

Traumatic Pneumatocoele (Pseudocyst) -A case report.

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Abstract

Post pneumonia pneumatocoeles are known in children but traumatic pneumatocoele formation is a rare entity. The purpose of reporting this case is to make the clinicians aware of this condition which can be easily managed conservatively. Unnecessary surgical intervention should be avoided in such case. We are reporting a case of traumatic pneumatocoele treated conservatively without any complications. Clinician should be aware of this condition so that he will be able to diagnose and manage this condition conservatively.

Keywords: Pneumatocoele, Pneumonia, Paediatrics, Lobectomy

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Introduction

Post pneumonic pneumatocoeles are very commonly seen in paediatrics practice. Due to its infective nature and chances of complications like air leak, abscess and pleural effusion, it often leads up with surgical interventions in the form of lobectomy. Traumatic Pneumatocoele is formation of air filled cavity in the lung parenchyma. It results from blunt chest trauma in children. It can be associated with other chest injuries. We are reporting a case of pneumatocoele formation in a 8 yr old male child who was diagnosed and treated conservatively without any complication.

Case report

On July 12, 2012 an eight year old boy in Abha city riding on bicycle was knocked down by a motor vehicle and was brought in Aseer Central Hospital. He sustained multiple chest and face injuries. He was conscious and well oriented. GCS 15/15 with normal pupils. He had no neck injury and airway was normal. Respiratory rate was 32/min with right side chest wall tenderness. Air entry was equal bilaterally with no adventitious sounds. His heart rate was 114/min, blood pressure 110/69 with saturation of 90% on room air. Abdomen was soft without any injury to pelvis and limbs.

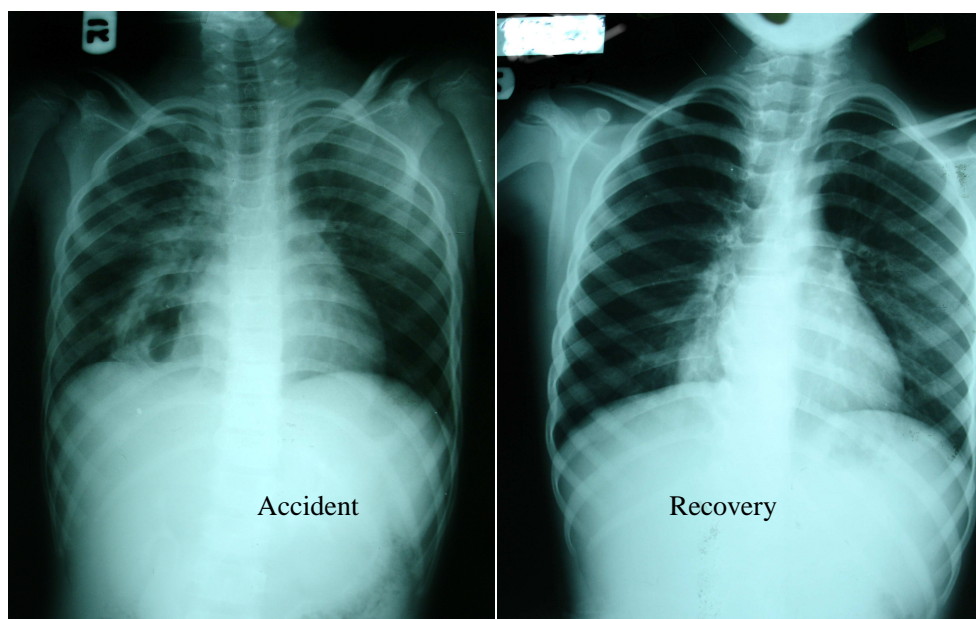


Figure 1. Right chest intrapulmonary cystic lesion in lower zone and fractured right 5th rib posteriorly

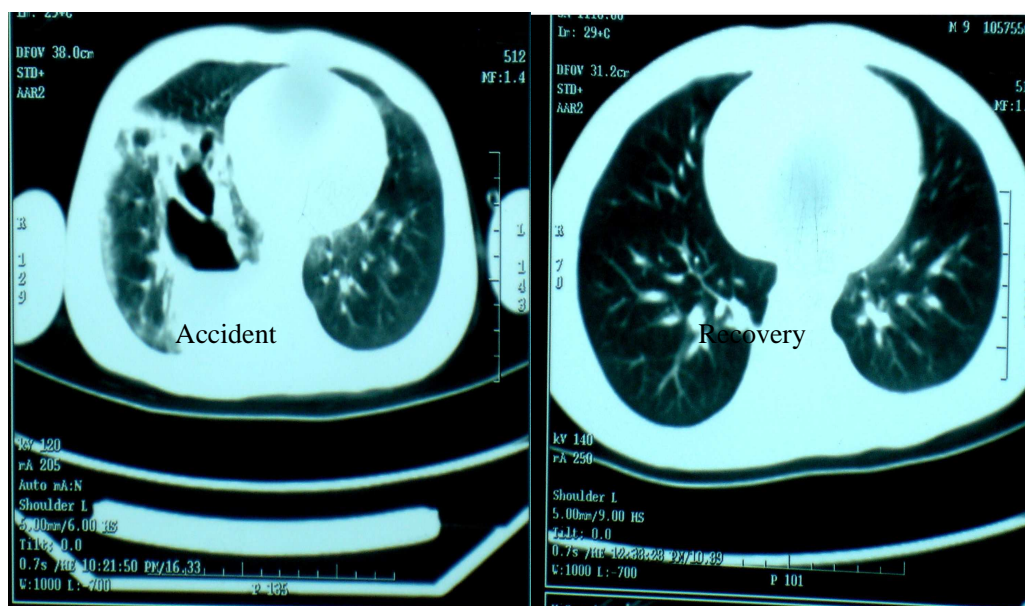


Figure 2. CT chest -right lung contusion 5cm x3 cm blood filled cavity in right lower lobe with minimal pneumothorax, segmental collapse of right lower lobe and fracture of 5th rib

Local examination revealed right sided chin laceration (3cmx0.5cm) without any active bleeding. X-ray chest PA View findings included right chest intrapulmonary cystic lesion in lower zone and fractured right 5th rib posteriorly (Fig. 1).CT chest showed right lung contusion with 5cm x3 cm blood filled cavity in right lower lobe with minimal pneumothorax, segmental collapse of right lower lobe and fracture of 5th rib (Fig. 2).

Chin laceration was sutured. Patient was treated conservatively with analgesics and chest physiotherapy.

In 48 hrs significant clinical recovery was seen. On 6th day minimal x-ray changes in lung were seen and patient was discharged. In 6 months the pneumatocele had completely resolved in 6 months. Patient was followed up for 4 years and found to be normal.

Discussion

Pneumatocele is a cystic lesion found in the lungs. It is common in children. It is not a true cyst as it is not lined by epithelium, hence we can consider it as a pseudocyst. Pneumatoceles commonly develop as a complication of staphylococcal pneumonia. They are found more frequently in infants and young children. One study reported that 70% of pneumatoceles occurred in children younger than 3 years [1].

The other documented causes are trauma, positive pressure ventilation and hydrocarbon ingestion [2].

In addition to post pneumonia pneumatocele rarely post traumatic pneumatocele can be found in children, although the most common chest injury in children is contusion of lungs. The greater flexibility of the thoracic cage

in young children permits the anterior ribs to be compressed to meet the posterior ribs which results in contusion. Rib fractures occur less frequently in children than adults [3].

Mechanism of formation of traumatic pneumatocele is totally different from formation of post infection or post pneumonia pneumatocele.

It is suggested that the traumatic pneumatocele develops in 2-steps. Initially the lung is compressed by the external force of the trauma, followed by rapid decompression from increased negative intra thoracic pressure. This way a "bursting lesion" occurs in the lung which leads to pneumatocele formation [4].

Other mechanism is by the rapid compression and decompression as energy lacerates alveoli and interstitium, and concomitant retraction of the surrounding elastic lung tissue leaving small cavities filled with air and fluid, which tend to grow until a pressure balance is achieved between the cavity and the surrounding tissue [5,6].

Pneumatoceles are of four types. Type 1 is an air-filled cavity with or without an air-fluid level, resulting from sudden compression of a pliable chest wall wherein the air-containing lung ruptures. Type 2 is an air-containing cavity in a paravertebral location, resulting from severe compression of the more pliable lower chest wall and sudden shifting of the lower lobe across the vertebral body causing a shearing type of injury. Type 3 is a small peripheral cavity or peripheral linear radiolucency that is always close to the chest wall where a rib has been fractured, resulting from a fractured rib that has punctured the lung.

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Type 4 is a result of previously formed, firm pleuropulmonary adhesions causing the lung to tear when the overlying chest wall is violently moved inward or fractures, diagnosed only at surgery or autopsy [7].

Mortality depends on associated injuries. The combined presence of head, chest, and abdominal injuries may be fatal in nearly 40% [8, 9].

Clinically, after the trauma the patient can be asymptomatic but if symptomatic they can present with tachypnoea, dyspnoea, cough, chest pain and haemoptysis within 12 to 36 hrs after injury [10].

X-ray and CT scan are two most important investigations for diagnosis of traumatic pneumatocele. CT scan is a sensitive method for early detection of this condition and allows further differentiation from other lesions [11].

It is usually treated conservatively with antibiotics, analgesics and chest physiotherapy, especially when they are uncomplicated. Surgery or other therapeutic measures that may lead to additional risks without any advantage for the patient, should be avoided [12].

Sometimes pneumatoceles can be associated with complications. Complications described are secondary infection and failure of the lesion to resolve. In these situations patient may need surgery in the form of lobectomy [13].

Conclusions

Traumatic pulmonary pseudocysts are benign lesions secondary to blunt chest trauma needing only conservative treatment unless complications arise. Hemothorax or pneumothorax formation, failure to resolve or infection of the lesion are some of the complications. Computed tomography is sensitive for early detection of the lesion, while plain roentgenograms are sufficient for follow up [14].

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