

CASE REPORTS

Spontaneous pneumomediastinum

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Abstract

Spontaneous pneumomediastinum, or Hamman's syndrome, is a rare condition which may present with the symptoms of chest pain, dyspnoea, dysphagia, or neck pain. The signs of subcutaneous emphysema and Hamman's crunch (the presence of a crepitation sound that varies with the heartbeat on auscultation of the precordium) are usually present. A case of this syndrome occurring in an elderly patient with none of the recognised risk factors is presented.

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Spontaneous pneumomediastinum is a rare cause of chest pain which can be accurately diagnosed clinically. Treatment is non-interventional and its course may be expected to last only a few days.¹⁻³ This is in marked contrast to the more common oesophageal trauma, which can also cause a pneumomediastinum. The key distinguishing feature between these two conditions is that there is no history of oesophageal or lung trauma to account for the pneumomediastinum. The treatment of the traumatic cases varies from conservative management to surgery, depending on the case. This condition has been reported in North American journals but is not well recognised as an entity on this side of the Atlantic.

Case report

An 88 year old woman was admitted through the accident and emergency department, having suffered a choking fit while drinking warm soup at home. She had not eaten any fish or meat. She complained of "something" sticking in her throat, together with retrosternal chest pain. Her past medical history included ischaemic heart disease and chronic obstructive airway disease. On admission, she was well, with stable basic observations, but she was unable to swallow her own saliva and had subcutaneous emphysema of her neck, face, and shoulders. Auscultation of her heart was normal, with no added sounds, in particular Hamman's crunch, and her chest was clear.

Fibreoptic examination of her nasopharynx showed pooling of saliva but nothing else.

Routine blood tests were found to be normal. A lateral neck radiograph showed the presence of air in the subcutaneous tissues and a chest radiograph revealed pneumopericardium, pneumomediastinum, and subcutaneous emphysema (fig 1). An electrocardiogram done on admission was unremarkable. A clinical diagnosis of spontaneous pneumomediastinum was made.

The patient was closely observed and treated with intravenous fluids, having been restricted from oral intake. Treatment with a broad spectrum antibiotic (co-amoxiclav) was started. Further investigations were done to rule out possible oesophageal or upper airway injury. The upper gastrointestinal tract was examined using a non-ionic contrast medium. Bronchoscopy was undertaken and both investigations were normal. Computerised tomography confirmed that there was no other obvious cause for the pneumomediastinum. Unfortunately while she was improving from her initial complaint, she suffered a cerebrovascular accident and developed a dense left hemiplegia. Despite intensive medical treatment, she succumbed to pneumonia and died. Permission for a necropsy examination was refused.

Discussion

Spontaneous pneumomediastinum was first described in 1939 by the physician L V Hamman (1877-1946) while at the Johns Hopkins Hospital, Baltimore.⁴ It is an uncommon disorder which usually follows a benign self limiting course. The pathophysiology involves alveolar rupture due to a process that either decreases pulmonary interstitial pressure or increases intra-alveolar pressure. Valsalva-type manoeuvres have been implicated, as have forcefully coughing against a closed glottis and excessive coughing or choking. Free air is then able to track along the vascular sheaths and connective tissue planes to the mediastinum. This leak is self sealing and hence is unlikely to be associated with bacterial contamination, pneumothorax, or other such complications.^{1,3,5}

Surprisingly, spontaneous pneumomediastinum is a condition predominantly occurring in young males, many of whom are illicit drug users, in stark contrast to our 88 year old spinster. Drugs which have been associated with this condition include marijuana and freebase

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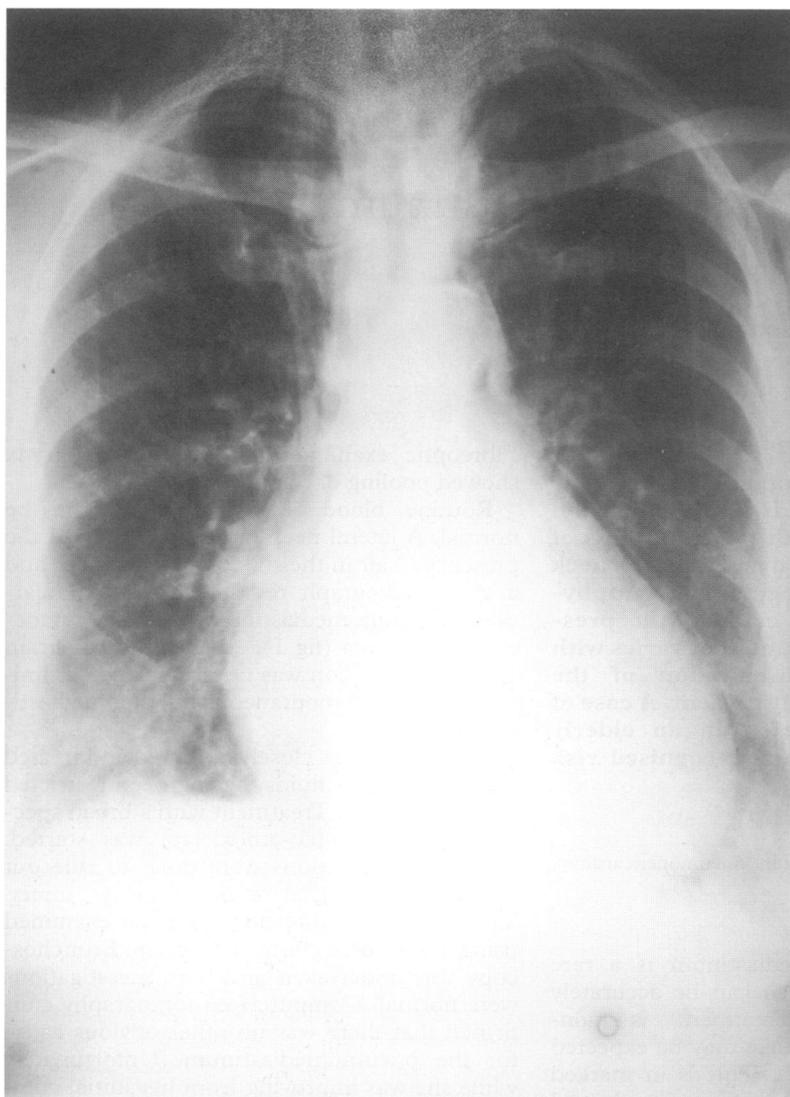


Figure 1 Chest radiograph showing pneumomediastinum, pneumopericardium, and subcutaneous emphysema.

or crack cocaine.³ It has been reported in the postpartum period and in association with tuberculosis, asthma, croup, and whooping cough.⁶⁻⁹

The predominant symptom is chest pain which is usually sharp, improved by sitting up, and worsened by lying down. It may therefore be confused with the pain of pericarditis. Dyspnoea is often associated with this pain. Our patient's complaint of neck discomfort and difficulty swallowing is also reported.

Clinical examination can often make the diagnosis. Hamman's crunch is almost pathognomonic of pneumomediastinum and in conjunction with the finding of subcutaneous emphysema is strong evidence in favour of the diagnosis. It has been recognised that, although these physical signs are present in most cases, they are often not recognised until an actual radiological diagnosis has been made. How-

ever, their presence should be sought in order to decrease the number of missed or delayed diagnoses.³

Radiological evidence of pneumomediastinum may be missed in up to 50% of cases on a routine PA chest film. The lateral chest radiograph is more sensitive in making the diagnosis.² Unfortunately, this view is not done routinely and our patient did not have one. Occasionally, electrocardiographic changes are seen in pneumomediastinum in the form of low voltages and axis shifts, but ST elevation has been described and the possibility of myocardial ischaemia should be investigated.^{1,3}

Secondary causes of pneumomediastinum such as oesophageal perforation, tracheobronchial injury, or even retropharyngeal abscess may be difficult to discount and therefore patients may need to undergo further investigation. Oesophageal examination should be considered, using non-ionic contrast medium or endoscopy and bronchoscopy.

The management of this condition is conservative, with restriction of oral intake, intravenous fluids, and antibiotics. In a previous study with this treatment, there were no patients who developed delayed tension pneumomediastinum or pneumothorax.³ The illness follows a benign course, with resolution of symptoms in about two days and disappearance of radiographic changes in about four days. Our patient seemed to be improving until the unexpected stroke.

CONCLUSION

Spontaneous pneumomediastinum is a rare condition, barely mentioned in the British literature. We highlight the cardinal symptoms of chest pain, dyspnoea, and neck discomfort, together with the signs of subcutaneous emphysema and Hamman's crunch. Our patient was unusual as she did not have any of the typical risk factors documented in previous reports. Treatment is conservative and the prognosis is usually good.

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