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Case Study

A Rare Case of Chest Pain in Children

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Abstract

The presentation of a paediatric patient with shortness of breath can be a common occurrence in the paediatric population presenting to the emergency departments with the majority of the illnesses in the paediatric population being attributed to shortness of breath. Recognition of life-threatening illnesses in a paediatric patient presenting to the emergency room can be a challenge and thus have a low threshold of suspicion. Early recognition and treatment can be crucial and lifesaving with the involvement of the right teams and the appropriate disposition of patients. In this case, we share a rare cause of shortness of breath in a child presenting to the emergency department.

Keywords:- Chest Pain, Shortness of Breath, Paediatric Patient

Introduction

Spontaneous pneumomediastinum (SPM) is the presence of air in the mediastinum that is not due to a traumatic cause or injury (Murayama & Gibo, 2014). SPM can cause a significant amount of anxiety in the treating physician as it is normally related to an acute traumatic cause and requires urgent intervention. However, in paediatrics, SPM is usually a benign and self-limited condition where most patients required hospitalization for observation.

Case Study

A 7-year-old girl with no known underlying illness was referred to the emergency department (ED) for subcutaneous emphysema. She complained of sudden onset chest pain and difficulty breathing about 1 hour after her usual weekend swims in the house pool. She denies any trauma to the chest, rapid deceleration, or breath holding during swimming time. On arrival, she appears well, not tachypnoeic, talks in full sentences, and is hemodynamically stable. Lung's examination was unremarkable where the air entry was good and she saturate well under room air. Upon palpation, she was noted to have subcutaneous emphysema over the upper chest, extending to the neck and jaw. No bruises were noted over the chest. Chest radiograph (CXR) revealed pneumomediastinum and subcutaneous emphysema up to the jaw without any pneumothorax. The patient was admitted to the paediatric ward and received supplemental oxygenation She was discharged well after 5 days when the physical sign of subcutaneous emphysema improved and the repeated CXR improved.

Discussion

SPM is not a routine provisional diagnosis in patients presenting with chest pain, accounting for only 0.3% of cases. In an absence of organic and primary lung pathology such as obstructive lung, SPM can be caused by an exertional increase in airway pressure induced by exertions that involve straining

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(weightlifting, defecation), forceful vomiting, difficult labor, and Valsalva maneuvers (Tobushi *et al.,* 2015). This increase in airway pressure causes microtears in the alveoli, which leads to air shearing through the bronchovascular sheath into the mediastinum, leading to the development of pneumomediastinum. The air can shift with each cardiac pulsation, creating a mediastinal crunch during auscultation known as Hamman's sign. The air can also shear through other mediastinal organs and subcutaneous tissue, leading to the development of subcutaneous emphysema (Maunder, Pierson & Hudson, 1984).

Conclusion

Although SPM is usually treated with observational medicine, it should be identified by the attending doctor through medical history-taking, a careful physical examination, and relevant radiology investigations. This could exclude more serious conditions such as pneumothorax, tracheobronchial tree rupture, Boerhaave syndrome (esophageal rupture), and pulmonary embolism, and should also exclude conditions associated with precordial pain, such as acute coronary syndrome and pericarditis.

Conflict of Interest

The authors declare that they have no competing interests.

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