

# UNUSUAL PRESENTATION OF PNEUMONIA IN AN IMMUNOCOMPROMISED PATIENT

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## CASE PRESENTATION

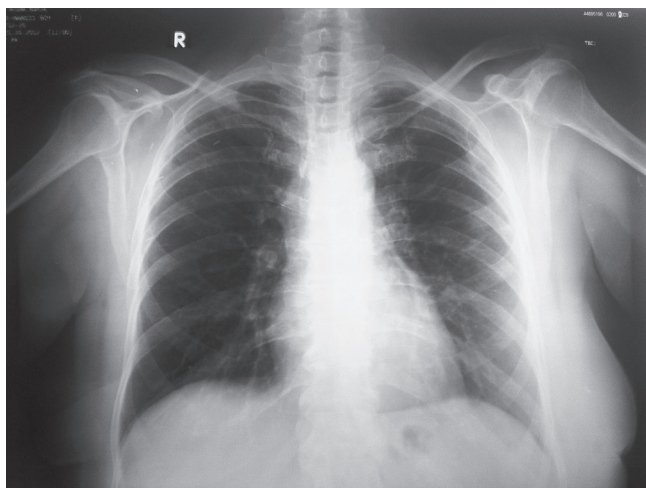
A 60 year old female diagnosed with Ca Breast with no metastasis underwent right modified radical mastectomy (MRM). She had received adjuvant chemotherapy with 4 cycles of adriamycin and cyclophosphamide, and 3 weekly doses of paclitaxel after which she developed neuropathy and was switched to docetaxel. The last cycle was administered 2 weeks ago. She came back with complaints of fever for 2 weeks and cough for 2 weeks.

According to the patient, she was in her usual state of health 2 weeks back. Then she developed intermittent high grade fever not associated with chill and rigors,

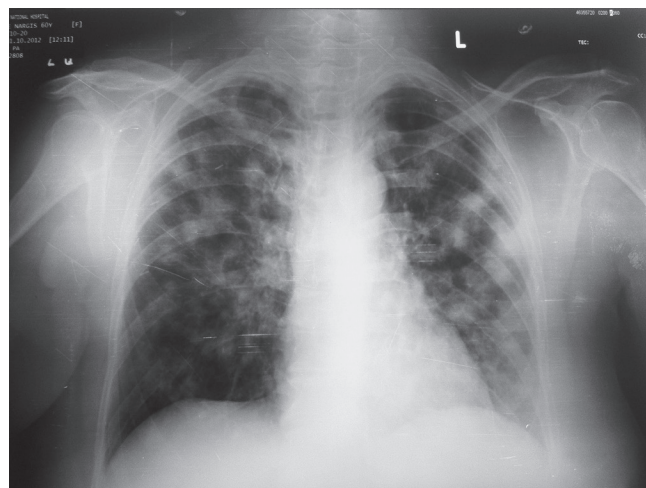
myalgia and arthralgia, relieved by taking antipyretics. For her fever, she went to a periphery hospital, initial work up was consistent with UTI and she was treated with ciprofloxacin. Her chest X-Ray at that time was normal (Fig.1).

But her fever persisted and she developed cough dry in nature aggravated at night and associated with shortness of breath on moderate exertion. There was no history of weight loss, night sweats, abdominal pain, diarrhoea, burning micturition, haematuria or any other complaint.

There was no history of exposure to tuberculosis or any familial disease. She had significant history of exposure to birds at home.



**Fig.1.** Initial CXR of patient showing no infiltrates or metastatic lesion



**Fig.2.** CXR showing multiple rounded soft tissue opacities of various sizes scattered in both lungs

Physical examination was unremarkable. On chest auscultation she had harsh vesicular breathing with occasional coarse crepts. Rest of her systemic examination was unremarkable. Lab parameters were also within normal limits. Repeat Chest X ray was done which showed diffuse opacities in both lungs which were reported as most probably metastatic lesions (Fig.2).

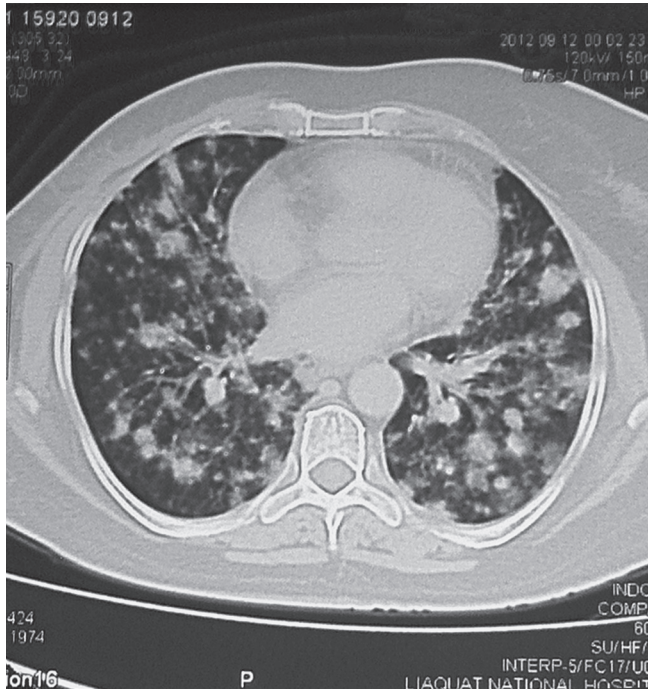
But as the patient was running fever, we started her on tazocin 4.5 gm I/V 8 hourly to treat any superimposed infection. On Day 4 of Piperacillin/Tazobactam (Tazocin), her CXR was repeated, which was improving. However her fever was not settling down.

Meanwhile, a contrast enhanced CT chest was done which showed diffuse bilateral nodular densities, suggestive of metastatic lesions (Fig.3).

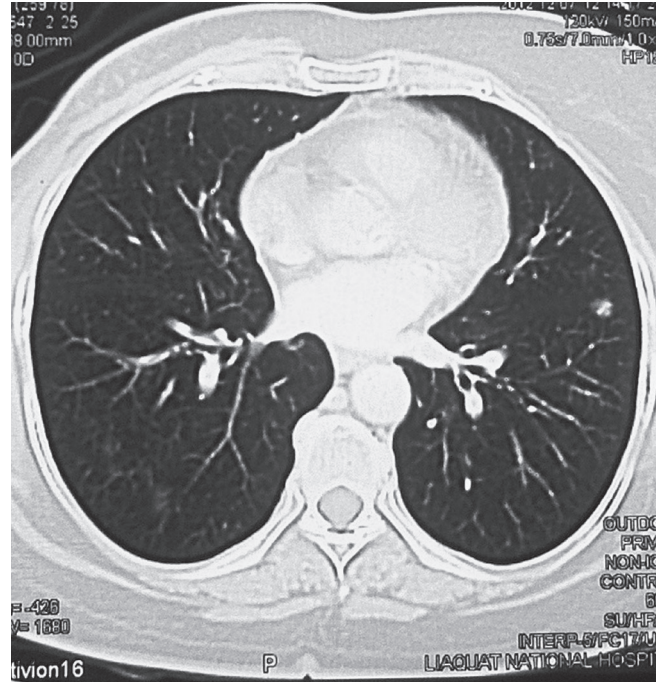
Bronchoscopy and Bronchoalveolar Lavage was performed, and was sent for C/S.

Culture of bronchoalveolar lavage grew **klebsiella**.

It was resistant to ciprofloxacin and sensitive to Piperacillin/Tazocin, Cefoparazone + salbactom, Imipenem, Amikacin.



**Fig.3. CT chest axial image (lung window) showing multiple rounded nodules diffusely scattered in both lungs**



**Fig.4. CT chest axial image (lung window) showing almost complete resolution of nodules**

Cytology came out to be negative.

Infectious Diseases consult was taken. They advised levofloxacin for double coverage. On Day 3 of levofloxacin, she defervesced. I/V antibiotics were discontinued and she was discharged on oral levofloxacin.

Then she completed her adjuvant chemotherapy.

Her contrast enhanced CT chest was repeated after two months that showed marked reduction in all lesions (Fig.4).

Patient was kept on three monthly follow ups.

## COMMENTS

### 1. INFECTIOUS DISEASE CONSULTANT'S PERSPECTIVE

Determining aetiology in cases of pneumonia is always a clinical challenge. A microbiologic diagnosis is confirmed in only 60% of cases in research studies that use specialized test to detect various pathogens as discussed below.

In a population based study conducted in Spain on 700 patients with clinical diagnosis of pneumonia, the aetiology was determined in only 55.7% of the patients.[1]

In another study conducted in Canada on 507 patients, despite considerable efforts, the aetiology could be determined in only 48.4% of the cases.[2]

In another prospective study conducted in Spain to determine the aetiology and incidence of pneumonia in immunocompromised patients, the aetiology could be determined in only 44% of the immunocompromised patients.[3]

The diagnosis of atypical pathogens requires extensive microbiological, serological and molecular tests which are unfortunately not available in our country.

In this case, although *Klebsiella pneumoniae* was isolated in culture and it was sensitive to piperacillin/tazobactam, the patient received piperacillin/tazobactam for 21 days in adequate dose with partial response. In patients who are immunocompromised, there is always a chance that the infection may present in an atypical way though in most of the cases these pathogens cause mild symptomatic disease in immunocompetent patients. The fact that patient responded to levofloxacin but not to beta lactam gives a supportive evidence that this patient had pneumonia with organism difficult to grow in culture or there is a possibility that she may have coinfection.

Since patient gave significant history of exposure to birds and exposure to birds can lead to highly pathogenic avian influenza, *Chlamydia psittaci*, pulmonary cryptococcosis and histoplasmosis associated pneumonia especially in immunocompromised patients. Because this patient responded to quinolones and no antifungal or antiviral agent was prescribed, we can assume that the infection was caused by bacteria which was difficult to grow in culture but was sensitive to levofloxacin.

## 2. RADIOLOGIST'S PERSPECTIVE

The four most common anatomic sites of distant metastases in carcinoma of breast are bone (41.1%), lung (22.4%), liver (7.3%), and brain (7.3%). Typical radiologic findings of a pulmonary metastasis include multiple round variable-sized nodules and diffuse thickening of interstitium. These nodules are of variable

sizes, a feature more consistent with metastasis. Other differentials depending upon the site of nodules may be fungal infections, sarcoidosis, lymphoma, Kaposi sarcoma, respiratory bronchiolitis, hypersensitivity pneumonitis.

These pulmonary nodules were of soft tissue density and showed enhancement in post contrast study. Our patient was a known case of breast carcinoma. Keeping in view history and radiological features of diffusely spread pulmonary nodules of variable sizes, a diagnosis of metastasis was made.

However, after bronchoalveolar lavage *klebsiella* grew in culture, and diagnosis of *klebsiella pneumoniae* was established.

Since she did not respond to initial antibiotic treatment and keeping in view the history of birds at home, a diagnosis of atypical pneumonia was made and quinolone was added.

It is very interesting to note here that radiological features of atypical pneumonia include enhancing consolidations, poorly marginated low-attenuation areas with or without small air-containing cavities, scattered enhancing linear branching structures representing pulmonary vessels in atelectatic or consolidated lung, pulmonary gangrene, coalescence of multiple small abscesses into a large cavity, large-vessel thrombosis and pleural effusion and/or empyema. To our knowledge, no case has been reported in the literature demonstrating diffuse pulmonary nodules in a patient of atypical pneumonia.

However, patient responded well and a re-scan of chest showed marked regression of pulmonary nodules in size and number.

## 3. MEDICAL ONCOLOGIST'S PERSPECTIVE

This was a very unusual presentation of pneumonia, and its radiological appearance was suggestive of metastasis. Our patient had node negative disease (T2N0M0) that is stage IIA, which has a low risk of recurrence and is associated with an overall survival of 81%[4]. On the other hand, in triple negative breast cancer, risk of relapse is high in first 3 years post treatment[5]. However being on chemotherapy and having a short history of current illness, an infectious etiology could not be ruled out completely.

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## CONCLUSION

Immunocompromised patients are more at risk of developing infections with unusual presentation. Thorough checkup including history, examination, labs and imaging should be carried out in such cases for evaluation and management.

### References

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