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Visual case discussion

Chest pain in an oboe player

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1. Visual case discussion

A 15-year-old girl with history of well-controlled moderate persistent asthma and gastro esophageal reflux disease, presented to emergency department with 1-day history of diffuse upper chest pain radiating to back and neck, worsened with physical exertion and deep inspiration and decreased at rest. It was associated with mild dyspnea, sore throat and intermittent palpitations. Physical examination revealed stable vital signs and crunching sounds synchronous with the heartbeat suggestive of pericardial rub (Hamman's sign). EKG and troponin levels were normal. Chest radiograph revealed small pneumomediastinum (Figs. 1 and 2, white arrows), bilateral small pneumothoraces (Fig 1, red arrows), subcutaneous emphysema (Fig. 1, black arrows) involving the upper chest and neck. The patient reluctantly revealed a long oboe recital prior to the onset of symptoms. This highlights wind musical instruments as a rare cause of spontaneous pneumomediastinum by elevating the alveolar pressure,[1] and asthma being the most common cause in children.[2] A thorough history and physical examination usually can determine the cause of chest pain in children and identify those who benefit from chest radiograph[3] and further evaluation. Chest radiograph should be obtained for pediatric chest pain evaluation when there is a suspicion for pneumothorax, pneumomediastinum, pneumonia or esophageal foreign body. Bedside ultrasonography shows air artifact “air-gap”. The patient did well with conservative management and remained symptom free at 1 month follow up.

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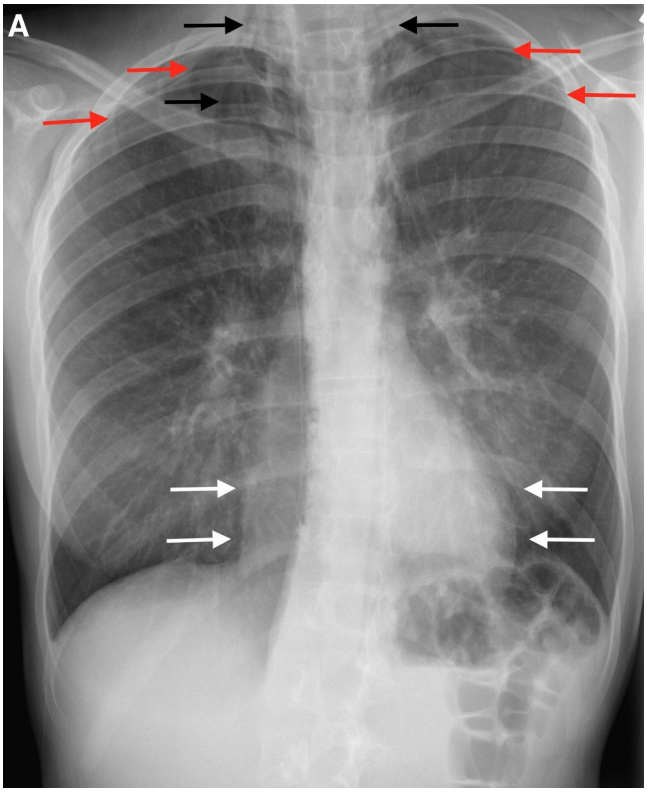

Fig 1. Chest radiograph PA view showing small pneumomediastinum (white arrows), bilateral small pneumothoraces (red arrows), subcutaneous emphysema (black arrows) involving the upper chest and neck. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

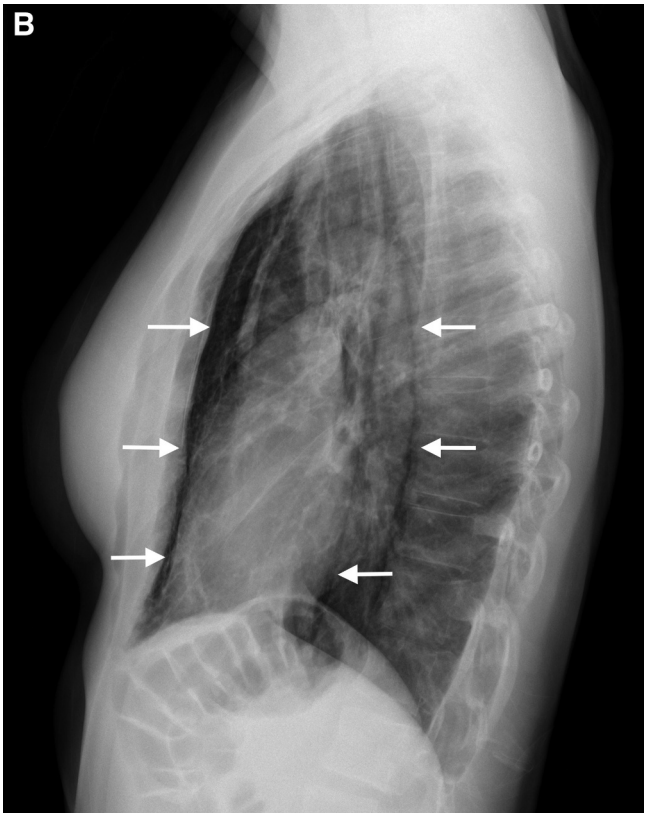

Fig 2. Chest radiograph lateral view showing small pneumomediastinum (white arrows).

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.visj.2018.11.003.

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Questions

1. What is the most common cause of pneumomediastinum in children?
   a. Asthma exacerbation
   b. Barotrauma
   c. Lower respiratory tract infection
   d. Valsalva maneuver
   e. Vomiting

2. Which is most useful in the evaluation of Pediatric chest pain?
   a. Chest radiograph
   b. Bedside ultrasonography
   c. History and physical examination
   d. EKG
   e. Echocardiogram

Answers

1. Asthma exacerbation. Explanation: Asthma exacerbation causes increased airway resistance and alveolar pressure. This results in alveolar rupture in the pulmonary interstitium, followed by dissection of gas towards hilum and mediastinum, predisposing to pneumomediastinum in children.

2. History and physical examination. Explanation: Chest pain in children is usually benign, not caused by a serious disease, in contrast to chest pain in adults, which raises concern for coronary ischemia. A thorough history and physical examination usually can determine the cause of chest pain in children and identify patients who require acute intervention and those who can be managed with reassurance and continued follow-up. Chest radiograph is normal in most of the children with chest pain, it should be obtained when there is a high index of suspicion for cardiac or pulmonary pathology and esophageal foreign body. Reference: Neff J, Anderson M, Stephenson T, Young J, Hennes H, Suter R. REDUCE-PCP study: radiographs in the emergency department utilization criteria evaluation-pediatric chest pain. Pediatr Emerg Care. 2012 May;28(5):451–4.