

Pleural mesothelioma presenting as recurrent pneumothoraces

Introduction

This article outlines five cases of pleural mesothelioma presenting as recurrent pneumothoraces to different respiratory departments. All patients had prior occupational exposure to asbestos but no evidence of asbestosis or bronchial carcinoma.

Occupational history is frequently overlooked in routine clinical care and while many patients with pleural mesothelioma cannot recall asbestos exposure it should be sought. When patients present with unexplained pneumothorax in the appropriate clinical setting the possibility of underlying mesothelioma should be considered.

Discussion

Malignant mesothelioma is primarily caused by occupational exposure to asbestos although there appears to be a small spontaneous rate of occurrence. Mesothelioma most frequently arises from the mesothelial cells of the pleura but can occur in any body cavity covered by mesothelium such as peritoneum, pericardium or tunica vaginalis.

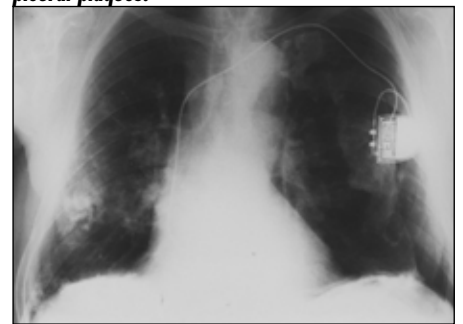
Restrictions on asbestos use were not implemented until the mid-1970s, and with the lag period of up to 50 years between exposure and disease presentation, the incidence continues to increase

and is not expected to plateau until around 2015 (Hodgson et al, 2005). Current mortality data indicates that it is responsible for nearly 2000 deaths per annum in Great Britain at present which is higher than the mortality rate of other 'common' cancers including both melanoma and cervical cancer.

Pleural mesothelioma usually presents with cough, progressive dyspnoea, pleural effusion and localized chest wall pain. It was first described as a cause of recurrent pneumothoraces by Eisenstat in 1956 but this was thought to be rare, with early reviews only finding one such case in 5027 patients (Elmes and Simpson, 1976; Hillerdal, 1983). This article reports five cases of pleural mesothelioma, all in men over 40 years, where the presentation was

one of spontaneous pneumothorax. The mechanism underlying the pneumothoraces has not been studied. Irritation of the visceral pleura, invasion into the lung parenchyma or rupture of a necrotic tumour nodule are possible mechanisms.

Figure 1. Chest X-ray showing pneumothorax with pleural plaques.



Case Report 1

A 79-year-old man presented with a 2-week history of increasing dyspnoea and reduced exercise tolerance. He was previously fit and well with no medical history of note. He was an ex-smoker of 25 pack years. Examination findings were of a right pneumothorax which was confirmed by chest X-ray. A chest drain was inserted and the lung expanded fully. He was discharged after 2 days but was readmitted 6 weeks later complaining of recurrent breathlessness over a 24-hour period and chest X-ray again revealed a large right pneumothorax. Once again a chest drain was inserted with good result.

Four weeks later the problem recurred. An occupational history revealed that he had worked for 40 years as a shipwright in a shipyard with regular asbestos exposure. A right thoracotomy and pleurectomy was performed – the pleura appeared normal macroscopically but histology demonstrated pleural infiltration by an epithelial-type malignant mesothelioma. He died 4 months after pleurectomy in an advanced cachectic state. Post-mortem confirmed a malignant mesothelioma.

Case Report 2

A 76-year-old male non-smoker presented with a 4-week history of increasing breathlessness and dry cough. He had a pacemaker for sick sinus syndrome. Examination revealed a frail gentleman with an obvious left-sided pneumothorax. Chest X-ray confirmed the pneumothorax and revealed extensive pleural plaques (Figure 1). Needle thoracocentesis aspirated 1130 ml of air and he was discharged after repeat radiography showed resolution of the pneumothorax. However, he was readmitted twice in the next 4 months with recurrent left-sided pneumothoraces necessitating chest tube drainage.

He was seen in the chest clinic after 5 months complaining of poor appetite, weight loss and intractable cough. An occupational history was taken – he had worked for 32 years as a burning machinist in a local shipyard with regular exposure to asbestos. Chest X-ray now showed left-sided pleural thickening and effusion in addition to pleural plaques. No definitive diagnosis was made by either pleural fluid examination or subsequent ultrasound-guided pleural biopsy. By this stage he was unfit for thoracotomy or thoracoscopy. A presumptive diagnosis of mesothelioma was made which was confirmed at later post-mortem.

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Plain chest radiography is the most useful test for initial diagnostic evaluation but pleural plaques are often not visible. Computed tomography of the thorax may show extension of tumour on the

pleural surfaces and possible mediastinal pleural involvement.

In the vast majority of cases of mesothelioma, the prognosis is extremely poor – usually less than 12 months from time

Case Report 3

A 41-year-old male non-smoker presented with a 5-month history of a dry cough and pleuritic chest pain. A chest X-ray demonstrated a small apical pneumothorax, with no evidence of pleural thickening, fluid or plaques. A diagnosis of a spontaneous pneumothorax was made and he was managed conservatively.

He failed to attend follow-up appointments and re-presented 7 months later with increasing pleuritic chest pain. Occupational history revealed significant asbestos exposure while working in the steel industry insulating catering equipment with asbestos 15–20 years earlier. Examination revealed reduced expansion and a pleural rub in the right lower zone. Chest X-ray demonstrated a moderate hydro-pneumothorax, with thickening of the pleura (Figure 2). Examination of the pleural fluid revealed an exudate with no malignant cells seen. Subsequent computed tomography of the thorax demonstrated the hydro-pneumothorax, an intrapulmonary nodule and significant pleural thickening (Figure 3). He subsequently underwent a thoracotomy and pleurectomy which confirmed the diagnosis as malignant mesothelioma.

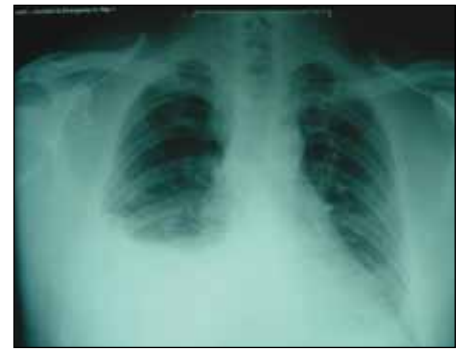


Figure 2. Chest X-ray showing hydro-pneumothorax with pleural thickening.

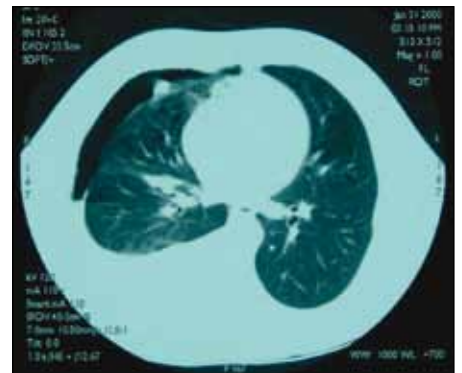


Figure 3. Computed tomography scan showing hydro-pneumothorax with pleural thickening.

Case Report 4

A 63-year-old male ex-smoker (30 pack years) presented with a 2-week history of cough, right-sided pleuritic chest pain and breathlessness on exertion. A chest X-ray confirmed a complete right-sided pneumothorax, with no evidence of pleural thickening, fluid or plaques. An initial diagnosis of spontaneous pneumothorax was made and an intercostal drain inserted. The lung re-expanded rapidly and he was discharged within 2 days.

Four weeks later at routine follow up he was found to have a moderate right-sided hydro-pneumothorax on chest X-ray. Occupational history identified significant asbestos exposure while working as an electrician 30 years earlier. A further intercostal drain was inserted and examination of the pleural fluid revealed an exudate (protein 44 g/litre, lactate dehydrogenase 672 IU/litre) with abundant neutrophils and rounded clusters of mesothelial cells but no malignant cells. A subsequent computed tomography scan of his thorax confirmed extensive pleural thickening and loculated pleural fluid. He then underwent a right thoracotomy and drainage of the fluid. The parietal pleura was found to be extensively thickened and histological examination revealed a malignant mesothelioma.

Case Report 5

A 45-year-old male ex-smoker (18 pack years) presented with sudden onset breathlessness and right pleuritic chest pain. He had been exposed to asbestos while working as a painter and decorator. A chest X-ray confirmed a complete right pneumothorax, with no evidence of pleural thickening, fluid or plaques. An intercostal drain was inserted and he subsequently underwent video-assisted thoracoscopic surgery and talc pleurodesis because of persistent air leak. The pleurodesis proved unsuccessful and therefore a right lateral thoracotomy and resection of the parietal pleura was performed. Histological examination of the pleura revealed florid reactive mesothelial cells thought to have been caused by the recent talc pleurodesis.

One year later he re-presented with breathlessness and right-sided pleuritic chest pain. A chest X-ray now showed extensive pleural thickening on the right with loculated air/fluid levels. Computed tomography confirmed circumferential pleural thickening with loculated air/fluid levels in the right hemithorax and a soft tissue mass in the right chest wall. A repeat video-assisted thoracoscopic surgery, pleural biopsy and apical bullectomy, and biopsy of the mass in the right chest wall identified an epithelioid malignant mesothelioma in the right chest wall and metastatic mesothelioma at the left apex.

of diagnosis. Surgery with adjuvant chemotherapy may potentially be curative or improve the length and quality of life of mesothelioma victims. Treatment modality trials are ongoing but early diagnosis is essential. In all the patients described here diagnosis was delayed because mesothelioma was not considered at presentation and occupational history was not taken.

Mesothelioma should be considered as a diagnosis in patients over the age of 40 years presenting with spontaneous pneumothoraces. An occupational history should be taken and follow up is vital. If recurrence occurs, even if the chest X-ray appears normal, more definitive investigations such as thoracoscopy are recommended with tissue specimens sent for histological examination. **BJHM**

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