A Man with Recurrent Pneumonia and Headache

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Case Presentation

- A 57-year-old male presents with fever, headache, tremors and altered mental status.
- This was his third admission in a month.
  - The first was 3 weeks prior for community acquired pneumonia (Fig. 1). A 7-day course of levofloxacin was prescribed.
  - The second admission occurred 4 days following discharge for worsening respiratory symptoms despite levofloxacin (Fig. 2). The course was extended to 9-days.

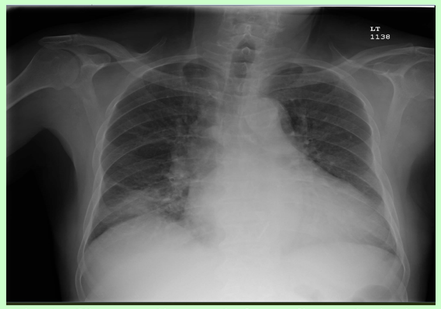

Fig 1. Chest radiograph from first admission showing a right lung infiltrate

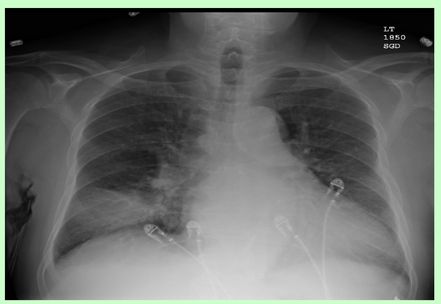

Fig 2. Chest radiograph from second admission showing interval worsening of right lung infiltrate

Pertinent History

- End stage renal disease due to uncontrolled type 2 diabetes mellitus and hypertension
- Failed cadaveric kidney transplantation 18 years prior due to antibody-mediated rejection
  - Not on immunosuppression
- Immigrated from Vietnam to Louisiana 30 years prior

Objective Findings

- T 103°F HR 103 BP 154/84 RR 20 saturating 94% on room air
- Relevant Exam Findings:
  - A&O x3 with delayed response
  - Involuntary lip smacking and upper extremity tremors
  - Lungs clear to auscultation
- Relevant Laboratory Data:
  - Hgb 10.5 gm/dL
  - WBC 8.8 x 10^3 µL (normal diff)
  - Sputum Gram stain: few Gram-positive cocci in pairs and Gram-variable rods
  - Lumbar Puncture:
    - OP 40 cmH_2O, WBC 3666 (88% PMN), RBC 2955, protein 131 mg/dL, glucose <1 mg/dL
  - Negative CSF Gram stain, AFB smear, India ink and culture; blood and sputum cultures; HIV, IGRA and RPR

Clinical Course

- Vancomycin, cefepime, ampicillin and acyclovir began. Mental status declined further requiring intubation
  - Leukocytosis of 16,000 and elevated transaminases (AST 1544, ALT 631) developed
- Brain MRI revealed scattered hypointense foci concerning for microbleeds (Fig. 3)

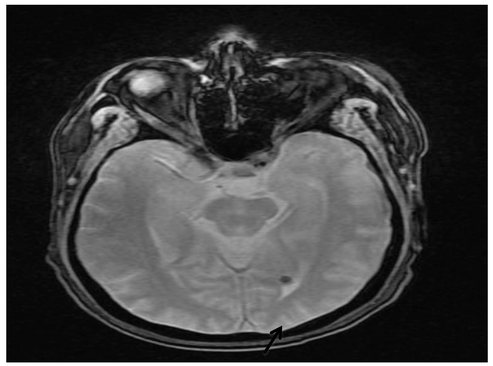

Fig 3. Non-contrast brain MRI with small hypointense foci

- A curated alternative TB regimen and liposomal amphotericin B were started with initial improvement leading to extubation. However, mental status progressively declined requiring reintubation
- Next-generation 16S ribosomal RNA sequencing of CSF performed
  - *Nocardia otitidiscaviarum*
- Improved on TMP/SMX, ciprofloxacin and amikacin induction
- Maintained on suppressive TMP/SMX and ciprofloxacin

Discussion

- Differential diagnosis for CSF with neutrophilic pleocytosis, hypoglycorrhachia, and elevated protein: bacterial, mycobacterial, and fungal organisms.
- *Nocardia* spp are aerobic, partially acid-fast, Gram-positive branching rods.
- Nocardiosis should be suspected in immunocompromised patients who present with unexplained pulmonary and CNS syndromes.
- CNS nocardiosis manifesting as meningitis alone is a rare but described phenomenon, and the lack of abscess on imaging should not exclude the diagnosis.
- Since *Nocardia* species are slow-growing organisms that may be difficult to isolate with traditional microbiologic techniques, next-generation 16S rRNA testing can be considered.

Final diagnosis:
Nocardia otitidiscaviarum Meningitis

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