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Case report

An unusual cause of an anterior mediastinal mass

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Anterior mediastinal mass
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Occupational hazard

A B S T R A C T

Mesothelioma is a rare tumour and its radiological growth pattern varies. We report the case of a biopsy proven Malignant Pleural Mesothelioma (MPM) presenting as an anterior mediastinal mass in a platinum miner. The prognosis for this aggressive tumour remains poor, despite combination treatment modalities.

Introduction

MPM presenting as a mediastinal mass is rare. Malignant mesothelioma is manifested in four ways; irregular pleural thickening, pleural effusion, lung encasement by tumour rind and parenchymal nodular lesions at the periphery (Table 1) [1]. Asbestos exposure and less commonly simian virus 40 are associated as causes of malignant mesothelioma [2]. MPM presenting as an anterior mediastenal mass is not well described in the literature.

Case report

A 56 year old non-smoker male, with a more than 25 year occupational history of platinum mining, presented with unrelenting chest pain that was neither ischaemic nor pleuritic in nature. He had a history of progressive dyspnoea. Physical examination showed clubbing of the digits, an uncommon finding in MPM. The flow volume loop (spirometery) disclosed a mild obstructive pattern .MPM and asbestosis usually demonstrates a restrictive pattern. The clinical significance of this pattern in this patient is uncertain. On bronchoscopy for airway examination the bronchial lavage retrieval yielded a ferruginised asbestos body [Fig. 2.1]. Following a CT Scan of the chest [Figs. 1.1 and 1.2], the diagnosis was established on an ultrasound-guided core biopsy of the mediastinal mass that stained positive for mesothelial markers, including calretinin [Fig. 2.2], AE1/AE3 cytokeratin [Fig. 2.3]and epithelial membrane antigen[Fig. 2.4]. The patient had a high performance status at the time of diagnosis, and was treated with palliative chemotherapy, opioid analgesics and carbamezapine for neuropathic pain, but succumbed a year later to his disease [Fig. 1.3].

Discussion

Reported cases of malignant pleural mesothelioma are rare, 3–4/million a year in industrialised countries [2,3]. Only 10% report a history of asbestos exposure, with a latency period of approximately 15 years [4,5,10]. The link between asbestos exposure and MPM was first reported in South Africa in 1960 [3,5]. Asbestos is a common component of insulation, ceiling, roofing vinyls cement and automobile breaking material.

Chest pain is an important symptom and is usually neuronal or somatic, due to intercostal nerve and localized invasion respectively. Radiotherapy should not be used to treat nerve root pain as it may cause tissue necrosis and further compression of intercostal nerves [6]. Local invasion to the pericardium and spinalcord may also occur. The common sights of spread are the hilar, mediastinal and supra clavicular lymphnodes. Metastasis to bone may also occur and miliary spread is occasionally apparent [Fig. 1.3] [4].

Asbestos bodies in BAL fluid correlate with occupational exposure [6]. Asbestos bodies are easily identified and quantified by light microscopy; an asbestos body recovery of more than one Ab/ml indicates a high probability of occupational exposure. Asbestos bodies are asbestos fibres that have been coated with an iron rich proteinaceous concretion. Amphibole asbestos forms majority of asbestos bodies and is more persistent in lung tissue than chrysolite. Greater than 8 AB/ml on BAL is strongly correlated with malignant mesothelioma or lung cancer [6]. The notion that some fibres are safer than others should be abandoned, as all asbestos are fibrogenic and carcinogenic [6,7].

CT is the first line and most common imaging modality for the evaluation of mesothelioma [Table 1].MRI and PET scan are useful in delineating the extent of the disease, staging and guiding biopsy

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Table 1
Frequency of occurrence, sensitivity and specificities for malignant pleural disease using CT scan.

	Sensitivity (%)	Specificity (%)	Frequency
Pleural rind	41	100	Very common
Nodular thickening	51	94	Common
Parietal thickening	36	94	Common
Mediastinal pleural disease	56	88	Uncommon

sites. The recently described "pointillism" (Speckled hyper intensity on DWI due to tumour deposits) sign on MRI has a high positive predictive value for the diagnosis of MPM [8]. Immunohistochemistry markers are important for determining the tissue of origin in mesothelial cell (calretinin), and its malignant potential (EMA), and AE1/3 cytorkeratin suggests invasion [3,4,9,10]. A specific known marker for MPM has not been recognised; in general Calretinin, keratin 5/6 and podoplanin are considered to be the positive mesothelioma markers. Immunohistostaining helps distinguish mesothelioma from adenocarcinoma; CEA and BerEp4 are the best negative markers for distinguishing between adenocarcinoma and mesothelioma. In challenging situations electron microscopy may be necessary [4,9].

Malignant pleural mesothelioma is a highly aggressive and treatment resistant tumour [11]. Median survival is 9 months from time of diagnosis [2–4]. Molecular targeted therapies may yield promising new treatment options but are still in its infancy and

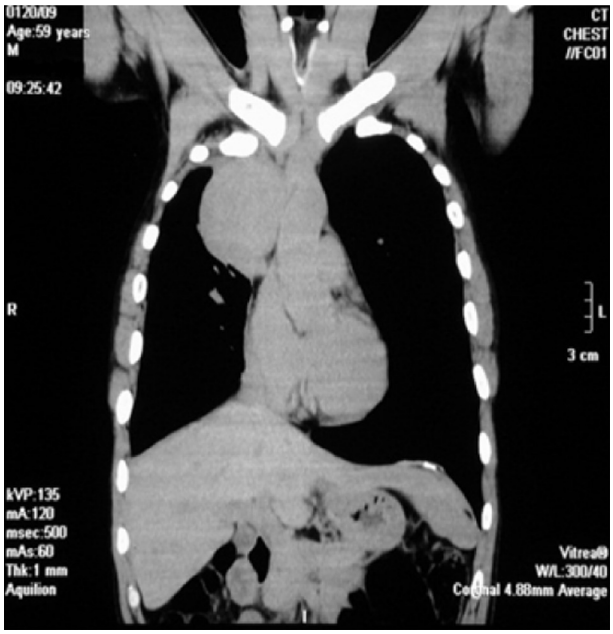

Fig. 1.1. CT-chest coronal view Demonstrating mediastinal mass.

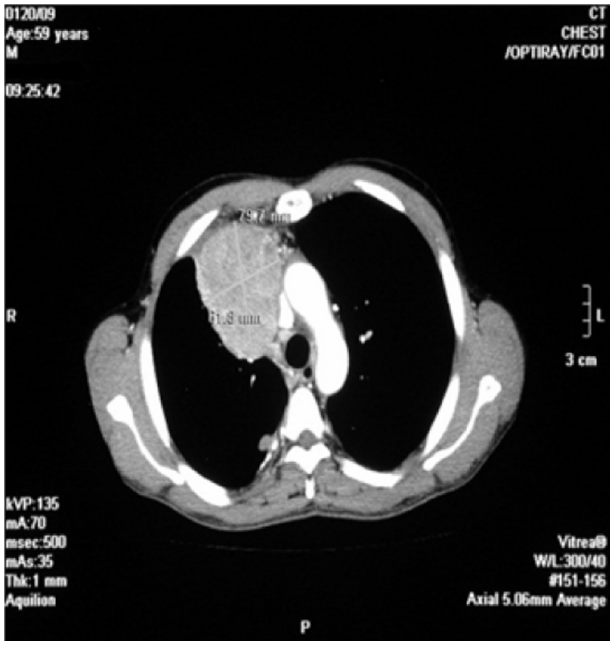

Fig. 1.2. post-contrast axial CT showing the tumour Compressing mediastinal Structure.

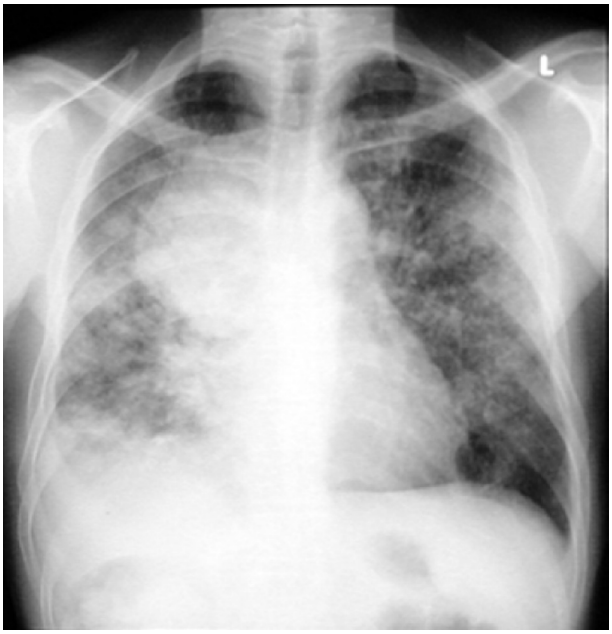

Fig. 1.3. Chest X-ray a year later demonstrating extensive bilateral lung involvement suggesting miliary spread.

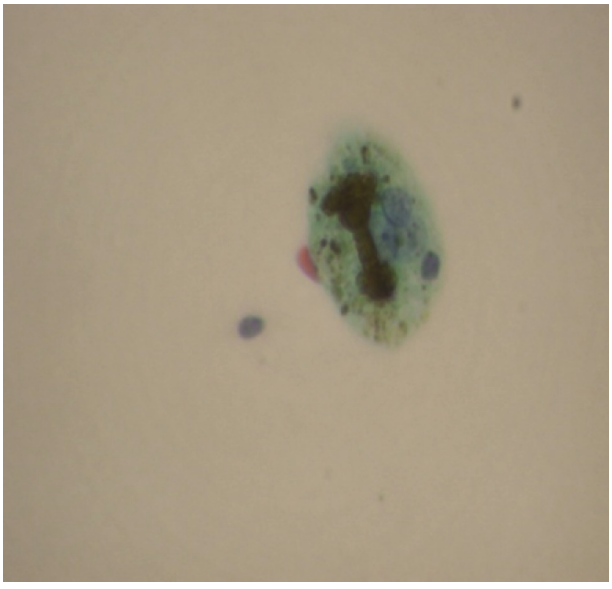

Fig. 2.1. Feruginised asbestos body.

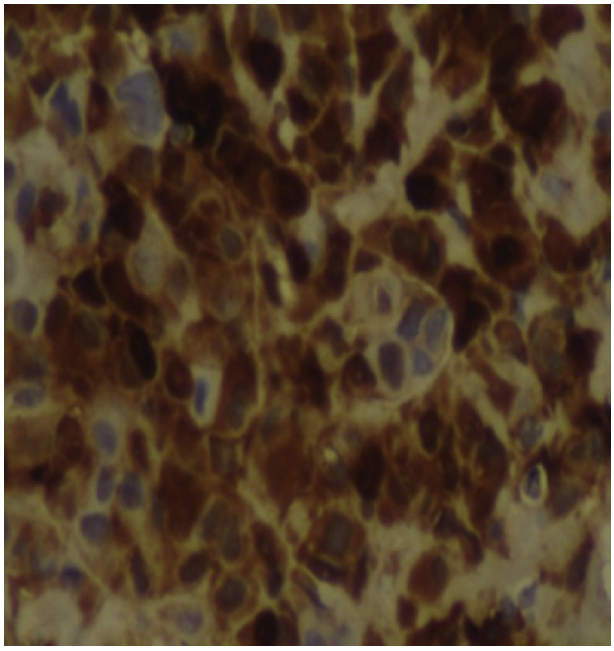

Fig. 2.2. Positive calretinin stain high magnification.

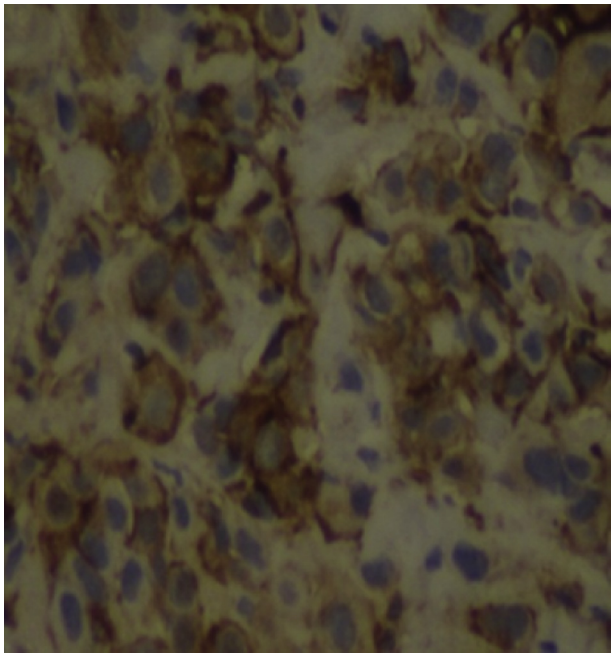

Fig. 2.3. Positive AE1/3 cytokeratin stain.

unproven. Further studies looking at surgical debulking procedures, chemotherapy and radiotherapy are needed to improve treatment outcome and survival [12].

Conclusion

The anterior mediastinum is a common location for thymic lesion, germ cell tumours, lymphomas and endocrine tumours in adults. Mesenchymal tumours localised to the anterior mediastinum compartment is rare in adults. Evidence is lacking for any relation between platinum mining and the development of mesothelioma. MPM presenting in this location and in this fashion is atypical. The pleura share an interface with the lung on both the parenchymal and mediastinal sides. MPM can therefore present as a mass with a sharp incomplete border that is frequently tapered on either the parenchymal or mediastinal sides. CT scan has a poor sensitivity and specificity for diagnosing mediastinal side MPM and therefore a certain diagnosis can and must only be made by biopsy.

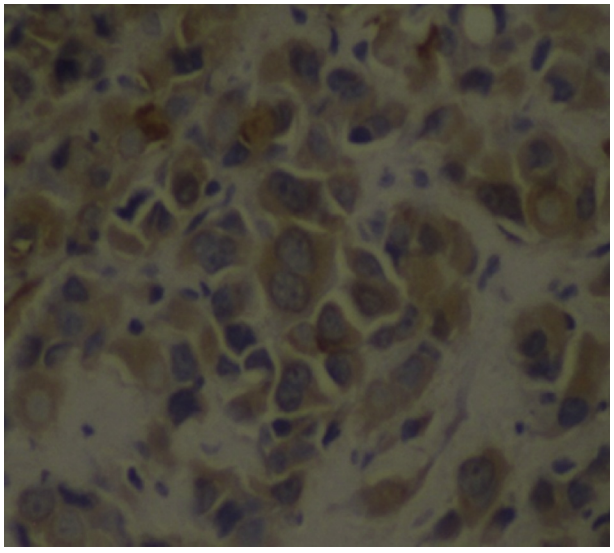

Fig. 2.4. Positive epithelial membrane antigen stain.

Conflict of interest

No conflict of interest.

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