June 2017 Critical Care Case of the Month

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History of Present Illness

The patient is a 60-year-old woman who presented with a month long history of odynophagia with retrosternal pain and occasional nausea and vomiting.

Past Medical History, Social History and Family History

She has a past medical history of mixed connective tissue disease with anti-phospholipid antibody. There is also a history of leukocytoclastic vasculitis, chronic leg ulcers, and poor dentition. She also has a history of chronic obstructive lung disease (COPD) and is a current smoker having accumulated about 50 pack-years of cigarette smoking.

Current Medications

- Prednisone 20 mg daily
- Azathioprine 75 mg daily
- Plaquenil 400 mg daily
- Salmeterol/fluticasone BID
- Albuterol prn

Electrocardiographic, Radiologic and Laboratory Evaluation

Her electrocardiogram and chest x-ray were unremarkable. Complete blood count showed a white blood cell count of 10,500 cells per microliter (mcL), hemoglobin 10.3 grams/deciliter (dL), hematocrit 31%, and platelet count of 48,000 cells per mcL. Electrolytes were unremarkable and creatinine was 0.6 mg/dL.

What should be **done next**?

1. Bronchoscopy
2. Gastroenterology consult
3. Platelet and red blood cell (RBC) transfusion
4. 1 and 3
5. All of the above

Correct!
2. Gastroenterology consult

She has no indication for either bronchoscopy or transfusion. There is nothing to suggest pneumonia or an endobronchial lesion. Platelet transfusions are usually only performed if counts are <10,000 cells/mcL or with active bleeding. RBC is usually not performed until the hemoglobin level is < 7 g/dL in the absence of active bleeding. Her complaints are suggestive of esophagitis and gastroenterology consultation is indicated.

The gastroenterologist suggest esophagogastroduodenoscopy (EGD). The EGD showed multiple whitish plaques (Figure 1).

Figure 1. Multiple whitish plaques found on EGD

Biopsy and culture of the plaques were consistent with Candida.

What **medication(s)** should be given to treat the Candida?

1. Amphotericin B
2. Fluconazole
3. Nystatin irrigation during EGD followed by nystatin swish and swallow
4. 1 and 3
5. All of the above

Correct!
2. Fluconazole

Candidiasis can be seen in immunocompromised hosts such as this lady receiving immunosuppressants for her rheumatologic disease or in AIDS (1). Fluconazole is generally considered the drug of choice in nonneutropenic patients. Although nystatin might be helpful it is unlikely that this would be sufficient to control the Candidiasis in this immunocompromised woman. Intravenous liposomal preparations of amphotericin B are often used for invasive candidiasis. Should her disease progress while on fluconazole this would be considered an alternative.

She is begun on fluconazole and clinically improves. However, three months later she presents with generalized malaise and poor oral intake. She denied shortness of breath, cough, or chest pain. Her SpO₂ was 80% on room air. A chest x-ray was performed (Figure 2)

Figure 2. Portable chest x-ray performed 3 months after her presentation with Candida esophagitis.

A thoracic CT is performed after the chest x-ray is reviewed (Figure 3).

Figure 3. Representative images from the thoracic CT scan in lung windows.

What should be **done next**?

1. Admission with consideration of bronchoscopy
2. Begin outpatient treatment with levofloxacin, moxifloxacin, Gemifloxacin or the combination of a beta-lactam plus a macrolide for community-acquired pneumonia
3. Blood cultures
4. 1 and 3
5. All of the above

Correct!
4. 1 and 3

The patient is immunocompromised and hypoxemic so outpatient therapy is probably inappropriate (2). Furthermore, she is more likely to have organisms other than those seen with community-acquired pneumonia. Blood cultures are indicated in patients with pneumonia. She is admitted to the intensive care unit and blood cultures are obtained. Empiric antibiotic therapy is begun with piperacillin-tazobactam and levofloxacin. A bronchoscopy is planned for the next morning in the ICU with possible intubation. She remains relatively stable overnight on high flow oxygen. The technician is setting up for the bronchoscopy the next morning when a Gram-negative rod is reported growing in the blood cultures. Shortly afterward, the organism is tentatively identified as a *Salmonella* species.

What should be **done at this time**?

1. Add coverage for influenza
2. Postpone the bronchoscopy since the organism causing the pneumonia has likely been identified
3. Proceed with the bronchoscopy
4. 1 and 3
5. All of the above

Correct!
4. 1 and 3

The cause of the pneumonia is unclear. The patient is immunocompromised from the prednisone and azathioprine used to treat her rheumatologic condition. *Salmonella* could possibly be a cause of her pneumonia but this organism would be unusual. Influenza remains a possibility. A decision is made to proceed with the bronchoscopy.

Bronchoscopy reveals unremarkable bronchi and bronchoalveolar lavage is performed. The lavage fluid has a neutrophilia with >90% of the cells being polymorphonuclear neutrophils (PMNs). Culture results are reported as showing a beaded, branching, Gram positive, partially acid fast, aerobic, non-motile bacteria characteristic of *Nocardia* sp.

What should be **done at this time?**

1. Begin therapy with trimethoprim-sulfamethoxazole
2. Begin therapy with linezolid
3. Perform brain MRI imaging
4. 1 and 3
5. All of the above

Correct!
4. 1 and 3

Nocardiosis is not uncommon in immunocompromised hosts (3). Most are associated with pneumonia which often disseminates in the blood and lymph to the lymph nodes, skin, and/or brain. Although she had no symptoms or physical findings, a brain MRI was performed because of the likelihood of finding a brain abscess (Figure 4).

Figure 4. Representative images from brain MRI. Note the multiple lesions most prominently seen in the right frontal cortex.

The patient was continued on the sulfamethoxazole-trimethoprim. Prolonged, probably life-long, therapy is planned. The patient slowly improved. A follow up chest x-ray showed the pneumonia to be mostly resolved.

References

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2. Letourneau AR, Issa NC, Baden LR. Pneumonia in the immunocompromised host. *Curr Opin Pulm Med.* 2014 May;20(3):272-9. [\[CrossRef\]](#) [\[PubMed\]](#)
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