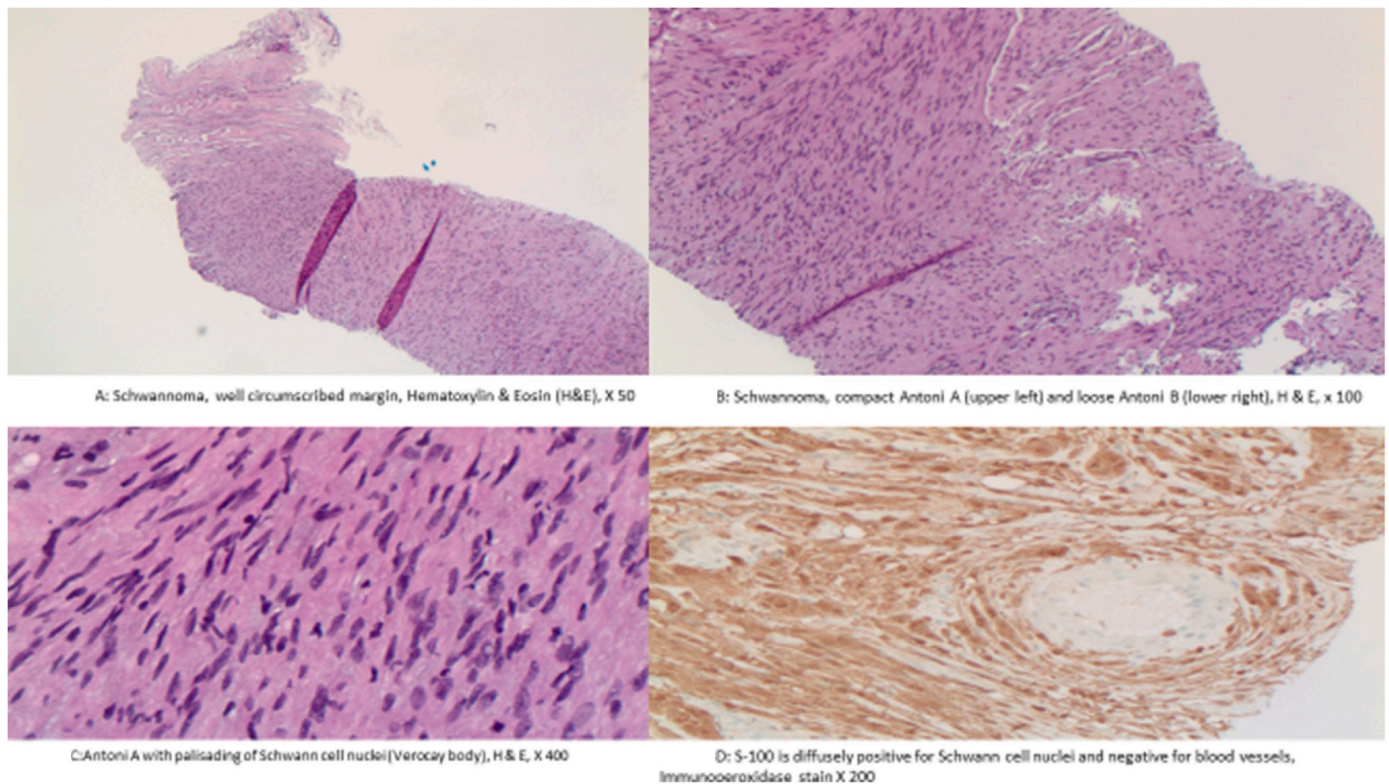


Fig. 3. A – D Pathology slides demonstrating schwannoma with different magnifications.

Often these tumors are predominantly discovered in the third and fourth decade of life. They usually are asymptomatic but with signs of nerve compression, Pancoast tumor and Horner syndrome can occur. Computed tomography reveals focal calcifications, cystic changes. Treatment is surgical resection [6].

4. Conclusion

Our patient had a successful brachial plexus exploration and dissection of thoracic inlet tumor resected through VATS. Afterwards she had a chest tube in place for 2 days with minimal output and was subsequently removed. She was eventually discharged from the hospital and will be following up in our pulmonary clinic.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Agreed by patient.

Availability of data and materials

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

Funding

Not applicable.

Authors' contributions

SK prepared the manuscript. AK interpreted her CT and CXR. FD evaluated her PFT. NM saw her in clinic for surgical evaluation.

Authors' information (optional)

None.

Declaration of competing interest

The authors declare that they have no competing interests.

Acknowledgements

None.

List of Abbreviations

VATS	Video Assisted Thoracoscopic surgery
CT	Computed Tomography
PET	Positron emission tomography
FDG	fluorodeoxyglucose

References

- [1] E. Angelopoulos, K. Eleftheriou, G. Kyriakopoulos, K. Athanassiadi, D. Rontogianni, C. Routsis, A giant intrathoracic malignant schwannoma causing respiratory failure in a patient without von Recklinghausen's disease, *Case Rep. Med.* (2016) 1–3, 2016.
- [2] R. Ritz, A. Pehl, D. Bartsch, A. Kirschbaum, Giant intrathoracic left-sided vagal schwannoma, *Thorac. Cardiovasc. Surg. Rep.* 2 (1) (2013) 19–22, <https://doi.org/10.1055/s-0033-1337368>.

- [3] P. Torpiano, E. Borg, P. Cassar, A. Manche', Intrathoracic schwannoma with Horner syndrome, *Case Rep.* 2013 (dec06 1) (2013) bcr2013201247.
- [4] J. Reed, K. Hallet, D. Feigin, Neural tumors of the thorax: subject review from the AFIP, *Radiology* 126 (1) (1978) 9–17.
- [5] C. Li, G. Huang, H. Wu, W. Chen, L. Shih, J. Lii, S. Duh, R. Chen, H. Tu, W. Chan, Differentiation of soft tissue benign and malignant peripheral nerve sheath tumors with magnetic resonance imaging, *Clin. Imag.* 32 (2) (2008) 121–127, 6.
- [6] D. Shahian, W. Neptune, F. Ellis, Pancoast tumors: improved survival with preoperative and postoperative radiotherapy, *Ann. Thorac. Surg.* 43 (1) (1987) 32–38.