SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

Cardiothoracic Surgery

Schwannoma in Thorax

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DOI: 10.36347/sasjs.2024.v10i03.024 | **Received:** 19.02.2024 | **Accepted:** 24.03.2024 | **Published:** 30.03.2024

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Abstract **Case Report**

Thoracic schwannomas are the most common nerve sheath tumour in the posterior mediastinum which are usually asymptomatic unless the mass compressing on the surrounding structures. Radiological scans were done and mass was seen in the right lower lobe. Right limited hemi clamp shell and excision of tumour was performed. Intraoperatively three distinct tumours were found and histopathology examination shows benign schwannomas.

Keywords: Schwannoma, thoracic tumour, benign schwannomas, right limited hemi clamp shell surgery.

INTRODUCTION

Schwannomas are the most common tumours of peripheral nerves arising from Schwann cells which are specialised myelin-producing cells of peripheral nerves sheaths. They represent 1% to 2% of total thoracic tumours. Common locations are the flexor surfaces of extremities, neck, mediastinum, retroperitoneum, posterior spinal roots and cerebellopontine angle. Posterior mediastinum is the most common site in the thorax. These tumours usually are benign, slow growing, asymptomatic and often diagnosed incidentally. Malignant schwannomas are significantly rarer which occurs at a ratio of 1:11 compared to benign schwannomas. Resection of tumour often is the cure of the disease.

CASE REPORT

A 42 years old Chinese female presented with shortness of breath and difficulty in climbing stairs (two flight of stairs). Patient initially went to a general practitioner; chest X ray noted mass over the right thorax. Subsequently patient went to private hospital and proceeded with computed tomography thorax (CT thorax). CT thorax shows solid nodules measuring up to 10cm. Subsequently, patient went for an excision of the nodules however was abandoned as intraoperative noted that the tumours likely looks like a bleeding tumour. Histopathological examination from the nodules taken shows spindle cell tumour. Differentials include solitary fibrous tumour and other spindle cell tumour.

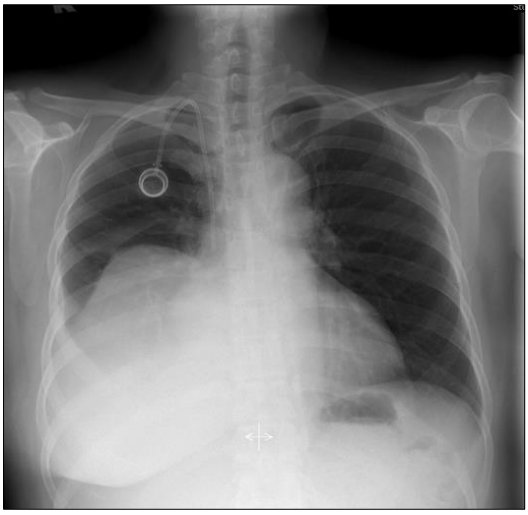

Figure 1: shows the Chest X ray with mass seen over the right thorax area

Computed tomography pulmonary artery (CTPA) was done; shows right lower lobe main pulmonary artery branch is splayed by a mass which is seen arising from the right lower lobe measuring approximately 9.6cm x 7.9cm decreasing the right lower lobe lung volume. The mass is seen compressing the lower lobe bronchus causing distal atelectasis. There is another mass inferior to the former mass measuring 5.6cm x 9.6cm. Patient subsequently underwent intercostal angiogram and embolisation; active tumour blush noted from the right T11 intercostal artery with minimal supply noted from the right T12 intercostal artery. The T11 intercostal artery super selectively cannulated and embolised with particles sized 255-300um till stasis. A CT thorax was repeated after the intercostal angiogram and embolisation shows enlarging right pleural masses with local mass effect and worsening pleural effusion, portal vein thrombosis with suspicious hepatic IVC thrombosis.

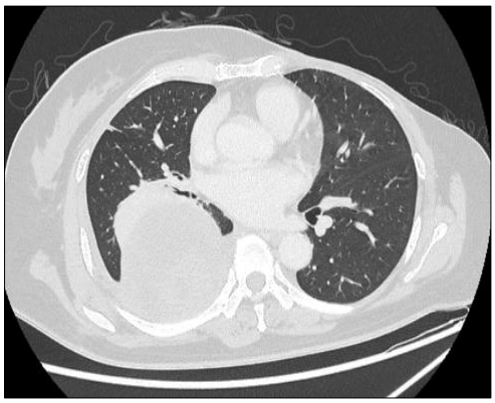

Figure 2

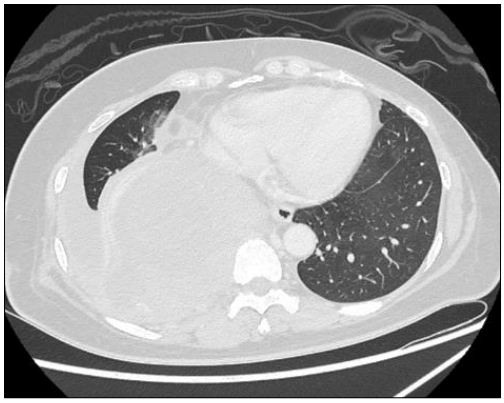

Figure 3

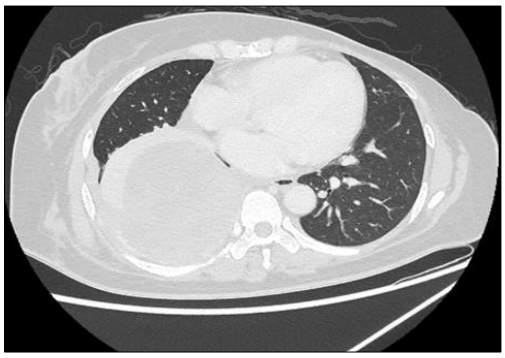

Figure 4

Figure 2, 3 & 4: shows CT images with mass over the right thorax area

Patient was subsequently referred to cardiothoracic department. During the admission, patient's vitals has been stable. On further history, there was no family history of neurofibroma or other malignancies. Patient underwent right limited hemi clamp shell and excision of tumour was performed. Intraoperatively, noted 3 distinct tumours with clear demarcation to surrounding structures; each respectively

measures 20g, 10g and 10g. (Figure 5, 6 & 7). These tumours compressing on the right lower lobe bronchus causing collapse of the right lower lobe. It was an uneventful postoperative recovery with no adjuvant therapy required. The histopathological examination shows benign schwannomas. The tumours show soft tissue tumours that composed of spindle neural cells with alternating hypercellular and hypocellular area. Spindle cells show bland looking nuclei. Mitosis is not increased. No sarcomatous transformation is found.

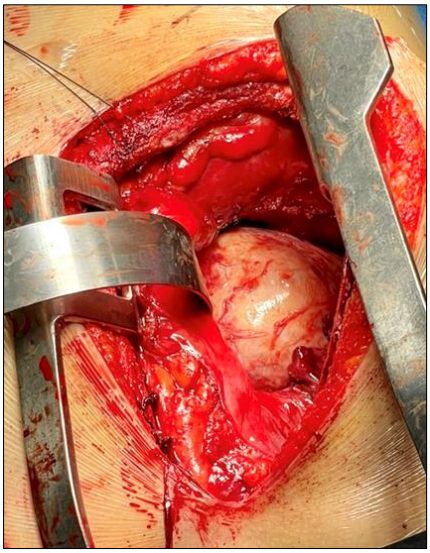

Figure 5

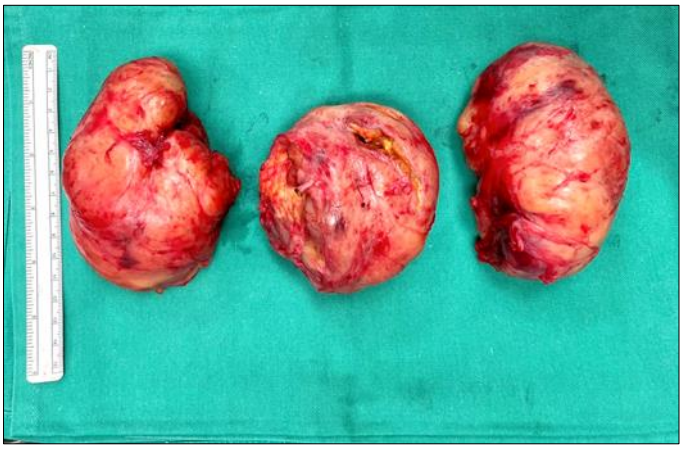

Figure 6

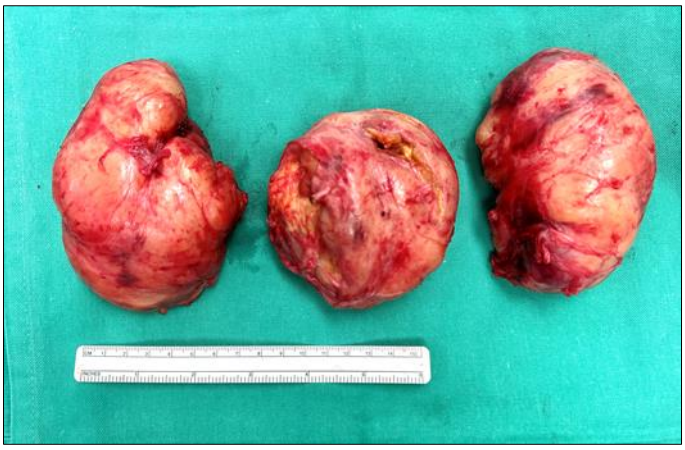

Figure 7

DISCUSSION

Schwannoma, also known as neurilemmoma, is a tumour which arises from specialised nerve cells called Schwann cells which produce myelin of either the sympathetic or parasympathetic autonomic nerve fiber sheaths. It is relatively a common mediastinal neurogenic tumour, accounting for 25.3% of intrathoracic neurogenic tumours [1]. Posterior mediastinum is the most common site of schwannoma in the thorax [2].

Schwannoma presented as a well circumscribed and encapsulated mass and usually is solitary. Most of the schwannoma is benign, slow growing tumour originating primarily from a spinal nerve root but may involve any thoracic nerve; commonly the intercostal nerves and autonomic nerves. Hence, it does not usually produce symptoms. Schwannoma predominantly affects males in their third of forth decades of life [3].

Differential diagnosis of pleural schwannomas include tumours which are solitary, solid, well-demarcated pleural lesions such as pleural lipoma, pleural metastasis, mesothelioma and solitary fibrous tumour. Usually the laboratory tests are within the normal limits.

The classical presentation of schwannoma in thorax is an asymptomatic round mass with well-defined margins with minimal contrast enhancement found on chest radiographs [4]. Meanwhile, malignant lesions can present as pulmonary pleural nodules, pleural effusion and mass lesions. CT scan remains the main diagnostic modality for these tumours. CT scan able to determine the components of the tumour (cystic / solid), well defined smooth round / ovoid lesions of hypodensity / isodensity with encapsulation and / or cystic degeneration [5]. MRI scan is also used to diagnose schwannoma in which T1 weighted images were isointense with skeletal muscle and T2 images are hyperintense. However, MRI scan is not able to differentiate between benign and malignant lesions and this pattern of signal intensity is not specify for neural tumours.

Microscopically, from the histopathology, Antoni A and Antoni B areas are revealed in the majority of pleural schwannomas. Antoni A represents the areas of hypercellularity which composed of closely packed long spindle cells in palisading and interlacing fashions. Besides that, Verona's bodies also can be seen in Antoni A areas. Antoni B represents areas of myxoid hypocellularity exhibiting degenerative changes (e.g. cyst formation, haemorrhage, calcification, xanthomatous infiltration and hyalinization) [6].

Resection of tumour remains the definitive treatment and it may ranging from wedge or sleeve resection to lobectomy or pneumonectomy. Benign lesions rarely recur after resection done [7]. Metastasis to lung has been reported but it is extremely rare. Signs of malignancy invasion includes absence of capsule, perineural invasion, increased mitosis figures, ill-defined cell borders, areas of hemorrhagic and cystic degeneration. Malignant lesions have been described in patients with neurofibromatosis type I and patients with positive history of previous radiation therapy [3].

CONCLUSION

Schwannoma is rarely seen in neoplasm of thorax. Most of the patients are asymptomatic. Imaging such as CT scan with histopathological examination helps in diagnosis of the neoplasm. Benign lesions usually shows good prognosis after resection was done with continuous follow up. Schwannoma should always be one of our differential diagnosis when treating thoracic neoplasms.

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