CASE REPORT

Case of chest pain in a young man

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SUMMARY

A young man with a history of smoking presented with acute-onset chest pain after lifting weights. He also noticed a change in his voice, tightness in his neck and difficulty breathing. A chest radiograph showed soft tissue emphysema in the neck. A CT scan of the chest revealed moderate amount of pneumomediastinum tracking into the neck and down to the diaphragm. He was haemodynamically stable and had no hypoxia or dysphagia. He was monitored for 48 hours and discharged home after resolution of his symptoms. A chest radiograph repeated after 6 weeks was normal.

BACKGROUND

This case describes a rare cause of chest pain in the young. Pneumomediastinum without any complications can be managed with supportive treatment.

CASE PRESENTATION

A 19-year-old man, an occasional cigarette and marijuana smoker, presented to the emergency department with sudden onset of right-sided pleuritic chest pain and shortness of breath while lifting heavy weights. He also noticed a change in his voice, tightness in his neck and shortness of breath developing over the next few hours. He was premorbidly healthy and did not take any medications. He had no medical history of asthma/bronchitis.

On physical examination, his temperature was 36.7 Celsius, pulse was 102 beats per minute, respiratory rate was 20 breaths per minute, blood pressure was 118/70 mm Hg and oxygen saturation was 97% on room air (RA). He looked mildly distressed on initial presentation and had crepitus around his neck. There was no jugular venous distension. Auscultation of his lungs revealed no adventitious

Figure 2 CT soft tissue neck: moderate amount of pneumomediastinum and soft tissue emphysema in the neck.

sounds. Hamman's sign was not appreciated. The rest of his examination was unremarkable.

INVESTIGATIONS

ECG showed sinus tachycardia. Chest and neck radiograph showed prevertebral soft tissue emphysema in the lower neck and upper mediastinum (figure 1). CT of the neck and chest confirmed moderate pneumomediastinum without any pneumothorax or lung parenchymal abnormalities (figure 2 and figure 3).

DIFFERENTIAL DIAGNOSES

- ▶ asthma exacerbation
- ▶ primary spontaneous pneumothorax.

TREATMENT

The patient was treated with inhaled bronchodilators on an as-needed basis and analgesics.

Figure 1 Soft tissue neck X-ray: prevertebral soft tissue emphysema.

Figure 3 CT chest: pneumomediastinum, extending from the level of the skull base down to the level of the gastroesophageal (GE) junction. Extraluminal gas also extends along the bronchovascular bundles at both hila.

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OUTCOME AND FOLLOW-UP

He was observed for 48 hours in the hospital. He had no dysphagia and his shortness of breath slowly subsided. His chest X-ray at discharge was unchanged.

He was prescribed a rescue inhaler on an as-needed basis, and was advised to avoid strenuous activity and air travel for a few weeks.

A follow-up chest X-ray at 6 weeks showed complete resolution of the subcutaneous emphysema. He did not have any recurrence at 6 months.

DISCUSSION

Spontaneous pneumomediastinum (SPM) is a rare cause of chest pain.¹ It is more common in young men. It usually occurs due to a sudden increase in intra-alveolar pressure during pressure swings in the thoracic cavity with alveolar rupture into the bronchovascular sheath.² Predisposing factors include asthma,

chronic bronchitis, respiratory tract infections, vomiting, choking and Valsalva manoeuvre including weightlifting.³ The most commonly reported symptoms include chest pain, neck pain, dyspnoea, dysphagia and swelling of the face and neck.⁴ Diagnosis can often be confirmed by posteroanterior and lateral chest radiography alone, but some authors recommend CT as the gold standard test.⁵ We were able to find only one similar case report in literature where SPM was directly related to weightlifting.⁶ Conservative management with analgesics and oxygen is often used with good outcomes.⁷ Recurrences are rare.⁸

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Patient's perspective

"I have been very active all my life but was new to weight training at the time of the incidence which was scary. I thought I was having a heart attack. Once the diagnosis was made, I was given the option for surgery which scared me even more. I am glad I could avoid surgery."

Learning points

- ▶ Spontaneous pneumomediastinum (SPM) is very uncommon.
- ▶ Weight training in the young can cause SPM.
- ▶ SPM can be managed with careful observation.
- ▶ Recurrence is rare.

REFERENCES

- 1 Tobushi T, Hosokawa K, Matsumoto K, *et al.* Exercise induced spontaneous pneumomediastinum. *Int J Emerg Med* 2015;8:43.
- 2 Macklin CC. Transport of air along sheaths of pulmonic blood vessels from alveoli to mediastinum. *Arch Intern Med* 1939;64:913.
- 3 Wong KS, Wu HM, Lai SH, *et al.* Spontaneous pneumomediastinum: analysis of 87 pediatric patients. *Pediatr Emerg Care* 2013;29:988.
- 4 Dirweesh A, Alvarez C, Khan M, *et al.* Spontaneous pneumomediastinum in a healthy young female: a case report and literature review. *Respir Med Case Rep* 2017;20:129–32.
- 5 Kaneki T, Kubo K, Kawashima A, *et al.* Spontaneous pneumomediastinum in 33 patients: yield of chest computed tomography for the diagnosis of the mild type. *Respiration* 2000;67:408–11.
- 6 Nishino T. Spontaneous pneumomediastinum after bench press training. *Clin Case Rep* 2017;5:535–6.
- 7 Takada K, Matsumoto S, Hiramatsu T, *et al.* Management of spontaneous pneumomediastinum based on clinical experience of 25 cases. *Respir Med* 2008;102:1329–34.
- 8 Grossman A, Romem A, Azaria B, *et al.* Pneumomediastinum in student aviators: 10 cases with return to flying duty. *Aviat Space Environ Med* 2005;76:63–5.

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