

Pneumomediastinum Secondary to Corn Chip Ingestion

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Abstract

Pneumomediastinum (PM) is the presence of air in the mediastinum. It is uncommon in children and has multiple possible etiologies. A 14 year old male presented to the emergency department with neck and chest pain for 4 h after eating a Corn chip. On physical exam we elicited a crepitus over the left anterior and lateral cervical areas. Chest and Neck X-rays showed a PM. He was admitted for close monitoring and observation in the pediatric intensive care unit and was discharged after he clinically improved. Management is supportive and complications are possible but rare.

Keywords: Pneumomediastinum; Corn chip; Chest pain; Neck pain, Hamman sign; Conservative management

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Introduction

Pneumomediastinum (PM) is defined as the presence of air in the mediastinum. It is rare in children with an incidence of 1/30000 emergency department visits [1]. It is related to multiple etiologies including infection, asthma, esophageal or tracheal rupture and foreign body aspiration [2]. Because of its low incidence and its mild intensity, the diagnosis can be easily missed. We present a case of Pneumomediastinum secondary to a corn chip ingestion.

Case Presentation

A 14 year old male presented to the pediatric emergency department with a 4 h history of neck and chest pain. The patient was running between classes and choked while eating a "Doritos" chip. He immediately felt a throat pain that worsened with swallowing and subsequently a chest pain. He denied hoarseness, shortness of breath or dyspnea. On physical examination, the patient was alert, active, in no acute distress, spoke in full sentences and his vital signs were normal and stable. A crepitus was noted over the left anterior and lateral cervical areas, left axilla and left hemithorax, with no tenderness or focal findings. Chest and Neck X-rays were performed and showed a PM with a small focus of soft tissue gas in the right axilla and an anterior cervical soft tissue gas (**Figures 1 and 2**). The patient was admitted to the pediatric intensive care unit (PICU) for close monitoring and further management. Thoracic surgery and Otolaryngology were consulted and recommended

an esophagogram that did not show any esophageal injury. The otolaryngologist performed a fiberoptic direct laryngoscopy that did not show any lesions. Throughout his hospitalization the

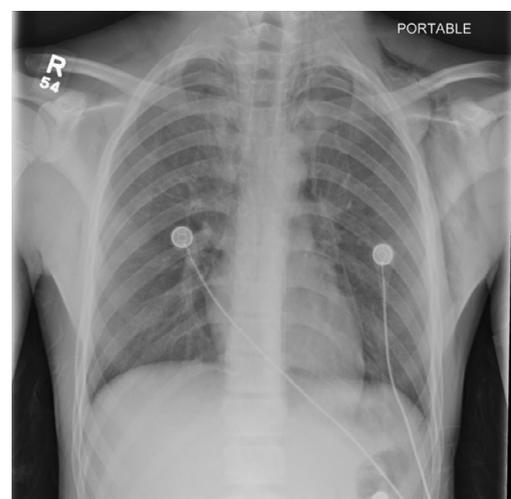


Figure 1 Pneumomediastinum on chest x-ray.

patient had no signs of hemodynamic compromise, remained in no respiratory distress and a follow up chest X-ray showed mild improvement of the PM (**Figure 3**).

Discussion

The incidence of PM in the pediatric population is low, occurring in 1 in 30000 emergency department referrals [1]. There is a bimodal distribution in age of incidence, with peaks in children under 4 years old and those aged 15-18 years. The most common etiologies in pediatric population are asthma, respiratory infections, vomiting and esophageal injury [2]. The esophageal mucosa is a fragile structure that can be lacerated by a sharply fractured chip due to the rigid structure of this type of food [3].

Patients with PM may be asymptomatic, or as was the case with our patient, can present with chest pain, which is often the first and most frequent symptom of PM [1, 3, 4]. The chest pain is

typically retrosternal, worsens with deep inspiration and may radiate to the neck, shoulders and arms. Other symptoms include neck pain, dyspnea, dysphagia and sore throat. Subcutaneous emphysema on the neck or chest is the most common finding on physical examination. Hamman sign (mediastinal crunch or crepitation synchronous with the heart beat on chest auscultation) is well known to be a pathognomonic sign of PM [1].

Chest X-ray usually confirms the diagnosis showing lucent streaks or bubbles of gas outlining mediastinal structures. The mediastinal gas is often seen above the left cardiac border and better visualized on the lateral view than posterior-anterior (AP) projection and more than 50% of PM may be missed if only an AP projection is used [5]. Chest computed tomography (CT) is important in clinically suspected cases when chest X-ray is normal or equivocal [1]. A recent study described the need to restrict additional imaging to PM patients with clinical presentation concerning for esophageal injury as additional imaging is often negative [6].

However when it is difficult to rule out esophageal perforation on a CT, an esophagogram should then be performed, as the esophageal perforation can be life threatening because of the development of fatal mediastinitis. The addition of oral contrast to CT may increase the accuracy of detecting esophageal perforation and enable diagnosis of aerodigestive tract injury in patients with suspected PM via one single study [1].

Management is conservative and consists of careful observation, bed rest, analgesics and oxygen [1, 4]. The treatment has to be individualized in cases of esophageal injuries and may involve surgical intervention that will vary depending on the site of injury. As in our case and in most cases of cervical esophageal injuries, good results can be achieved with conservative treatment [3]. If the patient's clinical status worsens or is unimproved, a follow up Chest X-ray should be obtained [4].

The natural course of the condition is spontaneous resolution and complications are extremely rare and include pneumothorax, pneumoperitoneum and pneumopericardium [4].

Conclusion

Pneumomediastinum is a rare condition in pediatric patients with a benign natural course. The etiology should be investigated to rule out emergency conditions such as esophageal or tracheal rupture, particularly in patients who present with neck pain or dysphagia. Chest radiography, including posterior-anterior and lateral projections should be performed to verify the diagnosis. Management is conservative and the complications are uncommon. It is important for pediatricians to alert patients and their parents about the potential danger of rigid, sharp edged snacks as they may induce an esophageal injury resulting in PM.



Figure 2 Pneumomediastinum on neck x-ray.



Figure 3 Pneumomediastinum resolving on chest x-ray.

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