CASE REPORT

Spontaneous pneumomediastinum: an important differential in acute chest pain

Francesca Hogan,¹ Chris McCullough,² Asif Rahman²¹Department of Emergency Medicine, Sir Charles Gairdner Hospital, Perth, Western Australia, Australia²Department of Emergency Medicine, St Mary's Hospital, London, UK**Correspondence to**Dr Francesca Hogan,
francesca.hogan@doctors.org.uk

Accepted 12 November 2014

SUMMARY

A 38-year-old man presented with pleuritic chest pain that was present on waking and localised to the left costal margin with no radiation. He was otherwise asymptomatic and denied preceding trauma, heavy lifting, coughing or recent vomiting. Observations and examination were unremarkable; however, a chest radiograph showed a pneumomediastinum. Spontaneous pneumomediastinum (SPM) is a rare condition that tends to follow a benign clinical course. A CT of the chest is generally only indicated if the chest X-ray fails to show an SPM in patients for whom there is a high index of clinical suspicion. A contrast-enhanced swallow study is only indicated if there is suspicion of an oesophageal tear or rupture. Evidence suggests that patients with SPM can be managed conservatively and observed for 24 h.

BACKGROUND

While complications can occur, spontaneous pneumomediastinum (SPM) is a rare condition with a generally benign clinical course.¹ The case presented here highlights the importance of considering SPM as a differential in patients presenting with acute chest pain.

CASE PRESENTATION

A 38-year-old man presented to the emergency department with pleuritic chest pain present on waking. It was localised to the left costal margin with no radiation. He was otherwise asymptomatic and denied preceding trauma, heavy lifting, coughing or recent vomiting. He had no significant medical history, was an ex-smoker and took no regular medication. His observations were within normal limits: blood pressure 129/82 mmHg (R=L), heart rate 60 bpm, respiratory rate 14 bpm, oxygen saturations on air 98% and temperature 36.2°C. Examination was also unremarkable.

INVESTIGATIONS

Blood tests, including white cell count, C reactive protein and 12 h troponin were normal. An ECG confirmed normal sinus rhythm. A chest X-ray showed a pneumomediastinum with no signs of subcutaneous emphysema (figure 1).

TREATMENT

With no precipitating risk factors identified the diagnosis of SPM was made. The patient was managed conservatively with oral analgesia and co-amoxiclav. He was observed for 24 h as an inpatient.

Figure 1 A chest radiograph showing air in the mediastinum (white arrows).

OUTCOME AND FOLLOW-UP

The patient had an uneventful admission and was discharged 24 h later.

DISCUSSION

SPM is defined as the presence of air within the mediastinum with no identifiable precipitating factor.² It has been associated with bronchial constriction due to asthma or the inhalation of toxic agents including illicit drugs as well as activities involving the Valsalva manoeuvre such as vomiting.³ SPM is thought to develop as a result of alveolar rupture with the tracking of air along the fascial planes into the mediastinum.⁴

The most common presenting symptoms are chest pain, shortness of breath, odynophagia and neck pain.^{1 2} The most common sign, although not present in this case, is subcutaneous emphysema, in particular of the neck.² Among the many causes for chest pain, the main differential diagnoses to consider include oesophageal perforation, acute coronary syndrome, pericarditis, pneumothorax, musculoskeletal disorders and pulmonary embolism.²

Most patients with SPM are clinically well and follow a benign clinical course. Complications can occur including tension pneumomediastinum, simple pneumothorax, tension pneumothorax and respiratory difficulty due to increased pressure in the pulmonary interstitium. Complications occur rarely and most cases undergo spontaneous resolution.¹ SPM is a rare condition with an incidence reported between approximately 1 in 30 000 and 1 in 44 500.^{1 2} With a benign clinical course, the incidence may not reflect the prevalence as many patients may go undiagnosed or may fail to present for medical assessment.

To cite: Hogan F, McCullough C, Rahman A. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-207692

A plain chest X-ray is only diagnostic in up to 70% of cases.¹ A CT of the chest is only indicated following a normal chest X-ray if there is a high clinical suspicion of an SPM.^{1 2} A contrast-enhanced swallow study is only indicated if there is

suspicion of an oesophageal tear or rupture.¹ Patients with an SPM should be managed conservatively with analgesia. Although antibiotics were given in this case, there is no evidence to support their use in this setting.^{1 3} Patients should be observed for at least 24 h to monitor for complications and the presence of a ruptured viscus.¹

Learning points

- ▶ Spontaneous pneumomediastinum follows a benign clinical course in most cases.
- ▶ A CT of the chest is only indicated in spontaneous pneumomediastinum if there is clinical suspicion with a negative chest X-ray.
- ▶ A contrast-enhanced swallow study is only indicated if there is suspicion of an oesophageal tear or rupture.
- ▶ Spontaneous pneumomediastinum should be treated conservatively with at least 24 h observation.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Newcombe A, Clarke P. Spontaneous pneumomediastinum. *Chest* 2005;128:3298–302.
- 2 Macia I, Moya J, Ramos R, *et al.* Spontaneous pneumomediastinum: 41 cases. *Eur J Cardiothorac Surg* 2007;31:1110–14.
- 3 Al-Mufarrej F, Badar J, Gharagozloo F, *et al.* Spontaneous pneumomediastinum: diagnostic and therapeutic interventions. *J Cardiothorac Surg* 2008;3:59.
- 4 McCullough C, Keane M, Hillman T, *et al.* Pneumomediastinum secondary to mephedrone inhalation. *BMJ Case Rep* 2013;2013:pil: bcr2013009961.

Copyright 2014 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow