

A 14-Year-Old Patient with Chest Pain

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WHAT IS YOUR DIAGNOSIS?

A 14-year-old boy was referred to our hospital with pain in his left posterior chest wall, cough, exertional dyspnea, weight loss, shoulder pain and inability to move his left hand. He had a history of chest trauma two weeks ago. During the past two weeks, he had two episodes of nausea and vomiting. During his admission to emergency department, his vital signs including blood pressure, heart rate, respiratory rate and oxygen saturation rate were normal. On physical examination, coarse crackles were auscultated in basal left lung and breath sounds were normal in other areas. Laboratory tests showed leukocytosis (WBC: 12.2×10^3) and PLT 460×10^3 . CRP was positive (3+) and ESR was 96 mm/h. Sputum culture was also positive for *Candida*.

Chest X-radiography (CXR) showed that the patient had a left lower lobe (LLL) sub-pleural loculation. On chest computed tomography (CT), there was a sub-pleural mass like consolidation in LLL measured up to 45×44 mm associated with subtle ipsilateral pleural reaction. Right lung was intact (Figure 1 and 2). Ultrasound revealed a hypoecho mass of the size of 52×44 mm at inner part of the left lateral chest suggesting hematoma. One week later, the size of the mass decreased significantly to 43×36 mm on ultrasound.

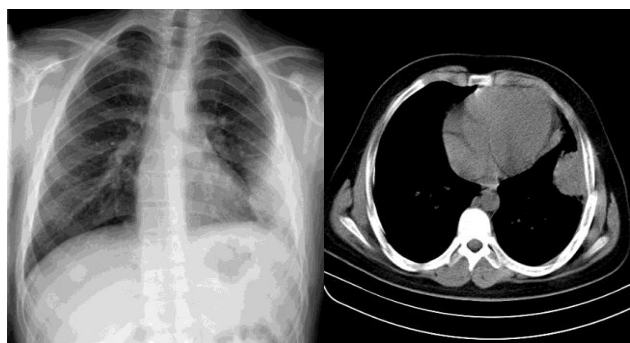


Figure 1. CXR shows a sub-pleural mass with silhouette sign. CT scan showed that there was a sub-pleural mass like consolidation in the LLL measuring up to 45×44 mm associated with subtle ipsilateral pleural reaction. Right lung was intact.

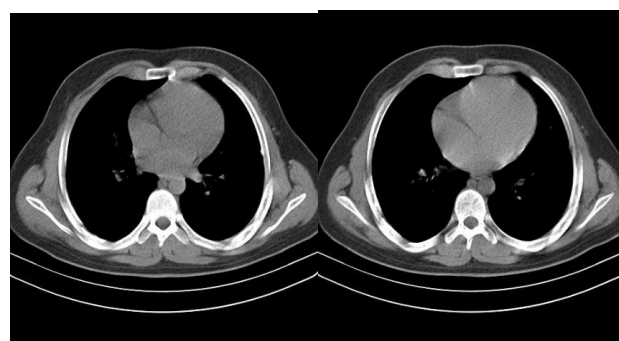


Figure 2. Chest CT one month (left) and three months (right) later

Answer

Diagnosis: The patient was diagnosed with subpleural hematoma as a complication of blunt trauma

TREATMENT

Conservative Management or Thoracentesis

The patient was followed for one month without any interventions or thoracentesis. The patient's sub-pleural hematoma was absorbed after one month spontaneously. One month later, ultrasound showed that sub-pleural hematoma mass was completely absorbed. Follow-up chest CT confirmed that sub-pleural hematoma had been absorbed with no signs of any remnant hematoma.

Thoracic trauma has an overall fatality rate of 10.1%, which is the highest in patients with cardiac or tracheobronchial-esophageal injuries. Sub-pleural hematoma is a common complication after blunt trauma to the chest. Imaging plays an important role in the diagnosis of sub-pleural hematoma. Conventional radiography is typically used for initial imaging examination, even if CT is to be performed. The role of ultrasound in diagnosis of sub-pleural hematoma has been emphasized (1).

A therapeutic thoracentesis in this case could have been used as the first line therapy. However, we used a conservative approach and the final result was excellent. Thoracentesis is used to remove a larger volume of pleural fluid or pleural hematoma to relieve symptoms, such as shortness of breath. In most cases, thoracentesis is performed without complications. When complications do occur, they are usually minor and resolve on their own or are easily treated. Potential complications include pain and discomfort, risk of bleeding from puncture of intercostal arteries, risk of infection, pneumothorax or lung collapse.

Pneumothorax is a symptomatic complication in approximately less than 5% of thoracentesis procedures (2), but could be less when performed with the assistance of ultrasound imaging (3). Recent data support the importance of operator expertise and the use of ultrasound

in reducing the risk of iatrogenic pneumothorax (4). Pneumothoraces that do occur are usually small and resolve on their own; however, about one-third of pneumothoraces become large, continue to expand, or cause shortness of breath. In these patients a catheter or chest tube is placed through the skin into the pleural space to withdraw the air.

In conclusion, thoracenteses may have a very low complication rate. However, the current clinical guidelines for hematoma thoracentesis in pediatrics may not reflect evidence-based best practices and conservative management is a more appropriate approach.

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