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A Rare Presentation of Pneumatocele: Case Report and Review of Literature

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Pneumatocele (lung hernia) is an uncommonly encountered clinical entity. Eight month old Iraqi female infant had a sudden appearance of a right sided neck swelling following repeated bouts of hacking cough associated with tachypnoea and high grade fever. A lateral cervical x-ray confirmed the presence of an air lined pocket (Pneumatocele) and chest x-ray showed another one in the chest with underlying lobar pneumonia. The mass was treated conservatively by manual reduction resulting in improvement of the symptoms. It's rare presentation is reported here.

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Pneumatocele is herniation of the lung tissue through a defect in the musculoskeletal thorax[1]. Most pneumatoceles are thoracic but cervical defects in Sibson's fascia may occur occasionally. They are usually asymptomatic but some patients may have local tenderness, pain or mild dyspnoea[2] . This paper reports an infant with a cervical pneumatocele. The clinical presentation, imaging studies and treatment with a brief review of literature are discussed .

THE CASE

Eight month old Iraqi female infant developed overnight an alarming swelling in the right side of the neck following repeated bouts of hacking cough. It was associated with high fever and tachypnoea for the preceding two days. There was neither a history of trauma or accident nor a family history of similar condition. Physical examination revealed febrile, restless, pale child with respiratory distress but no cyanosis . The pulse rate was 110 beats per minute, the temperature was 39.3^0C and respiratory rate was 40 breaths per minute . The right side of the neck and supraclavicular fossa was encroached by a well defined non tender 4 x 6 cm mass that was soft, smooth with uniform sponginess and positive crepitus . The swelling overlied by dilated superficial veins (Fig 1). It was exaggerated when the baby coughed or cried . There were multiple, small, soft and mobile lymph nodes at the base of the mass in the right supraclavicular fossa.

Chest examination showed scattered pulmonary rales with diminished air entry in the right side of the chest and bronchial breathing . Investigations revealed Hb 9 gm /dl, normochromic, normocytic and WBC 16 $x10^9$ /L, N 65% , L 24% . Chest x-ray

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Figure 1. The child with the mass in the and supraclavicular area.

Figure 2. Chest x - ray showing neck pneumonic patch and pneumatocele with mild tracheal shift .

Figure 3.Lateral x-ray of the neck showing air radiolucency.

Figure 4. Chest x-ray showing complete reduction of hernia and resolving pneumonia

showed a pneumonic consolidation with pneumatocele in the right hemithorax and a mild tracheal deviation to the left (Fig 2). Lateral x- ray of the neck and thoracic inlet showed an air radiolucency in the right side (Fig 3). Ultrasound of the neck reported the presence of an echo free air filled mass. Thus, a diagnosis of cervical lung hernia (pneumatocele) secondary to lobar pneumonia (mostly staphylococcal) was made. The child was treated conservatively with intravenous Ampiclox 100 mg/kg body weight, oxygen therapy, bronchodilators and antipyretics. The baby was monitored and assessed daily by clinical and radiological investigations.The mass became smaller. Gentle manipulative reduction of the hernia was successful in improving the condition further. In the next three days the fever and cough subsided after which the patient was discharged on maintenance oral antibiotics with no symptoms apart from a pneumonic patch to be followed up by paediatrician later on (Fig 4).

DISCUSSION

Lung hernia is a rare condition[1]. It is an abnormal protrusion of the lung tissue beyond the confines of the thoracic cage. Hernias are classified as cervical, intercostal or diaphragmatic and can be either congenital or acquired[3,4]. The majority of reported hernias are acquired traumatic thoracic hernia[1]. Aoki et al, reported a case of bilateral lung hernias in the supraclavicular fossae in 79 years old male with chronic asthma and bronchitis[5]. Chen R D et al, reported a familial incidence of cervical

lung hernia suggesting an autosomal dominant hereditary condition[6]. Pneumatoceles (cyst–like rarefaction within lung parenchyma) are almost always benign lesions[7]. Their aetiology and pathogenesis are not completely understood though various theories have been proposed[8]. It has been reported that pneumatoceles occur with infection of staphylococcus aureus, E.coli, Klebsiella, Streptococci, and Pseudomonas pneumonias[7]. Staphylococcal pneumonia continues to be one of the most severe bacterial pneumonia in children associated with high incidence of complications[9]. Children develop staphylococcal lobar pneumonia with abscess formation. These abscesses become inflated during coughing and crying. Thus resulting in a tension pneumatocele through a check valve mechanism[10].

This might explain our case as the pneumatocele expands during inspiration, coughing and crying, it bulged out through a congenital weakness in cervical Sibson's fascia stimulating an inflammatory reactive lymph node enlargement. These lymph nodes acted as a tight neck that obstructed the air filled lung sac. The diagnosis of pneumatocele can be confirmed by an x-ray in most cases[4,5]. Although, Mc Adams et al, recommended an airway fluoroscopy or CT- scan performed at maximum inspiration to confirm the diagnosis[11], these facilities were lacking in our hospital. The advised treatment is an operative repair rather than external support if symptoms are present[2] but most reports recommend occasional surgical repair where it is reserved to the large and incarcerated types[4,12]. Others do advise the safe performance of percutaneous catheter drainage for tension pneumatocele under CT guide[13] but we have no experience with such procedures.

CONCLUSION

Pneumatocele is a rare presentation in cervical region. Paediatritions and surgeons should be knowledgeable of its clinical and simple radiological diagnosis together with its response to treatment. We recommend that operative intervention is best reserved to the large and complicated or refractory cases.

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