Clinical Image

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Mass lesion in a chest x-ray of a male adolescent

Clinical Presentation

A 16-year-old boy presented with history of fever and cough for 4 days. On examination he was febrile, tachypnoeic with a pulse rate of 90 beats/minute, and blood pressure of 110/70 mm Hg. Clinical examination of respiratory system showed central trachea with dull note on percussion, bronchial breath sound, and crepitations in the right infraclavicular area. Investigations showed hemoglobin of 13 gm/dL, white blood cell count of $14x10^9$/L and platelet count of $200x10^9$/L The sputum acid-fast bacilli was negative. The chest x-ray (CXR) showed a rounded opacity in the right upper zone with well-defined margin (**Figure 1**).

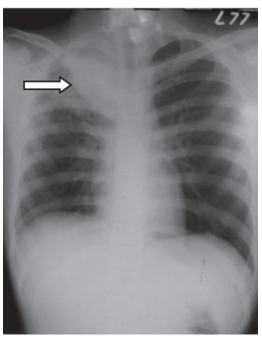

Figure 1 - An image showing a rounded opacity with well-defined margin in the right upper zone (arrow).

Questions

1. What is the diagnosis?

2. What is the differential diagnosis?

Answers

1. Round pneumonia.
2. The differential diagnosis include bronchogenic cyst, lymphoma, carcinoid, hamartoma, granuloma, hydatid cyst, lung abscess, lipoid pneumonia, rheumatoid nodule, round atelectasis, fungal pneumonia, pulmonary pseudotumour, pleural fibroma, bronchial metastasis and bronchogenic carcinoma.

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Discussion

Well-defined rounded opacities in CXR can be termed as pulmonary nodules or mass lesions, and the etiology can vary from benign to malignant causes.[1] We report a case of mass lesion in CXR of an adolescent boy, which turned out to be a fully treatable infectious condition. The CT of the thorax and bronchoscopy was planned after a course of antibiotics, as his clinical features were consistent with pneumonia. He was treated with IV cefotaxime, and oral azithromycin as per national pneumonia guidelines for hospitalized non-ICU patients. The symptoms improved within one week, and CXR taken 2 weeks later showed good clearance of the lesion. Final diagnosis of round pneumonia was established.

Round pneumonia represents an area of consolidation, seen as nodules or coin lesions in x-ray, commonly in the pediatric age group, but can rarely occur in adults.[2] Well-defined round opacity is due to the confinement of infection to a small area as interalveolar communications, and collateral airways in children, especially below 8 years of age are not well developed. The lesion is not always round as it can be oval, or triangular. The 'pores of Kohn and canal of Lambert' are well-developed communications in adults, which allows lateral spread of infection resulting in lobar pneumonia. Round pneumonia in adult is usually due to developmental defect of intralveolar communication, or during delayed resolution of lobar pneumonia, where it can be termed as focal organizing pneumonia.[3] Air bronchogram, which is present in 17% of CXR of round pneumonia clinches the diagnosis, but also seen in adenocarcinoma and bronchoalveolar carcinoma.[4] A CT of the chest and positron emission tomography helps in differentiating benign from malignant lesions.[5]

According to the World Health Organization bulletin, India ranks highest in newer pneumonia cases in numbers annually.[6] *Streptococcus pneumoniae* was isolated as the common pathogen in many case series of community acquired pneumonia from India, while mycoplasma pneumoniae, *Staphylococcus aureus, Klebsiella pneumoniae,* and *Haemophilus influenza* are the other common organisms isolated, but no organisms were isolated in the available case reports of round pneumonia from India. Organism causing pneumonia was not isolated in our case, but common etiological agents reported worldwide in round pneumonia are *Streptococcus pneumonia, Klebsiella pneumoniae, Coxiella Burnetii* and *Mycobacterium tuberculosis*.[1] Repetition of x-ray after a 2-3 weeks of antibiotic therapy can be carried out where good clearance of lesion confirms pneumonia. However, any lesion that does not resolve, or decrease in size with antibiotic therapy may necessitate further investigations such as bronchoscopy and biopsy.

In conclusion, round pneumonia in adults can be suspected in round mass lesions with onset suggestive of infectious etiology. Good response to therapeutic intervention may confirm the diagnosis, however, lack of response may require further investigations.

References

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