CASE REPORT

Pneumomediastinum secondary to mephedrone inhalation

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SUMMARY

A 23-year-old man presented to the emergency department with severe, central, pleuritic chest pain. The pain was present on waking and exacerbated by movement. On examination, supraclavicular and anterior chest wall surgical emphysema was noted, otherwise examination and initial observations were normal. A chest x-ray and subsequent chest CT demonstrated a pneumomediastinum with significant subcutaneous emphysema. There was no history of vomiting or chest trauma, but the patient had inhaled mephedrone, a synthetic stimulant drug, 36 h prior. Pneumomediastinum is an uncommon complication of inhalational drug use.

BACKGROUND

Pneumomediastinum is a rare complication of recreational drug use, most commonly seen following cocaine inhalation.^{1 2} This case highlights the importance of a full-history including specific drug use and to consider this unusual but important differential diagnosis in a young person presenting with pleuritic chest pain.

CASE PRESENTATION

A 23-year-old man presented to the emergency department with severe, central, sharp chest pain. The pain was exacerbated movement and inspiration, but there was no radiation or associated symptoms such as shortness of breath or palpitations. He denied any gastrointestinal symptoms or history of chest trauma. There was no significant medical history other than smoking and he was not on any regular medication. There was, however, a history of recreational drug use and he had inhaled mephedrone 26 h before presentation.

Initial observations were unremarkable: heart rate 82, blood pressure 127/69 (R=L), SpO₂ 99% on air and respiratory rate 20. Examination demonstrated supraclavicular surgical emphysema, but was otherwise normal.

INVESTIGATIONS

ECG and blood tests, including white cell count and C reactive protein were normal. A chest x-ray revealed a pneumomediastinum with subcutaneous emphysema, but no pneumothorax (figure 1). A chest CT with oral contrast was requested to rule out an oesophageal perforation. The CT confirmed a pneumomediastinum with no evidence of a pneumothorax or oesophageal involvement. There was extensive subcutaneous emphysema that

extended from the upper cervical vertebrae to the abdominal aorta (figure 2).

TREATMENT

The patient was managed conservatively. He received simple analgesia, coamoxiclav and intravenous fluids, while he was kept nil by mouth.

OUTCOME AND FOLLOW-UP

There was significant resolution of the subcutaneous emphysema within 48 h. Observations remained stable throughout. He was subsequently discharged and advised not to fly for at least 6 weeks.

DISCUSSION

Spontaneous pneumomediastinum (SPM) is rare, with a reported incidence in the region of 1 in 30 000 hospital admissions.¹ The commonest presenting symptoms of SPM are chest pain, dyspnoea, neck pain and odynophagia.^{1 3}

SPM has been associated with activities requiring a Valsalva manoeuvre, asthma and inhalational drug use such as cocaine.² Following such drug use, it is thought that the predisposing factor is prolonged and forceful breath holding rather than a direct pharmacological effect. We report a case of SPM associated with mephedrone inhalation. Mephedrone, also

Figure 1 Chest x-ray showing air under the pericardium (black arrow).

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Figure 2 CT scan showing emphysema (white arrows) at the level of C2 and retroperitoneal emphysema at the level of the kidneys.

known as M-CAT or meow-meow, is a stimulant drug and produces similar effects to ecstasy, amphetamines and cocaine. Only one similar case has been reported in the literature⁴ and the National Poisons Information Service have received a single report of mephedrone-associated SPM.⁵

The pathophysiology of SPM is a result of alveolar rupture, with dissection of gas along the fascial planes to the pulmonary

hilum and into the mediastinum. From here, the gas may dissect into the prevertebral tissues, into the lung to cause a pneumothorax and even into the abdomen causing pneumoperitoneum.

A plain chest x-ray is only diagnostic in up to 70% of cases of SPM.¹ Therefore, if there is a strong clinical suspicion in the context of a normal chest radiograph, CT imaging is warranted. If the clinical history is in keeping with oesophageal rupture or tear, contrast-enhanced swallow studies are indicated.

In most cases, SPM is a benign, self-limiting condition requiring no specific treatment other than a short period of observation and analgesia. Antibiotic therapy, though frequently given in published studies, is probably unnecessary.³ Complete resolution generally occurs within 7 days. Relapse is uncommon; in the absence of oesophageal rupture, complications are rare.¹

Learning points

- Pneumomediastinum is a rare complication of recreational drug use.
- Significant subcutaneous emphysema can result from a pneumomediastinum and can potentially cause airway compromise.
- In most cases, spontaneous pneumomediastinum is a benign, self-limiting condition.

Contributors All authors contributed to the management of this patient and to the manuscript preparation, editing and review.

Competing interests None.

Patient consent Obtained.

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