PNEUMOMEDIASTINUM AND SUBCUTANEOUS EMPHYSEMA ASSOCIATED WITH ASTHMA EXACERBATION IN A PEDIATRIC PATIENT, A RARE ENTITY

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ABSTRACT

Introduction: Spontaneous Pneumomediastinum is a rare entity in pediatric patients. It is defined as air in the mediastinum without any definitive cause sometimes also referred as Hamman Syndrome. Most common symptoms are cough, chest pain, subcutaneous emphysema and shortness of breath. This condition usually resolves spontaneously without any treatment. We would like to present a case of spontaneous pneumomediastinum in a 6 year old boy presenting at our department.

Key Words: Hamman Syndrome; Pneumomediastinum; Asthma

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INTRODUCTION

Pneumomediastinum or air in the mediastinum may originate from the esophagus, lungs, or bronchial tree. As suggested by a handful of small case series in the literature, spontaneous pneumomediastinum is an uncommon, self-limiting condition.[1-4] It results from alveolar rupture-otherwise known as the Macklin phenomenon. Alveolar rupture results from high intra-alveolar pressures, low peri-vascular pressures, or both. Air escaping from the alveoli tracks into the mediastinum during the breathing cycle as the pressure in the mediastinum decreases relative to the pulmonary parenchymal pressure. From there, air may track into the cervical subcutaneous tissues, epidural space,[5] pericardium,[6] and/or peritoneal cavity.[7,8] Spontaneous pneumomediastinum usually results from bronchial hyper-reactivity or barotrauma.[8] The finding of a pneumomediastinum usually places the integrity of the thoracic aero-digestive tract into question resulting in unnecessary radiological investigations, needless dietary restriction, unjustified antibiotic administration, and prolonged hospitalization.

CASE REPORT

A 6 years old male child brought to ER by his parents complaining of sudden onset of shortness of breath, two weeks history of non productive cough intermittent fever and asthma exacerbation. The patient had past history of dust allergy and Asthma for which he was on episodic treatment.

On general physical examination, he was tachypnoeic and in respiratory distress, his other vital signs were unremarkable.

On chest examination he had surgical emphysema of chest extending up to neck, along with inspiratory rhonchi and equal air entry bilaterally. His laboratory investigations were within normal range .CT scan chest with I.V contrast was done and showed pneumomediastinum with no pneumothorax (Figure 1). CT scan chest images were reconstructed for virtual bronchoscopic evaluation to rule out any tracheobronchial injury and were found out to be unremarkable (Figure 2). Barium swallow was requested to rule out the possibility of esophageal perforation and study showed no perforation (Figure 3).

The patient was managed conservatively and exacerbations of his symptoms were controlled. His surgical emphysema was closely monitored for any further increase along with his SpO_2 levels.

The recovery was uneventful. The patient was discharged in healthy state on 4th post admission day.

Figure 1a, 1b & 1c: CT SCAN showing subcutaneous emphysema and penumomediastinum without any other pathology.

Figure 1a

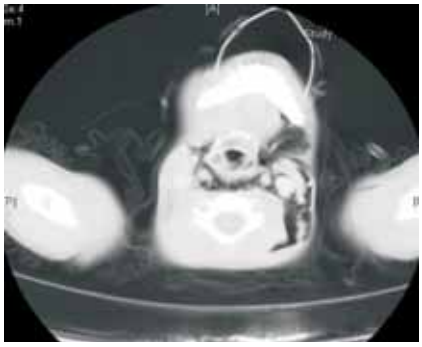

Figure 1b

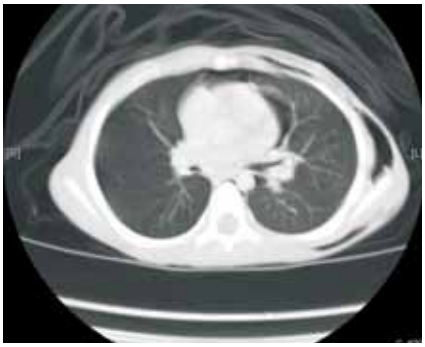

Figure 1c

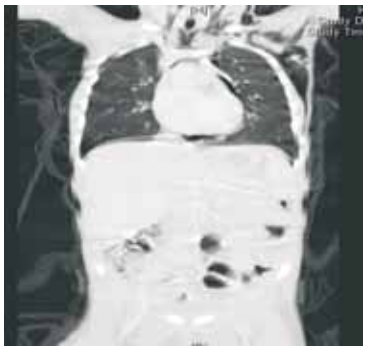

Figure 2: CT virtual bronchoscopy was unremarkable.

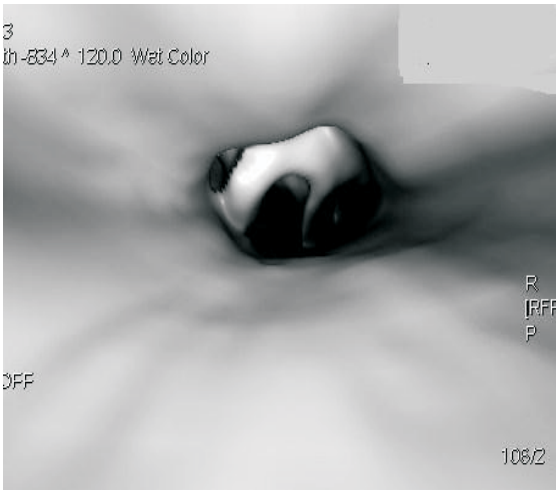

Figure 2

Figure 3: Barium Swallow showing no leak in the esophagus ruling out any possible esophageal perforation.

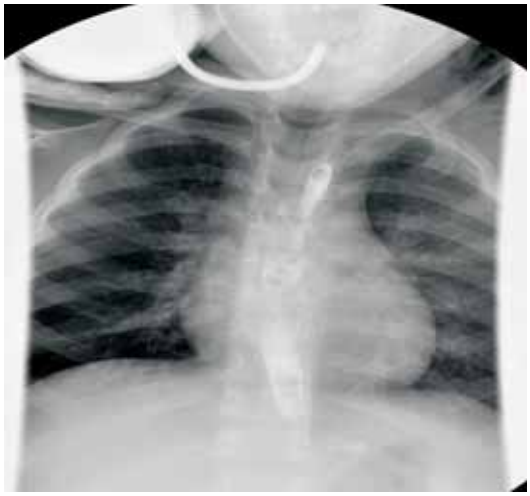

Figure 3

On the basis of above mentioned history, clinical examination and investigations diagnosis of spontaneous pneumomediastinum (SPM) was made.

DISCUSSION

Pneumomediastinum is an uncommon self-limiting benign condition that is frequently over-investigated and over-treated due to concern for missing an aero-digestive injury. A handful of small case series in the literature have suggested the benign course of this condition.[1-4] A complete blood count, a CT chest with contrast and reconstruction for virtual bronchoscopic images to rule out tracheobronchial pathology and a contrast study of upper G.I tracts to rule out esophageal perforation is mandatory as it can decrease the morbidity and mortality of the patient in this self limiting condition.

CONCLUSION:

Spontaneous Pneumomediastinum is a very rare condition especially in pediatric age group but it can occur secondary to exacerbation of asthma.It can be diagnosed non-invasively by using radiological investigations like C.T scan chest with virtual bronchoscopic reconstruction. Symptomatic and conservative management proves successful in these cases.

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