Spontaneous subcutaneous emphysema associated with mephedrone usage

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ABSTRACT

Subcutaneous emphysema in the head and neck is a rare condition, normally caused by major underlying injury to the airway or gastrointestinal tract. We report a non-traumatic occurrence of spontaneous cervical subcutaneous emphysema in a 30-year-old man who had been snorting mephedrone. The patient made an uneventful recovery, being managed conservatively, and did not require airway support. The occurrence of spontaneous cervical emphysema associated with snorting mephedrone has not been previously described in the literature.

KEYWORDS

Subcutaneous emphysema – Mediastinal emphysema – Thyroid cartilage – Otolaryngology

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Case history

A 30-year-old man presented to the accident and emergency department in the early hours of the morning with a painful neck, upper chest swelling and mild trismus. He also reported tightness across his chest on deep inspiration and some odynophagia. He was maintaining his airway without support. He had been snorting mephedrone a few hours beforehand, followed by sneezing, and started developing symptoms about an hour later. He believed it may have been caused by 'holding in a sneeze'. This was his first time snorting mephedrone. He had no other symptoms. He reported no recent trauma, travel abroad or any similar episodes and was in good health otherwise.

On examination, he was not in distress although he did complain of neck pain and was noted to have a hyponasal voice. His respiratory rate was normal and the chest was clear. He had been placed on 15l/min O₂, on which his oxygen saturation was 100%. He was cardiovascularly and neurologically stable. On palpation of the neck and chest, fine subcutaneous crepitations were noted. A differential diagnosis of perforated airway or oesophagus was therefore considered.

Electrocardiography was normal. Chest and soft tissue x-rays of the neck (Figs 1–3) demonstrated air throughout the subcutaneous tissue, highlighting soft tissue structures in the neck as well as showing air in the mediastinum. There were no pneumothoraces. Arterial blood gases were normal. Nasendoscopy was unremarkable.

The patient was monitored for 48 hours, during which time he remained well other than the neck discomfort. He

Figure 1 Anteroposterior x-ray of neck

Figure 2 Lateral x-ray of neck

Figure 3 Erect chest x-ray

was then discharged home to recover with instructions to return if he developed further swelling or any difficulty in breathing. No underlying cause was detected.

Discussion

Subcutaneous emphysema is a rare condition that presents as a smooth bulging of the skin with a characteristic palpable crepitation. It can occur anywhere in the body but is most common in the head and neck due to the proximity of the airway. In the head and neck, the patient may also have neck and chest pain, dysphagia, dysphonia, wheezing and dyspnoea. Subcutaneous emphysema is not inherently life threatening and the air will be resorbed over time but it can be uncomfortable for the patient. The underlying cause, however, is a concern and may require both investigation and treatment.

Subcutaneous emphysema can be traumatic, iatrogenic or spontaneous. Puncture of the respiratory or gastrointestinal tract, particularly the tracheobronchial tree or oesophagus, secondary to penetrating or blunt trauma usually results in subcutaneous emphysema. Trauma to the chest resulting in rib fracture, facial bone fracture and any medical procedure that affects alveolar pressure is also a recognised cause of subcutaneous emphysema.¹ Subcutaneous emphysema secondary to a surgical procedure is known as surgical emphysema and if the aetiology is unclear, it

is referred to as spontaneous subcutaneous emphysema (SSE).¹

In our patient's case, SSE was associated with pneumomediastinum, a combination known as Hamman's syndrome.² SSE and pneumomediastinum were reported in 1850 in a patient who had been coughing violently.³ A number of theories have been suggested in an attempt to explain the underlying pathophysiology, including intra-alveolar hypertension, imbalance in capillary and lung pressure, and the rupture of pre-existing subpleural cysts.^{1,4} Additionally, the presence of hairline fractures of the thyroid cartilage has been described after violent sneezing episodes.³⁻⁸

Our patient presents an aetiological puzzle as he does not describe any violent coughing episode and admits only mild sneezing following nasal inhalation of the mephedrone, making both alveolar rupture and thyroid cartilage fracture very unlikely.

References

1. Maunder RJ, Pierson DJ, Hudson LD. Subcutaneous and mediastinal emphysema. Pathophysiology, diagnosis, and management. *Arch Intern Med* 1984; **144**: 1,447-1,453.
2. Hamman LV. Spontaneous mediastinal emphysema. *Bull Johns Hopkins Hosp* 1939; **64**: 1-21.
3. Parker GS, Mosborg DA, Foley RW, Stiernberg CM. Spontaneous cervical and mediastinal emphysema. *Laryngoscope* 1990; **100**: 938-940.
4. Gunluoglu MZ, Cansever L, Demir A *et al*. Diagnosis and treatment of

spontaneous pneumomediastinum. *Thorac Cardiovasc Surg* 2009; **57**: 229–231.

5. Wiesner B, Frey M. Spontaneous pneumomediastinum in asthma. *Praxis* 2006; **95**: 369–373.

6. Quinlan PT. Fracture of thyroid cartilage during a sneezing attack. *Br Med J* 1950; **1**: 1,052.

7. Tewfik MA, Al-Qahtani K, Payne RJ, Frenkiel S. Pneumomediastinum and cervicofacial emphysema following a nasally obstructed sneeze. *J Otolaryngol* 2006; **35**: 355–357.

8. Beato Martínez A, Moreno Juara A, López Moya JJ. Fracture of thyroid cartilage after a sneezing episode. *Acta Otorrinolaringol Esp* 2007; **58**: 73–74.