CASE REPORT

Posterior mediastinal mass diagnosed as schwannoma with concomitant tuberculosis

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SUMMARY

A 21-year-old non-smoker, non-hypertensive male without diabetes was referred to our pulmonary medicine department with suspected malignant intrathoracic mass. The clinicoradiological evaluation revealed that it could be a posterior mediastinal mass. The same diagnosis was confirmed on performing CT and MRI. Benign posterior mediastinal schwannoma was suspected as it is the most common posterior mediastinal mass. It was completely resected. Histopathological examination confirmed the same. The mass was also sent for culture for mycobacterium which came out to be positive. The patient recovered from the surgery and postoperative X-ray showed complete clearance. He was treated with antitubercular treatment and responded very well.

BACKGROUND

One of the most common causes of a nearly asymptomatic posterior mediastinal mass is a benign schwannoma. We present a case of a posterior mediastinal schwannoma misdiagnosed as soft tissue sarcoma. The culture of mass revealed coexisting tuberculosis. This case report highlights the need to be aware of the fact that an asymptomatic or nearly asymptomatic posterior mediastinal mass should always be suspected for a neurogenic tumour particularly benign schwannoma. It also emphasises the importance of not performing fine-needle aspiration cytology (FNAC) in a suspected case of schwannoma. It reminds us of potential coexistence of tuberculosis in any case of incidentoma especially in the present scenario of resurgence of tuberculosis as a global epidemic with the increasing incidence of HIV and AIDS. To the best of our knowledge, this is the first reported case of a schwannoma and tuberculosis coexisting in a posterior mediastinal mass.

CASE PRESENTATION

A 21-year-old non-smoker, non-hypertensive male without diabetes was referred to our pulmonary medicine department with suspected malignant intrathoracic mass with a six-month history of on and off dry cough, fever, loss of appetite and chest pain. For these symptoms he was taking treatment from his family physician in the form of pain killers and antibiotics. When he did not get relief from this treatment, routine blood investigations and X-ray of the chest posteroanterior (PA) view were carried out. All routine blood investigations were within normal limits. Chest radiograph, however, showed a large, well-defined soft tissue

mass that projected over the right hilum. The right hilum could be visualised through this mass. The paravertebral tissue, dorsal spine and costophrenic angles were normal, and the lung fields were clear (figure 1). At this stage patient was suspected as a case of right-sided intrathoracic malignant mass and was referred our pulmonary medicine department.

We performed a contrast-enhanced CT (CECT) thorax (figure 2) which revealed a well-defined large soft tissue density mass measuring 6.4×4.4 cm in size. Heterogeneous attenuation pattern with heterogeneous enhancement on post-contrast images was present with presence of areas of necrosis. No calcification was seen. The adjacent ribs and vertebral bodies were normal. Now the suspicion of malignancy became stronger and a CT-guided FNAC of the mass was performed. However, it was inconclusive and hence procedure was repeated which revealed sarcoma but our clinical suspicion was totally against it.

We suspected it as a posterior mediastinal mass and a MRI (figure 3A, B) was advised to see for extension of lesions which revealed well circumscribed heterogeneously enhancing extra pleural soft tissue mass measuring $6 \times 5.1 \times 6.4$ cm seen in right paravertebral region from D6 to D8 vertebral

Figure 1 Large soft tissue mass over the right hilum.

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Figure 2 Contrast-enhanced CT thorax showing well-defined large soft tissue density mass.

levels. It was indenting the underlying lung parenchyma with apparent involvement. No demonstrable marrow lesion was seen in adjoining vertebral bodies and ribs. No intraspinal extension was there. No nodule was seen in both the lungs to suggest pulmonary metastasis. Major cardiac vascular structures were free. Both main bronchi were unremarkable. Now it was almost confirmed that it was a posterior mediastinal mass and was not involving lung parenchyma. So patient was referred to surgical oncology for complete excision of the mass. He underwent posterolateral thoracotomy and complete excision of the

mass. A globoid-shaped cystic mass of size approximate 7×5×6 cm was excised which was having a capsule and occasional necrotic areas were also seen. Histopathological examination of the mass revealed schwannoma with cystic changes (figure 4).

The postoperative period was uneventful and the patient recovered fully. The postoperative X-ray of the chest posteroanterior view (figure 5) showed complete clearance. Since tuberculosis can present in any way as we have reported tuberculosis mimicking malignancy in two situations earlier also^{1 2} the excised tissue was also sent for culture and sensitivity for *Mycobacterium tuberculosis* by both bactec method and conventional Lowenstein–Jensen culture method and to our utmost surprise both showed growth of the *M. tuberculosis* which was sensitive to all first-line antitubercular therapy (ATT). The patient was initiated on standard four drugs ATT regimen and responded well to the treatment and was declared cured after 6 months of ATT (rifampicin, isoniazid, ethambutol and pyrazinamide (RHEZ)).

INVESTIGATIONS

X-ray of the chest PA view, CECT thorax, MRI thorax.

TREATMENT

Standard four drug ATT (RHEZ).

OUTCOME AND FOLLOW-UP

The postoperative period was uneventful and the patient recovered completely. ATT was started and he performed well and was declared cured and is in our regular follow-up.

DISCUSSION

In the list of common differential diagnoses for posterior mediastinal masses neurogenic tumours are on the top.³ The differential diagnoses include nerve root tumours (schwannomas or neurofibromas), sympathetic ganglion tumours (neuroblastomas, ganglioneuroblastomas, ganglioneuromas) and paragangliomas (chemodectomas and pheochromocytomas), lymphadenopathy, enteric cysts, bronchogenic cysts, oesophageal tumours, aneurysms and paraspinous abscess.⁴

Benign schwannomas are the most common type of neurogenic tumours⁵ (90%). Both genders are equally affected, predominantly in the third or fourth decades of life.⁶ The classical presentation is an asymptomatic mass found on chest radiograph. Most patients are asymptomatic^{7 8} although a small percentage

Figure 3 (A and B) Cuts of MRI showing well circumscribed heterogeneously enhancing extra pleural soft tissue mass.

Figure 4 Schwannoma associated with cystic changes.

Figure 5 The postoperative X-ray of the chest posteroanterior view revealing complete clearance.

experience paraesthesia or pain from compression of adjacent structures or from intraspinal tumour extension.⁹ Recurrence is uncommon.^{10 11} It originates from the schwann cells of the nerve sheath.¹² Grossly, schwannomas are encapsulated, heterogeneous tumours with cystic degeneration.¹³ Microscopically, it is made up of spindle cells that give rise to dense cellular areas (Antoni A) and hypo cellular areas (Antoni B).¹⁴ Mitotic figures are rare. Gross examination of the malignant type shows large fusiform masses with areas of necrosis and haemorrhage within, and the microscopic picture comprises mainly pleomorphic spindle cells and abundant mitotic cells. A malignant schwannoma shows the presence of other cell types, for example, mucin secreting glands, mesenchymal tissue and epithelial cells. Mediastinal schwannomas are usually benign in nature and seldom degenerate into malignant tumours.¹⁵ In 50% of cases, they cause benign erosions and deformities of the ribs, vertebral bodies and nerve foramina.⁴ Constitutional symptoms may be present which include weight loss, malaise, fever and vague chest pain. Symptoms of obstruction or compression occur due to invasion of the normal mediastinal structures. Occasionally, there may be dramatic findings such as superior vena cava syndrome, Horner syndrome and phrenic nerve paralysis. Radiologically, schwannomas appear as spherical paraspinal masses with clean lobular margins, involve one or two posterior intercostal spaces, and can grow to large dimensions.¹⁶ Routine chest radiographs rarely show calcifications.⁴ Radiological tools like CT and MRI of the chest and spine help to pinpoint the precise anatomic location of the mass, as well as exclude any vascular origin, local and intraspinal invasion of the mass. After contrast medium infusion, schwannoma can appear homogeneous, heterogeneous, or with peripheral enhancement.^{17 18} On MRI schwannoma typically have low-

signal to intermediate-signal intensity on T1-weighted images and may have areas of intermediate-signal to high-signal intensity on T2-weighted sequences.¹⁹ MRI should be performed pre-operatively in all patients with suspected neurogenic tumours to definitively exclude intraspinal tumour extension. The other important purpose which these modalities serve is that they are also very useful in excluding other differential diagnoses of posterior mediastinal mass.²⁰ For instance, lesions of the vertebrae (metastasis, plasmacytoma) that originate in the mediastinum can be distinguished from those that invade the mediastinum from the lungs or other structures, for example, pancreatic pseudocysts extending into the mediastinum via the oesophageal hiatus. The clinical history of the patient also provides essential information to aid in narrowing down the differential diagnoses. A patient with a history of fever is likely to have an infectious mass (eg, abscess), whereas a history of congenital haemolytic anaemia (eg, thalassaemia, hereditary spherocytosis) would point toward extramedullary haematopoietic tumours.

The cornerstone to confirm the diagnosis of a suspected lesion is however the histopathological examination, as well as it also rules out the malignant nature of the mass. Fine-needle aspiration or biopsy can be performed but accurate diagnosis may not be possible¹³ because of the limited cellularity of these neoplasm.

Complete surgical resection is the mainstay of treatment. If left untreated the tumour will continue to increase in size; hence, prompt management would affect the prognosis. Thoracotomy via the posterolateral approach has been the conventional surgical technique for resection of these posterior mediastinal masses.²¹ At present, video-assisted thoracoscopic surgery is the preferred technique for the diagnosis and management of benign posterior mediastinal masses, as it is less invasive and results in fewer lung complications and a shorter hospital stay although this technique needs to be standardised, as evidenced by the reported high rate of conversion for technical reasons.²² Malignant lesions are still best approached via open thoracotomy. A tumour showing intraspinal extension requires both a neurosurgical and thoracic approach.^{5 22} Patients with benign neurogenic tumours have excellent survival. With the increasing incidence of HIV and AIDS and resurgence of tuberculosis as a global epidemic, the diagnosis of tuberculosis must be considered in any case of incidentaloma,²³ particularly in the Southeast Asian region which has the highest incidence and prevalence of tuberculosis worldwide (WHO, March 2007). This fact is also highlighted in a case which describes the coexistence of adrenal schwannoma and tuberculosis in the same lesion.²⁴

This case report highlights the need of differentiating the benign posterior mediastinal masses from malignancy especially bronchogenic carcinoma and avoiding FNAC in benign schwannoma as it can lead to a false diagnosis because of hypocellularity of these tumours and to be aware of the potential coexistence of tuberculosis in any case of incidentaloma, especially due to resurgence of tuberculosis as a global epidemic with the increasing incidence of HIV and AIDS.

Patient's perspective

The patient's symptoms improved and he responded well to the treatment and was highly satisfied.

Learning points

- ▶ A posterior mediastinal mass should be differentiated from a lung mass.
- ▶ The benign posterior mediastinal masses should be differentiated from malignancy especially bronchogenic carcinoma.
- ▶ Fine-needle aspiration cytology should be avoided in suspected schwannoma.
- ▶ To be aware of the potential coexistence of tuberculosis in any case of incidentaloma particularly in tuberculosis endemic areas.

Competing interests None.

Patient consent Obtained.

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