Pneumomediastinum and subcutaneous emphysema: a rare cause of odynophagia

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DESCRIPTION

A 5-year-old boy was admitted in the paediatric emergency service with odynophagia, dysphagia with food refusal and neck pain. Two days before, he started productive cough and dyspnoea with progressive worsening. He had a background of recurrent wheezing, with no other significant medical history or family history, and was not on any regular medication. Physical examination showed tympanic temperature of 37.7°C, tachycardia (120 beats per minute), polypnea (50 breaths per minute) with intercostal and subcostal recession, peripheral oxygen saturation of 94%, mild oropharyngeal hyperaemia and lung auscultation was positive for increased expiratory time, bilateral wheezing and scattered crackles. Crepitus on palpation, affecting his neck and chest was noted. Review of his other systems was otherwise unremarkable. A chest radiography revealed an image of pneumomediastinum and subcutaneous emphysema with bilaterally extension to cervical region (figure 1). ECG was normal. There was no history of trauma. The patient was hospitalised, and treatment consisted of oxygen therapy, analgesia, rest, inhaled bronchodilators and systemic corticosteroids. Clinical evolution was favourable, subcutaneous emphysema resolved and the patient was discharged on the fifth day.

The patient was referred to outpatient paediatric respiratory clinic. Tests for allergen sensitivity were negative and spirometry was normal. Bronchoprovocation test revealed mild asthma.

Spontaneous pneumomediastinum is rare in the paediatric population. Secondary spontaneous pneumomediastinum is often associated with a respiratory tract infection or an asthma exacerbation, as in this case.¹⁻⁴ Clinical presentation includes more frequently chest pain and cough.³ Other reported symptoms are dyspnoea, neck pain, odynophagia, dysphagia, neck and upper chest swelling, torticollis, dysphonia, abdominal or back pain.^{2 5} Odynophagia has been recently reported in 31% of cases with spontaneous pneumomediastinum and in 7% of respiratory-associated pneumomediastinum cases.³

Subcutaneous emphysema and Hamman's sign are suggestive of this diagnosis, which is confirmed by chest radiography in which lucent streaks or bubbles of gas outline mediastinal structures, elevate the mediastinal pleura and often extend into the neck or chest.⁵ Radiographic characteristic signs of spontaneous pneumomediastinum include the 'spinnaker sign', in which the thymic lobes are seen deviating upwards and outwards, the 'continuous

Figure 1 Linear lucencies overlying the upper chest and neck (grey arrowheads) consistent with pneumomediastinum with subcutaneous emphysema. 'Spinnaker sign' (white arrowheads); 'continuous diaphragm sign' (white arrow); 'Naclerio's V sign' (black arrows).

diaphragm sign', in which the mediastinal gas is seen as a thin lucent line outlining the superior surface of the diaphragm and separating it from the heart, and the 'Naclerio's V sign', in which the gas outlines the lateral margin of the descending aorta and extends laterally over left hemidiaphragm.⁵ Chest CT may be helpful for evaluation of any associated causes or abnormalities and to exclude life-threatening differential diagnoses.^{3 5 6}

Spontaneous pneumomediastinum due to an asthma exacerbation is usually benign and

Learning points

- ▶ Spontaneous pneumomediastinum is a rare and underdiagnosed situation in the paediatric population, so subcutaneous emphysema should be investigated and a chest radiography performed.
- ▶ The most common observed symptoms of respiratory-associated pneumomediastinum are chest pain and cough, however, odynophagia and neck pain may be reported.
- ▶ Children with an episode of spontaneous pneumomediastinum, with a background of recurrent wheezing, should be referred, after discharge, for specialised clinic, and after a safety interval, to perform a spirometry and bronchoprovocation test.

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self-limiting, requiring supporting therapy and a good asthma control. Treatment of uncomplicated cases is based on analgesia, rest, avoiding manoeuvres that increase pulmonary pressure (such as Valsalva manoeuvre) and oxygen therapy.^{2 5 6} In situations of significant respiratory and/or haemodynamic compromise, invasive measures are needed.⁵

Despite its rarity in the paediatric population, diagnosis of pneumomediastinum requires a high suspicion index with physical examination and a chest radiography to confirm the diagnosis.

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