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Visual Case Discussion

An old-age woman with cough and dyspnea

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1. Visual case discussion

A 69-year old woman with previous history of chronic lung disease presented to the emergency department with complaints of chronic productive cough, new-onset and progressive dyspnea, anorexia, and fatigue. On physical examination, she had tachypnea (respiratory rate of 20 breaths/minute), crackles in lungs (particularly left side), tachycardia (heart rate of 105 beats/minute), and bilateral lower extremities pitting edema up to the level of her ankles. She had a blood pressure of 90/60 mmHg and a room-air SpO2 of 84% (by finger pulse oximetry) at the time of hospitalization. On admission laboratory data was significant for a white blood cell count of 26,900 cells/mm3 (92.2% neutrophils), a positive qualitative c-reactive protein (3+), and an INR of 3.9. Due to progressive dyspnea and respiratory distress endotracheal intubation was done. Plain chest radiography showed bilateral lung infiltrations, mainly in left side. (Fig. 1, Panel A). She underwent non-contrast computed tomography (CT) of the lungs and mini-bronchoalveolar lavage (mini-BAL) for assessment of the cause of lung involvement (Fig. 1, Panels B and C).

This patient was diagnosed as pulmonary nocardiosis according to the microscopic findings of mini-BAL samples. Due to severe lung infection, treatment with trimethoprim/sulfamethoxazole plus imipenem/cilastatin was started; however, no response was seen and unfortunately the patient expired due to severe and unresponsive septic shock. Of note, acid-fast staining of mini-BAL samples for Mycobacterium tuberculosis – as an important differential diagnosis - was negative.

Nocardia spp are aerobic actinomycetes that present in soil, decaying vegetation, and water.[1] Inhalation of organism into the lungs is an important route of infection.[2] Nocardia can spread hematogenously and may involve different organs (particularly the central nervous system), causing a fatal infection.[2]

Patients with nocardiosis are usually immunocompromised, particularly those with T cell-mediated immune deficiency are at risk.[1, 2] Long-term steroid therapy, acquired immunodeficiency syndrome (AIDS), malignancies, and solid organ transplantation are among known risk factors for nocardiosis.[1,2] Uncommonly, patients without any serious underlying condition may be infected.[1, 2] Long-term antibiotic therapy and sometimes surgery are required to treat Nocardia infections.[1]

2. Questions and answers

1 What is the most common primary site of nocardial infection?
upperLetter%1 Lungs
upperLetter%1 Small intestine
upperLetter%1 Brain
upperLetter%1 Cutaneous

Answer: A (Lungs are the most common primary site of infection with nocardia)

1 What is the most important risk factor for nocardiosis?
upperLetter%1 Penetrating trauma
upperLetter%1 Immunosuppression
upperLetter%1 Liver cirrhosis
upperLetter%1 Anemia

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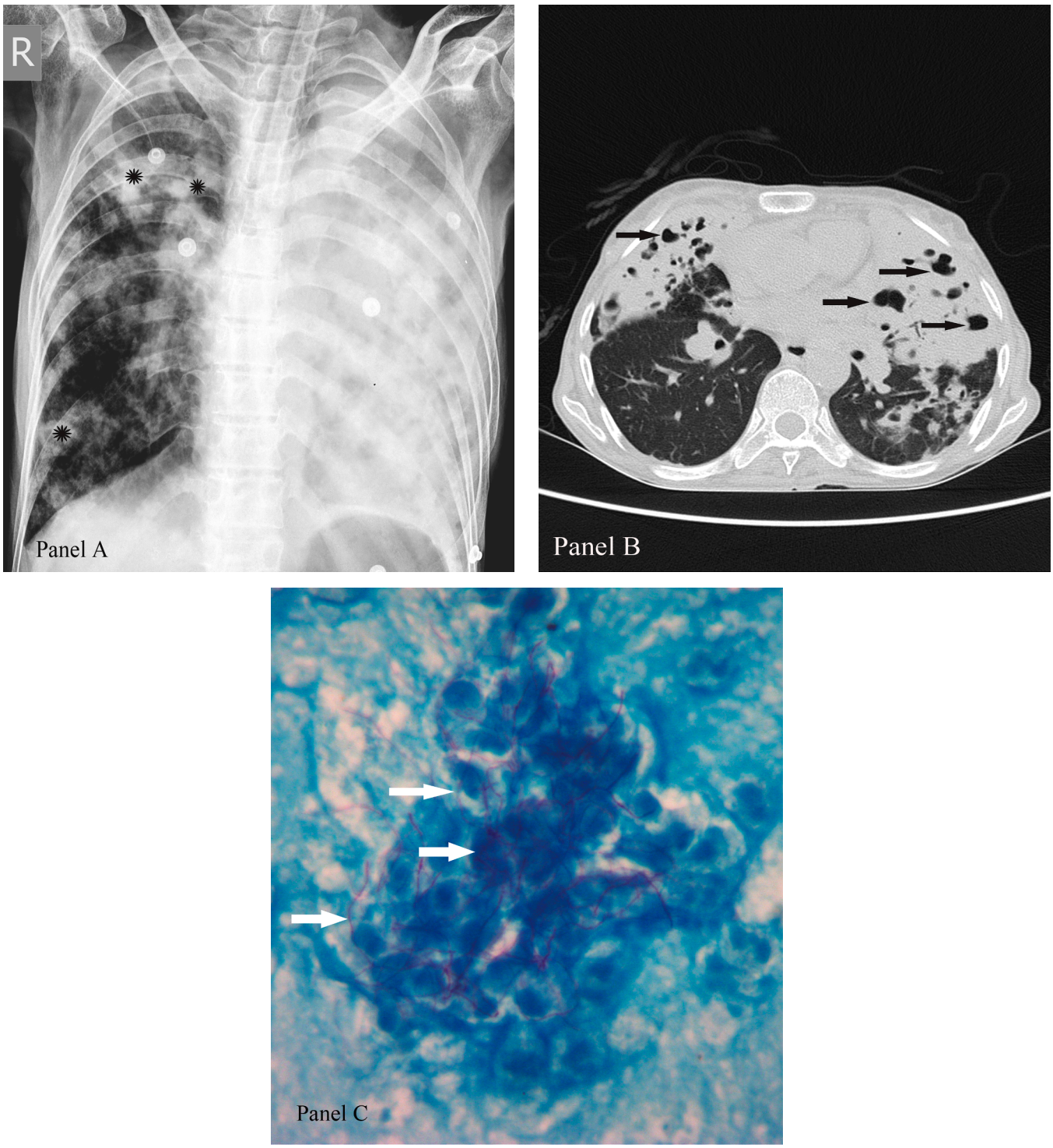

Fig. 1. Panel A: Plain chest radiograph showing severe bilateral lung infiltrations (asterisks in right lung field and almost all of left lung field), particularly in left side. Panel B: CT scan study (axial view) showing bilateral lung infiltrations and cavity formation (black arrows). Panel C: Microscopic view of mini-BAL sample showing partially acid-fast, branching, and filamentous rods of Nocardia (white arrows) (modified acid-fast staining; × 100).

Answer: B (According to the available data immune deficiency, particularly T cell dysfunction, is the most important risk factor for nocardiosis)

Authorship confirmation

All authors have participated in the conception of study idea; drafting the manuscript, and revising it critically for important intellectual content. All authors approved the final version.

Declaration of Competing Interest

The authors declare that they have no conflict of interest.

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