CASE REPORT

Cervical and mediastinal emphysema associated with an asthma exacerbation

Waseem Asrar Khan, Shoneen Abbas, John Bright

Manchester Royal Infirmary,
Manchester, UK**Correspondence to**
Dr Waseem Asrar Khan,
waseemkhan@doctors.org.uk**SUMMARY**

Surgical emphysema associated with an acute asthma exacerbation is very rare. This report presents the case of a 19-year-old male patient with a background of asthma who presented with palpable cervical surgical emphysema and CT evidence of mediastinal emphysema. There are only a limited number of case reports associated with surgical emphysema in the absence of pneumothorax in patients with an asthma exacerbation. Evidence with regard to the management of such cases is limited and is largely consensus based. Below we discuss the case in a greater detail.

BACKGROUND

The patient had described worsening shortness of breath symptoms and wheeze over a period of 2 days prior to admission. On the morning of admission, the patient developed sudden onset of pain in the neck. The patient reported no other comorbidities and had no previous admissions to hospital for his asthma. He was on salbutamol and symbicort inhaler with good control earlier and had been managed by the asthma nurse practitioner at his general practice. Cases of surgical emphysema associated with an asthma exacerbation are extremely rare and evidence for treatment is largely consensus based.

CASE PRESENTATION

A 19-year-old male patient with a background of childhood asthma presented to the emergency department with acute shortness of breath and pain in the neck. Upon examination, there was evidence of cervical surgical emphysema. On auscultation, there was good air entry bilaterally with scattered wheeze. Arterial blood gases performed on admission showed a type 1 respiratory failure with a pO_2 of 7.3 on 2 litres of oxygen. A chest radiograph was performed and revealed no pneumothoraces, but gave evidence of cervical and mediastinal emphysema (figure 1). A CT thorax was then performed which showed extensive cervical and mediastinal emphysema (figures 2 and 3).

The case was discussed with the intensive care and was monitored on high-dependency setting. The patient was treated with steroids, nebulisers and high-flow oxygen. He made a good recovery and was discharged 2 days postadmission.

INVESTIGATIONS

CT thorax, high-resolution, chest x-ray.

Figure 1 Chest radiograph on admission. Evidence of surgical emphysema above the right clavicle.

DIFFERENTIAL DIAGNOSIS

Cervical and mediastinal surgical emphysema secondary to an asthma exacerbation.

DISCUSSION

Cervical and mediastinal emphysema often appears as a result of surgery or trauma.^{1–3} However, its spontaneous occurrence or association with asthma is quite rare. When this does happen, the patient may present with clinically impressive and dramatic features as was the case with this patient. From previous case reports, the aetiology seems to be related to the rupture of terminal alveoli and dissection of air along the pulmonary vasculature.^{1–4} Cases have been previously reported during labour and post-operatively, but very few cases have been reported during asthma exacerbation. Spontaneous mediastinum may occur owing to a sudden rise in

Figure 2 CT thorax showing evidence cervical surgical emphysema.

To cite: Khan WA, Abbas S, Bright J. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2012-008253

Figure 3 CT thorax showing evidence cervical and mediastinal surgical emphysema.

intra-alveolar pressure. Causes of this may include asthma, emesis, barotrauma, cough, etc. The resulting increasing pressure may give rise to the rupture of marginal alveoli and tracking of air along the bronchi, interstitial and vascular structures. This may then present with cervical and mediastinal surgical emphysema. In this case, there was both clinical and radiological evidence of mediastinal and palpable cervical surgical emphysema. The previous case reports suggest that management usually entails supportive measures such as high-flow oxygen which may lead to faster absorption of air. Surgical options are usually considered in unstable patients especially when mediastinal structure compromise is present.

OUTCOME AND FOLLOW-UP

The case was discussed with intensive care and was monitored on high-dependency setting. The patient was treated with steroids, nebulisers and high-flow oxygen. The patient made a good recovery and was discharged 2 days postadmission.

Learning points

- ▶ Consider the possibility of surgical emphysema as a complication of an asthma exacerbation.
- ▶ The nature and severity of presentation can vary considerably; imaging is therefore essential to rule out possible precipitating causes.
- ▶ Management is largely supportive, but surgical intervention may be required in severe cases.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Maunder RJ, Pierson DJ, Huson LD. Subcutaneous and mediastinal emphysema: pathophysiology, diagnosis and management. *Arch Intern Med* 1984;144:1447–53.
- 2 Inna K, Bartolome RC. Pneumomediastinum in a 63 year old woman with an asthma exacerbation. *Chest* 2000;117:1778–81.
- 3 Hamman L. Spontaneous mediastinal emphysema. *Bull John Hopkins Hosp* 1939;64:1–21.
- 4 Shackelford D, Casani JA. Diffuse subcutaneous emphysema, pneumomediastinum and pneumothorax after dental extraction. *Ann Emerg Med* 1993;22:248–50.

Copyright 2013 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