

Case Reports

Round Pneumonia in Adults Masquerading as Bronchogenic Carcinoma

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Abstract: Round pneumonia or coin pneumonia is a rare variant in adults, although it is very common in the pediatric age group patients. It can mimic as a pulmonary mass on imaging, which can lead to broad differential diagnosis or misguidance toward the conditions like bronchogenic carcinoma or other benign conditions which can lead to unnecessary diagnostic work up like computerized tomography scan and even a biopsy. We report a case of 45-year-old female with this rare presentation of pneumonia.

Keyword: Round Pneumonia, Pneumonia, Lung Neoplasm, Rare Variant of Pneumonia, Round Opacity on X-Ray

Introduction

It is an oval shaped consolidation with non-segmented pattern and centrifugal distribution. It is a rare variant comprising around 1% of pneumonia, the chest x-ray finding of round pneumonia is even found in less than 1% cases of these round pneumonia (Porstmann, 1977). Greenfeild and Gyepes (1964), first described this variant mimicking as a bronchogenic carcinoma. Rose and Ward (1973), it was recognized as a clinical entity as round pneumonia. Unfamiliarity of this variant in adults can lead to extensive diagnostic work up like C.T scan or even biopsy in this benign condition which is just a consolidation opacity of infectious etiology.

Case Report

45-year-old female with history of chronic smoking about 20 pack a year presented with cough, fever, fatigue, since a week without any history of weight loss and no significant past history. On physical examination patient had fever, BP-124/82 mmHg, pulse rate was 100 bpm, respiratory rate: 23 breaths per minute, on auscultation fine crackles on left infra-axillary area were present. The rest of the examination was unremarkable. Chest x-ray-PA view revealed a round opacity with air bronchogram and infiltrates in left lung field (Fig. 1). Complete blood count reveals white count of 14×10^3 mL, a hematocrit of 30%, low hemoglobin of 9.0 g/dl and normal platelet count. Liver and kidney functions were within the normal limit. Based on the acute history of presentation, patient was started on Injection ceftriaxone (i.v) 12 hourly for 10 days with tablet

Azithromycin 500 mg once a day for 5 days. Patient become afebrile with remarkable decrease in frequency of cough noted on 3rd day of starting antibiotics. Patient was discharged on 10th day with repeat chest x-ray on 18th day demonstrated clearance of round opacity. She responded well to the antibiotics, so no further investigations were done.



Fig. 1: X-ray chest PA view demonstrating round opacity with air bronchogram and infiltrate in left lung field

Discussion

Pneumonia is a major health problem worldwide, which is the leading cause of death due to infectious diseases. On imaging it can present as bronchopneumonia, interstitial pattern or lobar consolidation. Round pneumonia a rare variant is common in children but rarely seen in adults (Taylor *et al.*, 1978). Pathogenesis of round pneumonia is unknown, it is believed that atypical dissemination of the exudates through pores of Kohn (discrete holes in walls of alveoli) and channel of Lambert (connections between adjacent bronchioles and alveoli) is responsible for oval pattern on imaging (Soubani and Epstein, 1996). According to Zinkernagel *et al.* (2001) the round lesion on imaging is seen in earliest phase of disease due to slow velocity of exudative spread through pores of Kohn and Lambert's channel.

Patient with round pneumonia usually presents as community acquired pneumonia with benign course with fever and cough for 1-2 weeks along with leukocytosis. There is characteristic radiological and clinical response to course of antibiotics (Rose and Ward, 1973). In our case, patient clinical presentation and findings pointed toward an acute infectious pathology of lung parenchyma and coincidentally financial constraints from patient's side led us to the diagnosis. The neoplastic and non-neoplastic condition of round lesions such as pulmonary nodule, atelectasis, bronchoalveolar sequestration obviously will show no improvement with course of antibiotics. Streptococcus pneumonia is the most common cause of round pneumonia (Zinkernagel *et al.*, 2001). Other include Mycobacterium tuberculosis (acuteness of symptoms and no history of weight loss ruled it out on our case), Klebsiella pneumonia, Hemophilus influenza and some atypical like *Chlamydia psittaci* (Zylberman *et al.*, 2006) and *Coxiella burnetii* (no authentic data of prevalence of Q fever in our area). According to Anton Q fever should be ruled out and round pneumonia should be treated with macrolides and fluoroquinolones (Anton, 2004). Wan *et al.* (2004) reported eight case of severe acute respiratory syndrome presented as round pneumonia, seven of these eight cases were having lesion in the right lung so this is also a rare presentation of severe respiratory distress syndrome. Etiological diagnosis of round pneumonia in our case was not possible because of limited laboratory facility in rural India. Considering *Streptococcus pneumoniae* being the most common etiological, we started ceftriaxone and azithromycin for atypical organisms. The radiological feature of round pneumonia could be from large lesion to small, according to Kohno *et al.*, satellite lesion can be useful in diagnosing round pneumonia on computerized tomography. According to Zwirowich *et al.* (1991) air bronchograms are not useful to differentiate between

benign or malignant lesion (the age adjusted incidence rate of malignant lesion is around 2 per 100000 population in western India) (Behra, 2017), air bronchograms can be found in eighty seven percent of malignant cases and in around half cases of pulmonary nodule which is a benign condition. C.T scan is more accurate in differentiating the lesions as compared to x-ray. Misdiagnosis of round pneumonia can lead to sepsis which is one of leading cause of mortality in developing nations and unnecessary diagnostic procedures like computed tomography or even biopsy.

Conclusion

Round pneumonia is a rare presentation which is usually found on the right side and here we present coin lesion on the left side which can masquerade as carcinoma or other conditions. Recognition of the infectious etiology, a benign condition which can be managed with antimicrobial therapy at an early stage can prevent unnecessary aggressive diagnostic tests and simultaneously decreasing the cost of health care in resource poor settings.

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Author's Contributions

Chandan Kumar: Involved in drafting the manuscript. Final approval for publication. Edited the content for critical information. Analysis and interpretation of data.

Abhishek: Involved in drafting the manuscript. Final approval for publication. Edited the content for critical information. Analysis and interpretation of data.

Pal Satyajit Singh Athwal: Involved in drafting the manuscript. Final approval for publication. Edited the content for critical information. Analysis and interpretation of data.

Shivangi Gupta: Involved in drafting the manuscript. Final approval for publication. Edited the content for critical information. Analysis and interpretation of data.

Fnu Kajal: Revised the manuscript for critical information, analysis and interpretation of data. Final approval for publication. Involved in drafting the manuscript.

Piyush Puri: Involved in drafting the manuscript. Final approval for publication. Edited the content for critical information. Analysis and interpretation of data.

Anil Kumar Kem: Revised the manuscript for critical information.

Ethics

Written informed consent was obtained from the patient for this case report and the images.

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