

Unusual presentation of more common disease/injury

Advanced, recurrent mesothelioma growth mimicking an aortic dissection

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Summary

In the emergency setting, a cold, clammy, dyspnoeic patient presenting with interscapular chest pain and unequal blood pressures suggests an acute aortic dissection until proven otherwise. By means of a case report, the authors detail one such patient who presented identically to one having an acute aortic dissection. Initial assessment showed unequal blood pressures in left and right arms, a resting tachycardia and indistinct heart sounds. Fluid resuscitation failed to improve the patient's physiological parameters and they rapidly deteriorated. The medical history included mesothelioma and atrial fibrillation. Existing investigations were reviewed and after thorough consideration of the patient's premonitory state and likely prognosis, the decision was made to palliate. The patient died shortly after being transferred to the oncology ward. Imaging is therefore integral to the assessment and management of a patient in whom an aortic dissection is feared.

BACKGROUND

Mesothelioma is an uncommon entity in the emergency setting and very rarely presents with symptoms suggesting neurovascular compromise. A more likely presentation in the emergency department, is that of an acute aortic dissection. We detail a case of recurrent mesothelioma which presented atypically when compared to existing literature and highlighted the importance of the use of imaging within the emergency department in confirming or refuting the presence of treatable disease.

CASE PRESENTATION

An elderly patient with known mesothelioma presented to the local emergency department with sudden onset central chest pain, which radiated through to the back. The patient had been progressively dyspnoeic over the previous 3 months, but denied any previous pain. On arrival in the emergency department, the patient was cold, clammy, pale and clearly distressed. Further history was compounded by the degree of the patient's dyspnoea. Initial nursing observations showed fast atrial fibrillation, at a rate of 110. The respiratory rate was 38 and oxygen saturations on a 15-litre non-rebreather bag were 97%. The blood pressure in the right arm measured 110/80 mm Hg, but in the left arm, measured 60/44 mm Hg. This was repeated several times, both manually and electronically.

Clinical examination showed the patient to have poor perfusion, decreased expansion of the chest, dullness to percussion and absent breath sounds throughout the left hemithorax. Heart sounds were indistinct and the abdomen was soft, non-tender, but with a palpable liver edge measuring 6 cm. There was no expansile mass to be felt and no radio-femoral delay.

The patient had previously worked in engineering and had been a smoker. There was no medical or

family history of sudden death, cardiac disease or aortic aneurysm.

INVESTIGATIONS

- ▶ Full blood count
 - ▶ White cell count – $62.3 \times 10^9/l$ (neutrophils $59.4 \times 10^9/l$)
 - ▶ Hb – 13.2 g/dl
 - ▶ Mean corpuscular volume – 93.5 fl
 - ▶ Platelets – $95 \times 10^9/l$
- ▶ Arterial blood gas (15 l O₂)
 - ▶ pH – 7.362
 - ▶ PaCO₂ – 3.22 kPa
 - ▶ PaO₂ – 22.21 kPa
 - ▶ Base excess – 10.0 mmol/l
 - ▶ HCO₃⁻ – 13.4
- ▶ Urea and electrolytes – within normal limits

Biochemistry was performed within 5 min of the patient arriving in the emergency department.

- ▶ Electrocardiogram (ECG) – see figure 1
- ▶ Chest x-ray – see figure 2
- ▶ Bedside echocardiogram/ultrasound scan – no pericardial effusion, no evidence of abdominal aortic aneurysm or abdominal aortic dissection
- ▶ ECGs and imaging were performed within the first hour of the patient's arrival in the emergency department.
- ▶ CT thorax/abdomen – previous admissions – see figure 3A–C.

Review of any previous thoracic CT scans showed

- ▶ 11/3/09 – Calcified pleural plaques bilaterally. Interstitial lung disease, with traction bronchiectasis. Likely diagnosis of asbestosis. No significantly enlarged lymph nodes.
- ▶ 7/8/09 – As previous CT in March 09. Atelectatic left lung base.

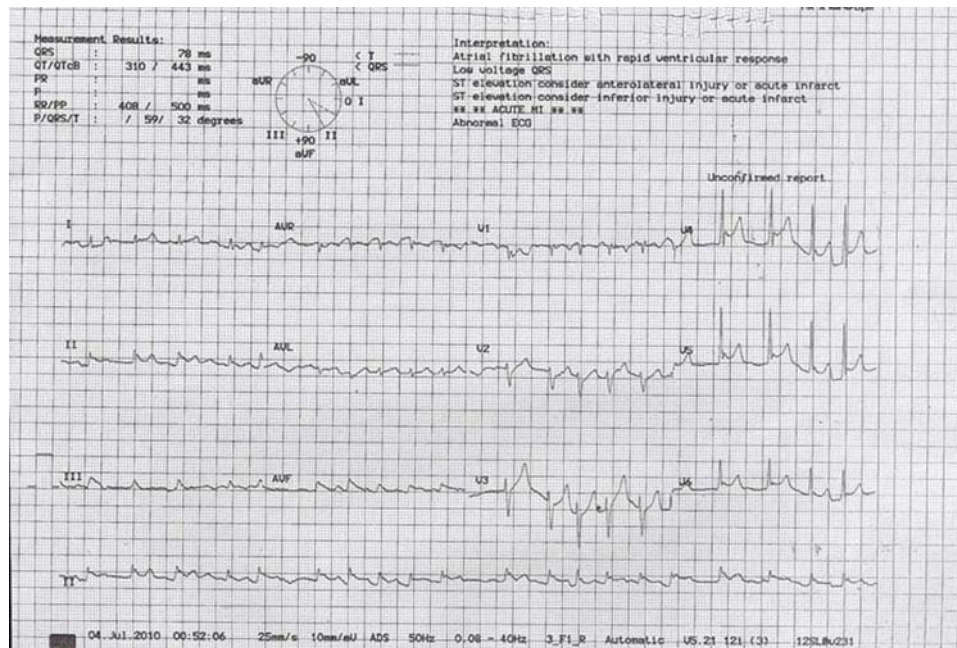


Figure 1 Electrocardiogram demonstrating atrial fibrillation with infero-lateral saddle-shaped ST elevation.



Figure 2 Chest x-ray demonstrating total left-sided collapse and replacement of hemithorax with mesothelioma. There is reduced expansion on this side.

- ▶ 9/2/10 – Reduced left hemithoracic volume. Extensive pleural thickening. Recurrent mesothelioma with aortopulmonary lymphadenopathy is present.
- ▶ 11/6/10 – Complete infiltration of the left lung. Multiple necrotic areas. Subcarinal disease impinging and compressing the left atrium.

DIFFERENTIAL DIAGNOSIS

- ▶ Aortic dissection
- ▶ Dissecting thoracic aneurysm
- ▶ Acute myocardial infarction
- ▶ Cardiac tamponade secondary to aortic dissection
- ▶ Acute pericarditis

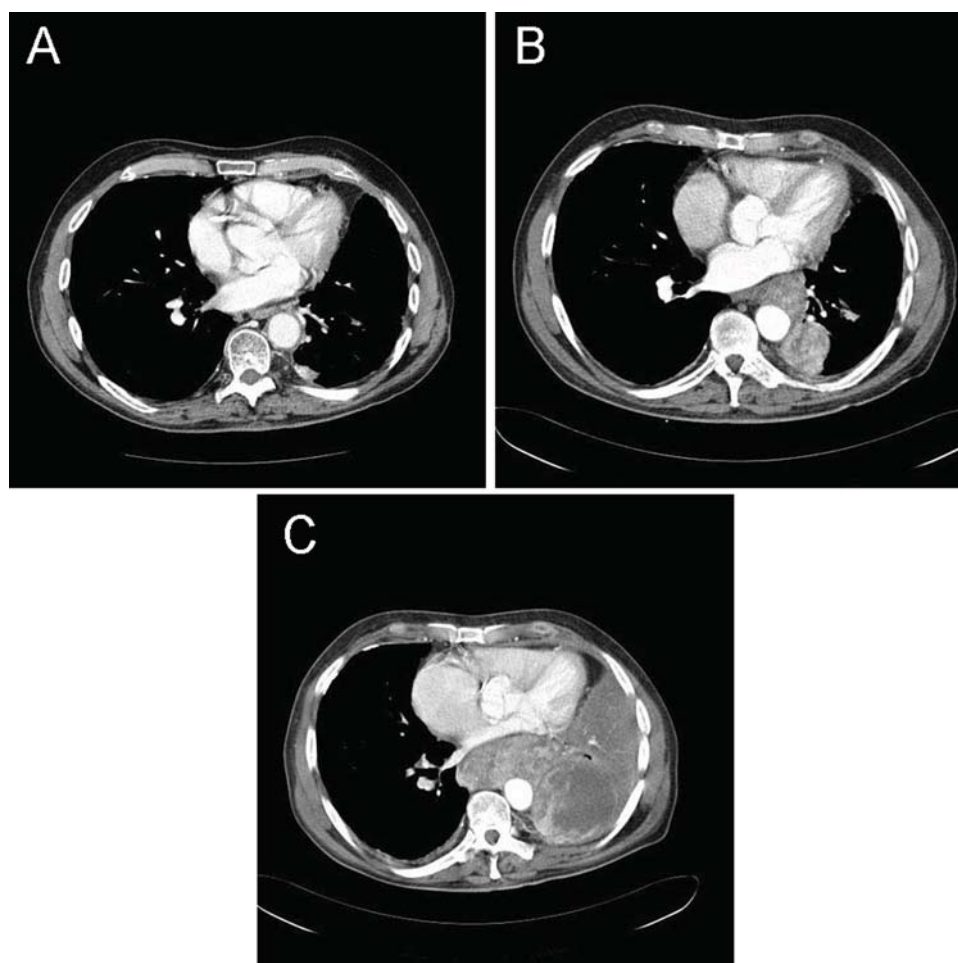


Figure 3 (A) CT of the thorax – initial diagnostic CT performed 15 months prior to presentation in the emergency department. (B) Recurrent disease 4 months prior to presentation in the emergency department. (C) Aggressive mesothelioma with infiltration of the pericardium and collapse of the left lung. There is impingement of the left atrium.

- Pulmonary embolism
- Progression of pre-existing mesothelioma
- Infiltration of heart and aorta by mesothelioma
- Lung cancer excluding mesothelioma.

TREATMENT

On arrival, the patient was immediately placed on 15 l O₂ via a non-rebreather bag. Two wide bore cannulae were inserted in both antecubital fossae and fluid resuscitation commenced with normal saline. A dose of 10 mg morphine provided sufficient analgesic effect for the patient, and 300 mg aspirin was given prophylactically in case of acute coronary syndrome. The patient was nursed in a supine position and encouraged to rest.

OUTCOME AND FOLLOW-UP

The patient failed to respond to fluid resuscitation and after thorough discussion with senior colleagues, analysis of their premorbid state, and prior investigations, the decision was made to palliate. The patient was moved to an oncology ward and died soon after transfer.

DISCUSSION

This unique presentation of mesothelioma as an acute aortic dissection requires a particularly high index of suspicion

if one is to suspect mesothelioma as the ultimate cause, based solely on the clinical findings.

The final diagnosis was made more difficult by the similarity in presentation to a dissection and the lack of history suggesting an alternative diagnosis other than a dissection. In the acute setting, the most likely diagnosis based on clinical findings alone therefore was that of a dissection.

However, there were several factors which made a dissection less likely. There was no history of cardiovascular disease or cardiovascular risk factors. There was a background of mesothelioma, but little information existed as to the extent and stage of disease on arrival. There was also a history of progressive dyspnoea, rather than acute dyspnoea which one would expect with aortic dissection.

The bedside investigations performed in the emergency department were integral in establishing the potential underlying diagnosis. They consolidated the examination findings and a limited history, allowing the medical team to apply anatomical and physiological knowledge to clarify the information acquired.

Many cases of lung cancer presenting as an aortic dissection exist in literature, but there are currently no documented reports of a mesothelioma presenting with symptoms suggestive of an acute aortic dissection.

Learning points

- ▶ Common, life-threatening conditions should be investigated, treated and excluded in the emergency setting to arrive at an appropriate management plan.
- ▶ A thorough assessment should take into account the patient's pre-existing risk factors and comorbidities, whenever possible, in order to achieve the best plan of action.
- ▶ In a patient with significant pre-existing disease, it is important to review existing investigations to establish the likelihood of further deterioration and ongoing management outside of the emergency setting.

Infiltration of surrounding neurovascular structures is common with lung primaries and often responsible for profound haemoptysis or rapid deterioration in the patient's clinical condition.¹

Current literature highlights that lung neoplasms may frequently present in such a way, but mesothelioma which is predominantly a pleural disease, has not been seen to behave in this way. Mesotheliomas, as seen in this case, would need to be sufficiently extensive and aggressive as to infiltrate and compromise the surrounding mediastinal structures.¹⁻³

There are several review articles detailing pericardial mesothelioma, peritoneal mesothelioma and pleural mesothelioma. Typically, initial presentation of a thoracic primary mesothelioma comprises anorexia, chest pain and dyspnoea. Progressive disease involving the thoracic cavity results in worsening dyspnoea, chest pain and ultimately death, with a median survival of 1 year following diagnosis.^{1 4 5}

Analysis of the patient's ECG (figure 1) provides an interesting insight into the nature of the disease progression. There are changes consistent with pericarditis, but on closer inspection, this is not widespread and seen only in the inferolateral leads. The bedside echocardiogram performed in this case did not reveal a pericardial effusion and there was no evidence of an aneurysm or dissection on the bedside ultrasound scan.

Cross-analysis with the CT scan in figure 3C demonstrates why this patient is in atrial fibrillation and the reason for the pericarditic changes on the ECG. This is due to impingement and compression of the left atrium and ventricle by the expanding mesothelioma.

We feel therefore that this case reiterates the importance of several key points, particularly in the emergency setting, where urgent stabilisation of an acutely unwell patient is necessary in order to provide optimal management and to direct treatment.

Competing interests None.

Patient consent Not obtained.

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