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Pneumomediastinum

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A 23-year-old male patient presented to the emergency room with a complaint of sudden retrosternal pain, which had started two hours prior, accompanied by fatigue. Imaging (Figure 1) showed pneumomediastinum.

Pneumomediastinum, or mediastinal emphysema, is characterized by the presence of air or gas in the mediastinum, and can cause chest pain, dyspnea, soft tissue emphysema, and crackles. Pneumomediastinum is commonly associated with pneumothorax. Air or gas can reach the mediastinum when there is a sudden increase in intra-alveolar pressure resulting in alveolar rupture. The air or gas tracks along the peribronchovascular interstitium and dissects into the hilum, entering the mediastinum. Pneumomediastinum can also result from rupture of the esophagus, trachea, bronchi, or even the neck or the abdominal cavity. In addition, infections in these regions can lead to gas formation.[1,2]

Pneumomediastinum is classified as spontaneous when there is no evidence of trauma, iatrogenic injury, or previous lung disease. The main causes of spontaneous pneumomediastinum are intense physical exercise, the labor of childbirth, pulmonary barotrauma, deep dives, severe paroxysmal coughing, vomiting, and bronchial asthma. Some authors have reported that the main cause of pneumomediastinum of unidentifiable cause is the use of smoked drugs, such as marijuana or crack cocaine. Chest X-ray is the gold standard in the diagnosis of pneumomediastinum. Sometimes, the lateral view facilitates the diagnosis. The most common chest X-ray finding is a thin vertical line, which is lateral and parallel to the mediastinal border, corresponding to the mediastinal pleura separated from the mediastinum by a band of air. This finding is more common on the left. The characteristic CT finding is the presence of gas in the mediastinum, dissecting into anatomical structures (vessels and airways).[1,2]

After careful clinical review, our patient reported having smoked crack before the onset of pain. Barotrauma is a well-known complication resulting from the use of crack, inhaled cocaine, or smoked marijuana. Barotrauma can manifest as pneumothorax, pneumomediastinum, pneumopericardium, or soft tissue emphysema. In cocaine users, an increase in intra-alveolar pressure may occur after smoking, either because of forceful coughing or intentional production of a Valsalva maneuver to increase the absorption and maximize the effect of the drug. When alveoli become overdistended against a closed glottis, they may rupture, and air may dissect into the mediastinum, producing pneumomediastinum.[3] In conclusion, in young individuals, the presence of pneumomediastinum, in the absence of a history of other etiologic factors, should raise the suspicion of crack or marijuana use.

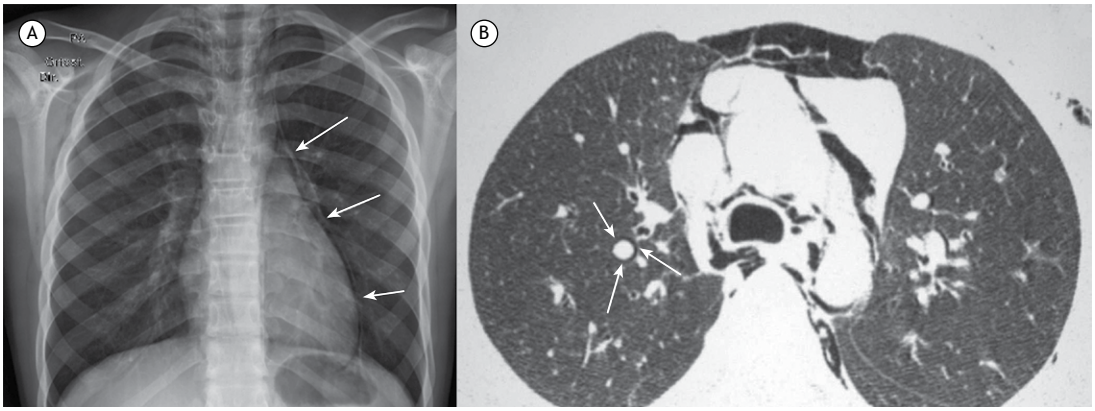

Figure 1. In A, chest X-ray showing a linear opacity parallel to the left mediastinal border, representing the laterally displaced mediastinal pleura separated from the mediastinum by a band of air (arrows). In B, HRCT scan of the chest showing the presence of free gas in the mediastinum, dissecting into anatomical structures (bronchi and vessels). Also note the presence of gas surrounding a pulmonary vessel on the right (arrows).

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