BILATERAL PNEUMOTHORAX COMPLICATING SEPTIC PULMONARY EMBOLI IN A CHILD WITH OSTEOMYELITIS

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CASE REPORT

ABSTRACT

Osteomyelitis in children are primarily hematogenous in origin although cases secondary to trauma, surgery or infection in contiguous sites are also reported. Septic pulmonary emboli is a rare complication of osteomyelitis. Numerous pulmonary complications of septic pulmonary embolism have been described, but only a few have reported spontaneous pneumothorax. High clinical suspicion should be raised in patients with osteomyelitis presenting with shortness of breath for prompt diagnosis and treatment. Here we present a rare case of bilateral pneumothorax complicating septic pulmonary emboli in a nine year old child with biopsy proven osteomyelitis. Keywords: Pneumothorax, Bilateral, Osteomyelitis, Septic pulmonary emboli, Children, Complication

Introduction

Osteomyelitis in children are primarily hematogenous in origin although cases secondary to trauma, surgery or infection in contiguous sites are also reported. Septic pulmonary emboli is an uncommon entity in children and is a rare complication of osteomyelitis. In SEP, the embolic blood clot that leads to an infarction in the pulmonary vasculature also contains microorganisms that incite focal abscess. Numerous pulmonary complications of septic pulmonary embolism have been described, but only a few have reported spontaneous pneumothorax. Here we present a case of bilateral pneumothorax complicating septic pulmonary emboli in a child with biopsy proven osteomyelitis.

Case Report

A 9 year old boy presented with swelling of the right knee joint with pain. Radiograph of the right knee joint demonstrated ill defined soft tissue swelling with blurring of the myofascial planes. No periosteal reaction or cortical break was identified (Fig. 1). For further

Figure 1: Anteroposterior (AP) and Lateral (L) Radiograph of the right knee joint showing ill defined soft tissue swelling with blurring of the myofascial planes. No periosteal reaction or cortical break was identified.
characterization MRI was performed that showed ill defined hyperintense areas involving epiphysis and metadiaphysis of tibia along with marked soft tissue edema (Fig. 2). A differential diagnosis of osteomyelitis and tumor mass lesion was made and biopsy of the lesion suggested. Histopathology confirms the diagnosis of osteomyelitis secondary to staphylococcal aureus infection. Patient was then managed conservatively under antibiotics cover.

Two weeks after that patient again presented in the emergency department with severe respiratory distress and shortness of breath resulted in hypoxemia. Oxygen saturation was decreased to 75%. Clinically, he was tachypneic (40 breaths / min), tachycardiac (121 beats / min) and febrile (102 degree Fahrenheit). Breath sounds were decreased bilaterally. Laboratory investigations revealed leukocytosis (13,000 cells/mm³). Immediate chest radiograph demonstrated bilateral pneumothorax more on the right side. CT Scan chest with contrast was done later on which showed bilateral pneumothorax. Multiple pulmonary nodules of varying sizes are seen scattered throughout both lung fields. These are predominantly peripherally distributed with feeding vessel sign (Fig. 3). Few of the nodules were showing cavitation. Mild left sided pleural effusion was also present. A diagnosis of septic pulmonary emboli was made resulting in spontaneous pneumothorax due rupture of some cavitory lung nodule. An intercostal chest tube was immediately placed. Patient’s clinical condition improved after insertion of chest tube and intravenous antibiotics. Later on bronchoscopic biopsy of the pulmonary lesions confirmed septic pulmonary emboli. Transesophageal Echocardiography was also performed to rule out vegetations and infective endocarditis that turned out to be negative.
Staphylococcus aureus found to be the most common pathogen in 89.2% of the reported cases of SPE in pediatric patients, 70% were MRSA. It has been increasingly associated with deep tissue infections, such as osteomyelitis, septic arthritis, cellulitis, and, rarely, pyomyositis. Wong KS et al. found soft tissue and bone infections as the commonest cause of SPE. In a study conducted by Gonzalez et al., seven children had septic pulmonary emboli of which six had osteomyelitis and one had septic arthritis. Miyashita et al. reported a case of septic pulmonary emboli caused by cellulitis and Yulsel et al. reported with pyomyositis.

High clinical suspicion and awareness is necessary to diagnose SPE. Different radiological presentations has been seen in SPE. The typical features include multiple ill-defined rounded or wedge shaped densities ranging in sizes from 0.5 to 3.5 cm. These are predominantly located peripherally abutting the pleura. Feeding vessel sign may be evident on CT scans chest. Patchy air space opacification mimicking non-specific bronchopneumonia may also be seen. Lesions are mostly bilateral and occasionally unilateral. There is rapid progression of nodules into cavities and abscesses. Other features may include empyema, bronchopleural fistula, hilar or mediastinal lymphadenopathy which was not present in this case. In addition mild left sided pleural effusion was present in this case.

Spontaneous pneumothorax from septic pulmonary emboli is a rare entity and should be considered with worsening pulmonary function in an appropriate clinical context. Up to authors knowledge four cases of spontaneous pneumothorax secondary to SPE has been reported in patients with infective endocarditis and only one case reported in intravenous drug abuser. This case is unique as no case of spontaneous pneumothorax complicating SPE in a child with osteomyelitis has been reported in the literature so far. This case demonstrated bilateral spontaneous pneumothorax more on the right side. The pathophysiology of pneumothorax in the setting of SPE is presumed to be erosion of an embolic bacterial cavity lesion into bronchus with formation of a bronchopleural fistula.

For the treatment of pneumothorax immediate intercostals chest tube insertion would be necessary. Early and prompt treatment with appropriate antibiotics...
Conclusions

Spontaneous bilateral pneumothorax is a possible lethal complication of septic pulmonary emboli and is rare in patients with osteomyelitis. High clinical suspicion should be raised in patients with osteomyelitis presenting with shortness of breath for prompt diagnosis and treatment. CT scan chest is the imaging modality of choice in the diagnosis of septic pulmonary emboli and to rule out other causes of spontaneous pneumothorax.

References


