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Case Report

Recurrent spontaneous pneumomediastinum in a young female: Hamman's crunch revisited†

Uma Devaraj*, Priya Ramachandran and George A. D'souza

Department of Chest Medicine, St. John's Medical College & Hospital, Bangalore, India

*Correspondence address. Department of Chest Medicine, St. John's Medical College & Hospital, John Nagar, Sarjapur Road, Bangalore – 560 034, India. Tel: +91 80 22065802; Fax: +91 80 25501144; E-mail: druma.devaraj@gmail.com

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Presence of free air in the mediastinum without any identifiable cause is defined as spontaneous pneumomediastinum (SPM). SPM is more common in young males. The common inciting event leading to SPM are retching, vomiting, acute asthma attack, intense sport activity, inhalation of drugs and weight loss as seen in anorexia nervosa. Analgesics and rest is the mainstay of treatment. Recurrence of SPM is rare. We present a case of recurrent SPM occurring in a young female within few months interval. We also present a brief literature review.

CASE REPORT

A 25-year-old female from rural residence, presented with sudden onset of left half of chest and left breast pain of 2 days duration. She also had pain on swallowing both liquids and solids. She did not complain of any breathlessness. She had no history of trauma, nor any prior history of retching or vomiting. There was no history of any other comorbid illness like bronchial asthma. She was not a smoker nor gave any history of substance abuse. She was married and her menstrual periods were regular, the last period was 20 days prior to presentation. On the day prior to onset of symptoms, she had manually shifted around 100 coconut fronds from her garden to a storage space.

On examination, she was afebrile, normotensive, with pulse rate of 78/min and respiratory rate of 18/min. Her oxygen saturation was 98% in room air. She was 161 cm tall and weighed 60 kg, with a BMI of 23.2. Extensive subcutaneous emphysema was noted over her left side of chest and left breast which was exquisitely tender. Left hemithorax crepitations (Hamman's crunch) were noted synchronous with heartbeat, but masked due to the subcutaneous emphysema. She was started on intravenous fluids and analgesics as she refused to eat due to odynophagia. Chest radiography and computed tomogram of the chest showed extensive pneumomediastinum (Figure 1a and b) with no evidence of pneumothorax on either side. She was discharged home after 3 days of observation, after considerable reduction of subcutaneous emphysema.

Patient presented with recurrence of symptoms 2 months later and she had left-sided subcutaneous emphysema similar to the previous episode. She was admitted and symptoms subsided after 4 days, during which time she was only on analgesics. The third episode occurred 3 weeks later. The subcutaneous emphysema had spread to the left jaw and neck and she had severe left-sided chest tenderness. Patient was managed conservatively and was reassured about benign nature of the illness. She was discharged home after 4 days with residual symptoms and signs. On telephonic follow-up, she has remained symptom free.

DISCUSSION

Presence of free air in the mediastinum without any apparent cause is defined as spontaneous pneumomediastinum (SPM). Incidence of SPM is reported to be 0.001–0.01% of all adult inpatients and is said to be more common in young males [1]. The causes of SPM are retching, vomiting, acute asthma attack, intense sport activity, inhalation of drugs, weight loss as seen in anorexia nervosa [2, 3]. The inciting event in our case is probably the intense physical activity of lifting

†The work was performed at St. John's Medical College & Hospital, Bangalore, India.

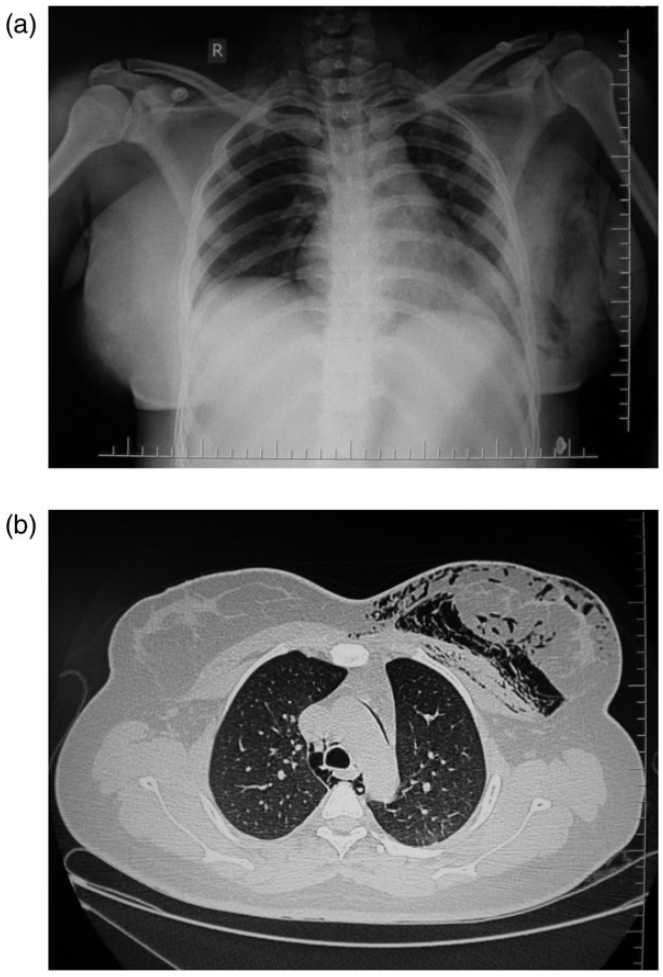

Figure 1: (**a**) Chest X-ray: mediastinal emphysema with air around the heart and subcutaneous emphysema seen in the chest wall and left breast. (**b**) CT scan chest: air around the aorta, trachea and in the left breast. Note the absence of pneumothorax.

100 coconut fronds. Some case reports have quoted forced defecation, labor, sneezing and yelling as causes of SPM [4, 5]. Pneumomediastinum can be secondary to chest trauma, surgical or medical procedures, or mechanical ventilation [6]. Reports of idiopathic pulmonary fibrosis being complicated with SPM have been noted [6, 7]. Though there are many causes of SPM, the exact pathophysiology remains to be clarified.

Rapid increments of airway pressure across the alveolar membrane causes terminal alveolar rupture. Direct toxic effects of heat, caused by inhalation of illegal drugs [8], and the thinner alveolar wall secondary to malnutrition [9] are other local factors implicated in the alveolar rupture.

Air enters the lung interstitium when the terminal alveolar rupture occurs without pleural dissection, as evident from animal studies. This air then migrates along the bronchovascular bundle toward the mediastinum (Macklin effect). Rarely air tracks into the pericardium, retropharyngeal and the retroperitoneal space.

Chest pain and dyspnea are the commonest symptoms reported with SPM. Other symptoms such as cough, neck pain and odynophagia can present depending on the extent of SPM. Subcutaneous emphysema is the salient feature in SPM; whereas the classical Hamman's crunch (crepitations heard with each heartbeat, usually on the left hemithorax) is seen in about 30% of the patients [1]. SPM does not result in respiratory failure. The index case had severe chest pain, subcutaneous emphysema and odynophagia but no dyspnea.

Diagnosis is confirmed by radiography; chest X-ray shows streaks of air in the mediastinum, making the heart silhouette clear and prominent, subcutaneous emphysema in the neck and chest. Computed tomography, which visualizes the mediastinal air better, is the gold standard for diagnosis, as chest X-ray has low sensitivity. Diagnostic workup for esophageal rupture or bronchial asthma has to be completed when history is suggestive. A barium swallow test in our patient was negative for any breach in the esophageal mucosa. She had no comorbid illness like asthma and neither gave any relationship of events with her menstrual periods.

Analgesics and rest is the mainstay of treatment. Symptoms usually regress within few days, and patients can be sent home without further intervention, as was in our case. Rare complications such as compressive symptoms in the mediastinum and unilateral or bilateral simple pneumothorax or tension pneumothorax have been reported [10].

Recurrence of SPM is very rare with only 13 cases reported in literature so far [10]. Recurrence of SPM in a young female within few months interval and no apparent inciting event during the second and third episode makes our case unique. Rest and analgesics were all that was required to achieve a favorable outcome.

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CONFLICT OF INTEREST

None declared.

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