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Case Reports on Pleural Nocardiosis

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Abstract: ***Introduction****: Most common causes of pleural effusion are tuberculosis, malignancy, congestive cardiac failure and rarely rheumatoid arthritis. Pleural effusion in connective tissue diseases can be due to disease itself, infection like tuberculosis and rarely malignancy. We need to differentiate the pleural effusion caused by disease or due to infection as treatment differs for both. Tuberculosis is endemic in our country and we tend to forget the rare causes of pleural effusion. Here we are presenting 2 cases of non resolving pleural effusion in connective tissue disease patients who were on long term immunossuppression and steroids.* ***Case 1****-45/ female, known case of SLE, on immunosuppressants for 2 years. Patient presented with cough and breathlessness. Chest radiography showed right pleural effusion, pleural fluid analysis showed exudative fluid, most likely tuberculosis. However patient did not took anti tubercular treatment and presented after one month with recurrent pleural effusion. Usg thorax showed loculated pleural effusion and done usg guided thoracocentesis. Frank pus aspirated, then put pigtail for drainage.* ***Case 2****-32/male, known case of Rheumatoid arthritis for 8 years, presented with cough and breathlessness for 20 days. Chest radiography showed loculated massive pleural effusion. Usg guided thoracocentesis done, frank pus aspirated. Hence Intercostal tube had inserted.* ***Results****: Both patient's fluid report were exudative with very high values of ADA and LDH. ZN stain was negative, but Gram stain showed gram positive filamentous bacilli. Modified ZN stain picked up nocardia species. Both patients are on Cotrimoxazole for 6 months. Chest xray showing clearance and symptomatic improvement for both patients.* ***Conclusion****: Nocardia usually affects immunocompromised patients. Hence with high index of suspicion we have to approach and come to diagnoisis as nocardia usually affects lung parenchyma without involving pleura. Pleural involvement with nocardia is very rare, so in any undiagnosed case of pleural disease on prolonged steroid and immunosuppressant drugs, routine search for nocardia should be done. Here in both of our patients, there is mere involvement of pleura without involvement of lung parenchyma.*

Keywords: Pleural nocardiosis, Connective tissue diseases, non-resolving pleural effusion, immune suppression, empyema

1. Introduction

Nocardia is a rare infection which presents in pleura. Nocardia is usually common in immunocompromised hosts. Pulmonary nocardia usually present in immunocompromised hosts. Pleural nocardia is rarely documented in India [(1).] Pleural involvement in pulmonary nocardiasis is seen in 25% of cases including pleural effusions and empyema [(2).] This case highlights the importance of considering nocardia as a differential diagnosis in pleural effusion cases.

Case 1

45 year old female, known case of SLE, diagnosed 2 years back, and on immunosuppressants (mycophenolate mofetil and steroids) since then. She presented with history of dry cough, breathlessness MMRC grade 3 since one month. Her chest radiograph showed right sided pleural effusion, which on evaluation showed exudative nature, with high ADA and LDH, mostly due to tuberculosis. However she did not took anti tubercular treatment and presented one month later with worsening breathlessness, MMRC grade 4. She also had right sided pleuritic chest pain. She gave history of 20 kg weightloss over last 3 months along with loss of appetite.

On general examination, her pulse rate was 124 beats per minute, BP-140/80 mmhg, respiratory rate 24 breaths per minute, spo2-93 % room air, febrile-100 defree fahrenheit. On respiratory system examination, air entry reduced on right infra axillary line and infrascapular area.

Her total WBC count was 19600 with 70 % neutrophils, hb-8.6 g/dl, procalcitonin 6.76, random blood sugar level 340, creatinine 1.4.

Her chest radiograph showed right lower zone homogenous opacity with costophrenic angle blunting (Figure 1). D-dimer was 2496, with 2-D echocardiography shows pulmonary presuure of 43 mmhg with normal RA and RV.

CT pulmonary angiography was done and pulmonary embolism was ruled out. HRCT thorax showed that there is loculated pleural effusion with no underlying parenchymal involvement (Figure 2).

The mantoux test done was 2 mm, IgrA negative, complement levels are normal, hbA1c-5.6. Ultra sound guided thoracocentesis was done and aspirated thick pus. Adenosine de-aminase in pleural fluid was 130, LDH was 1220, with 85 % lymphocytic predominance. Gram stain showed filamentous gram positive bacilli, with Zeil-Neison stain negative. Modified Zeil-Neilson stain showed filamentous acid fast bacilli suggestive of nocardia.

Patient was put on trimethoprim-sulfamethoxazole (2 tablets double strength twice a day), and there was symptomatic improvement. Chest radiograph showed clearance of pleural effusion after 3 months (Figure 3).

Case 2

32 year old male, known case of rheumatoid arthritis for 8 years, presented with dry cough and breathlessness, MMRC

grade 3 for 20 days. He gave a history of loss of weight of 4 kg over one month. He was on methotrexate and low dose steroids for last 2 years.

On examination, heart rate was 90 beats per minute, blood pressure 130/80 mmhg, respiratory rate of 20 breaths per minute, spo2 of 92 % room air, and afebrile. On respiratory system examination, air entry was reduced on left side.

His total WBC counts was 24000, with neutrophilic predominance, Hb-9.5, platelets-350000. His routine biochemistry values were within normal limits.

Chest radiography showed loculated pleural effusion (figure 4). Usg guided thoracocentesis done, frank pus aspirated (figure 5). Hence Intercostal tube had inserted. Pleural fluid was exudative with sugar 25, Adenosine de-aminase 180, LDH 1342. Pleural fluid gram stain showed gram positive filamentous bacilli, with Zeil-Neilson stain negative, and modified Zeil-Neilson stain showing filamentous acid fast bacilli suggestive of nocardia.
He was put on trimethoprim-sulfamethoxazole (2 tablets double strength twice a day), and patient showed symptomatic and radiographic improvement within 3 months.

2. Discussion

Nocardiae are aerobic actinomycetes that are found in soil, decayed organic plant matter and water [3, 4]. Pulmonary nocardiosis is an oppertunistic infection, usually acquired through inhalation [1]. One of the important predisposing factor for nocardiosis is steroid therapy [5, 6]. Both of our patients were on steroids for longer duration due to underlying connective tissue diseases. In nocardiosis, pleural involvement occurs through direct spread from the chest wall or the lung parenchyma and pleural fluid may be the only source of diagnosis [6, 7].

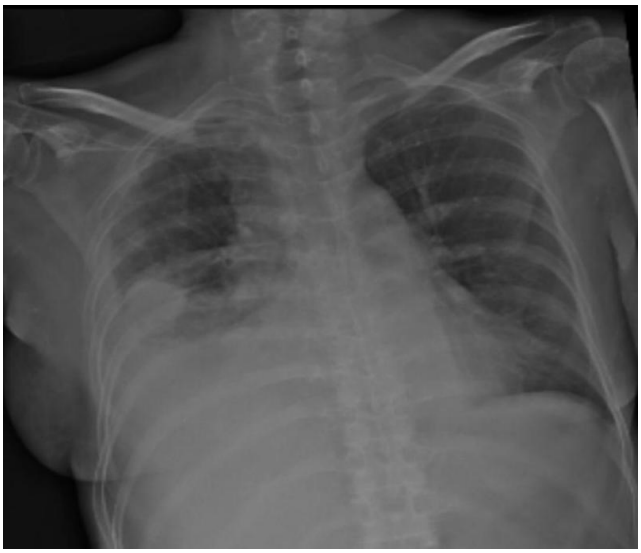
In both our cases, the first differential diagnosis was tuberculosis, as tuberculosis is quite common in India, and the clinical features were poiting towards tuberculosis.

In India, the reporting of pleural nocardia is very rare. There is one nocardial hydropneumothorax reported, and 2 other cases of pyo pneumothorax and empyema ([6, 8, 9]. In our case, the first clue for diagnosis was high levels of ADA. The diagnosis was confirmed with gram stain showing filamentous bacilli and culture was not able to grow the species. Gram stain is one simple test which helps in the diagnosis of nocardiosis ([6]. Smear and culture is positive in only one-third of cases [4, 6]. Growth of Nocardia usually takes 3-5 days on routine culture media and negative bacterial culture specimen is usually discarded after 72 hours. This may be the reason for not detecting growth of Nocardia in many cases ([10].

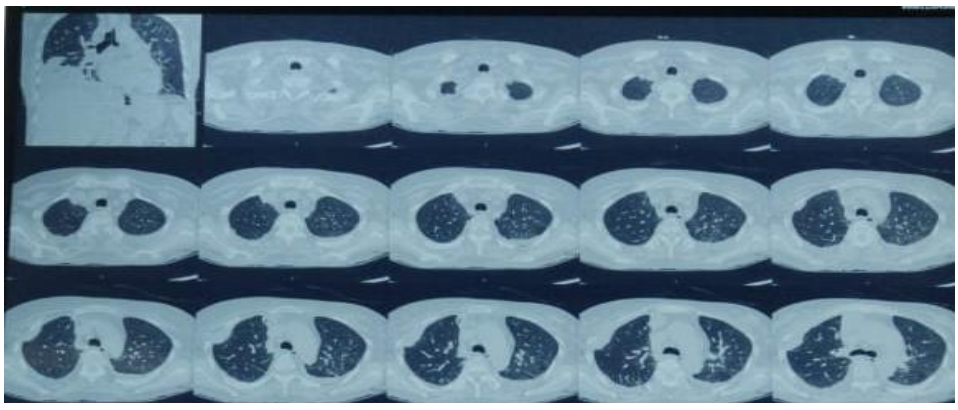
Sulphonamides are the drugs of choice but trimethoprim-sulphamethoxazole is now more frequently used and the duration of treatment is 6-12 months in immunocompetent individuals [6, 11] and the duration will be longer for immunocompromised individuals. The dose for pulmonary nocardiosis doses is 10 to 20 mg/kg of TMP and 50 to 100mg/kg of SMX should be given daily in two to four divided doses (160 mg/800 mg TMP-SMX IV every 6 hours), or 2 tab double strength orally twice a day ([12]. In our both cases, there was clinical and radiologic resolution when followed up at 3rd and 6th months.

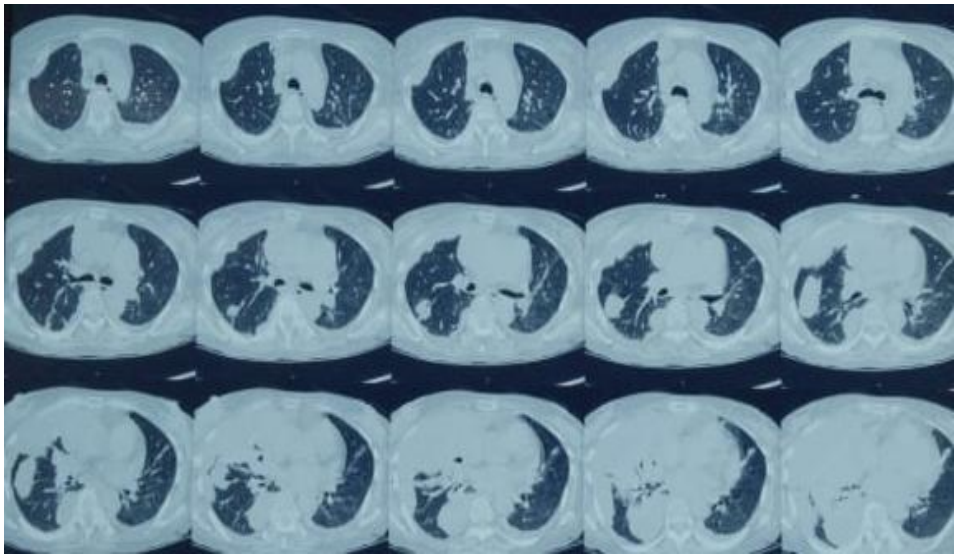
3. Figures

1) Chest radiograph showing right lowerzone homogenous opacity with costo phrenic anglke blunting.

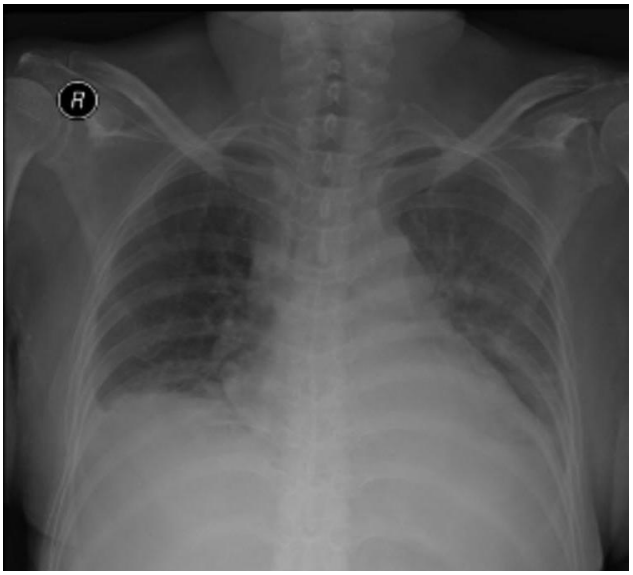


2) HRCT thorax shows right sided loculated pleural effusion.

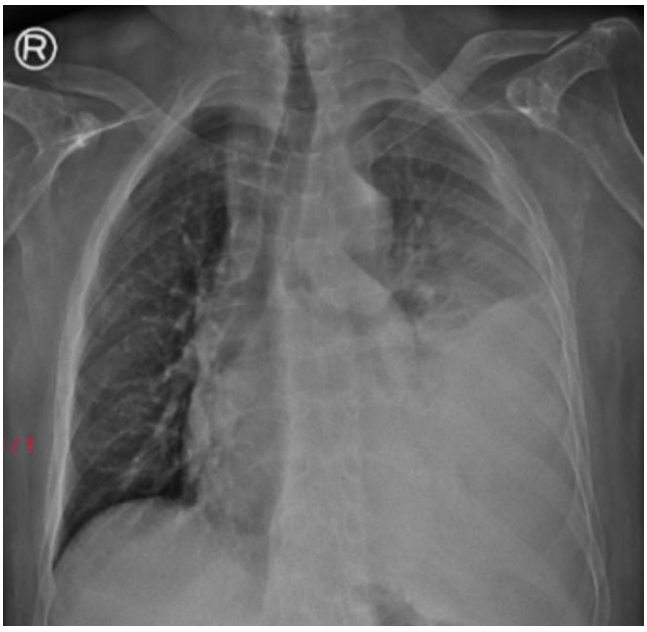




3) Chest radiograph shows clearance of pleural effusion.

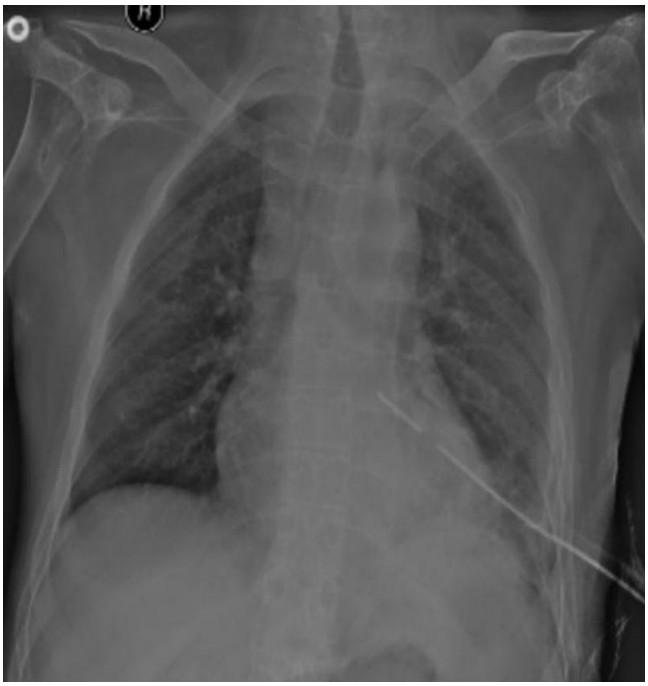


4) Chest radiograph showing loculated pleural effusion



5) Thick pus aspirated from pleural space

6) Chest radiograph showing intercostal tube in situ, with clearance of pleural effusion.



References

[1] Bagali S, Mantur P. Pleural nocardiosis in an immunocompetent patient: A case report. J Clin Diagn Res [Internet].2016; 10 (1): DD01-2. Available from: http: //dx. doi. org/10.7860/JCDR/2016/15039.7144
[2] Vohra P, Sharma M, Yadav A, Chaudhary U. Nocardiosis: A review of clinico-microbiological features. Int J LifeSc Bt Pharm Res.2013; 2: 20–8.
[3] Lerner PI. Nocardiosis. Clin Infect Dis [Internet].1996; 22 (6): 891–903; quiz 904–5. Available from: http: //dx. doi. org/10.1093/clinids/22.6.891
[4] Saubolle MA, Sussland D. Nocardiosis: Review of clinical and laboratory experience. *J Clin Microbiol.*2003; 41: 4497–501
[5] Martinez TR, Menendez VR, Reyes CS, Santos DM, Valles T, Modesto AM. Pulmonary nocardiosis: risk factors and outcomes. Respirology.2007; 12: 394–400.
[6] Gowrinath K, Das S, Ranjitham M, Sekhar U, Thanasekaraan V. Nocardial hydropneumothorax. Indian J Chest Dis Allied Sci.2004; 46 (1): 51–3
[7] Heffner JE. Pleuropulmonary manifestations of actinomycosis and nocardiosis. Semin Respir Infect.1988; 3 (4): 352–61.
[8] D, Ray; DJ, Christopher NOCARDIA EMPYEMA-A CASE REPORT, Lung India: November 1994-Volume 12-Issue 4-p 195-197
[9] Kulkarni SA, Kulkarni AG. Disseminated nocardiosis. J Assoc Physicians India.1991; 39 (10): 779–80.
[10] Sorell TC, Mitchell DH, Iredell JR. Nocardia species. In: Mandell GL, Bennett JE, Dolin R, editors. Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases. Philadelphia: Elsevier Churchill Livingstone; 2005: pp2916-25
[11] Lerner PI. Douglas and Bennett's Principles and Practice of Infectious Diseases. Mandell GL, Bennett JE, Dolin R, editors. Vol.1995. New York: Churchill Livingstone;
[12] Nocardia species (Nocardiosis) [Internet]. Antimicrobe. org. [cited 2022 Jan 10]. Available from: http: //www.antimicrobe. org/b117. asp