June 2016 Pulmonary Case of the Month

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History of Present Illness

A 77-year-old gentleman presented with 6 weeks of:

- Sinus congestion
- Bloody nasal discharge
- Cough with maroon sputum
- Dyspnea
- Hearing loss
- Painful peripheral neuropathy
- Left median neuropathy and left foot drop
- Fevers

Past Medical History, Social History and Family History

- No significant past medical history
- Retired
- Does not smoke
- Family history is noncontributory

Physical Examination

- Temperature of 37.8º C
- Bloody nasal discharge
- Lungs clear to auscultation and percussion
- Heart with a regular rhythm without murmur
- Neurologic findings consistent with his complaints

Laboratory Evaluation

- Elevated white blood cell count with a left shift
- Na+ 130 mEq/L
- 10-20 RBCs on urinalysis

Radiographic Evaluation

Initial chest x-day is shown in Figure 1.

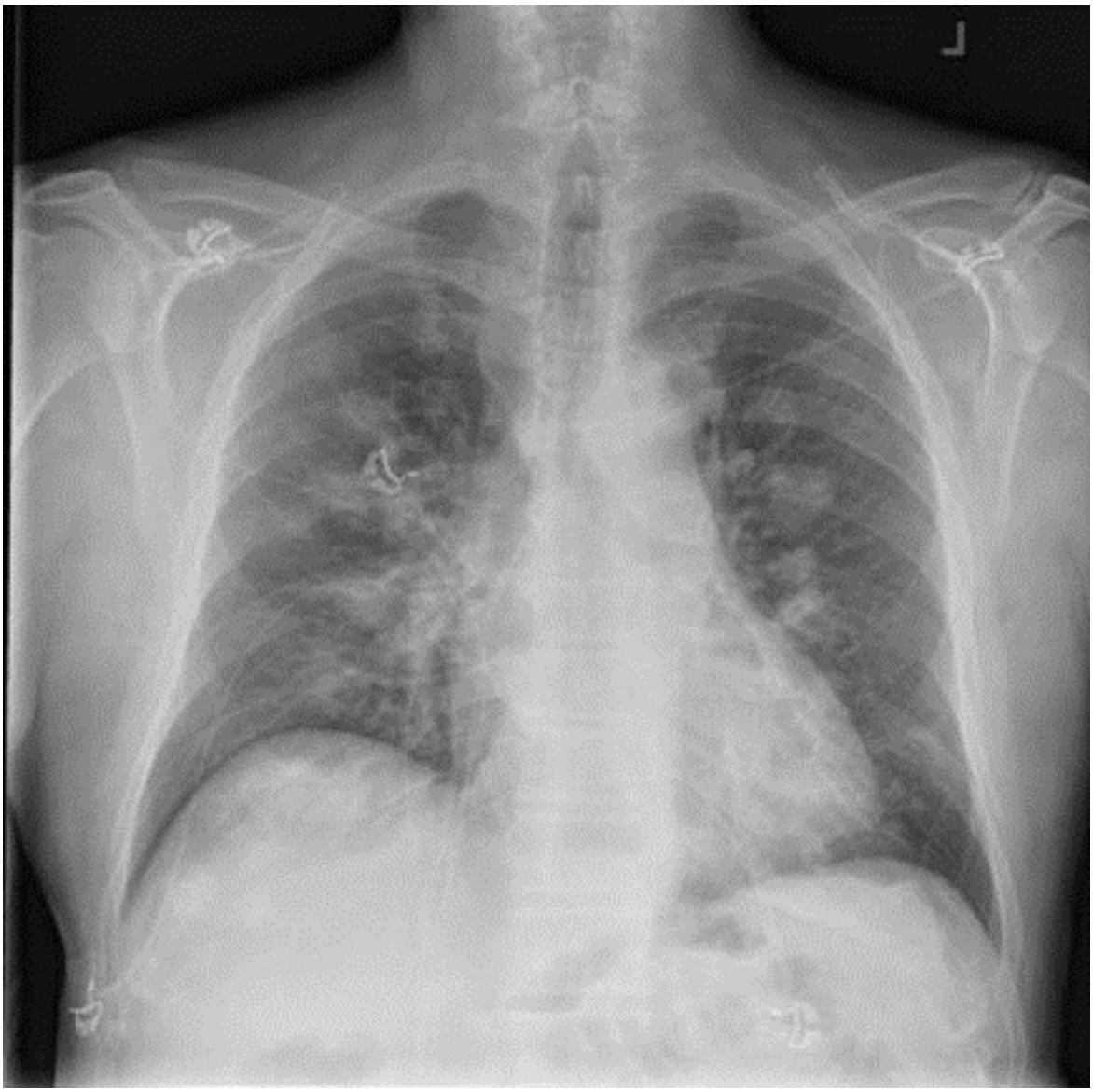

Figure 1. Initial PA radiograph of chest.

Which of the following is (are) the next ***appropriate steps in the evaluation***?

1. Transthoracic echocardiogram
2. Treat with macrolide antibiotics for outpatient pneumonia
3. Thoracic CT scan
4. 1 and 3
5. All of the above

Correct!
3. Thoracic CT scan

The patient has several signs and symptoms that are worrisome. His 6 week history is suggestive of more than a self-limited upper respiratory infection; the neurological findings are unusual; and the bloody nasal discharge and presumed hemoptysis are also unusual; and the chest x-ray shows multiple pulmonary nodules. Therefore, treatment with empiric antibiotics for outpatient pneumonia is unlikely to be beneficial. The patient could potentially have bacterial endocarditis but there is no history consistent with endocarditis or signs pointing to cardiac dysfunction.

To better define the nodules a thoracic CT scan was performed (Figure 2).

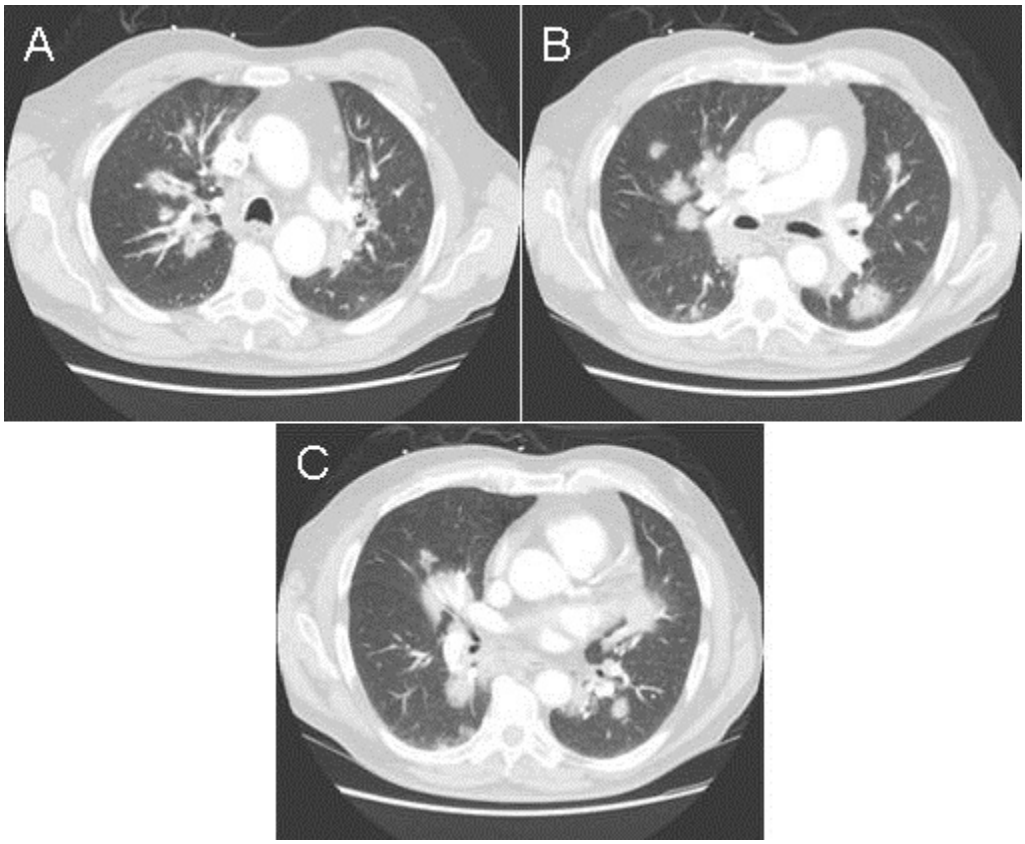

Figure 2. Representative images from the thoracic CT scan in lung windows.

Which of the following should be performed next?

1. Bronchoscopy
2. Needle biopsy of the prostate
3. Serum anti-nuclear cytoplasmic antibody (ANCA)
4. 1 and 3
5. All of the above

Correct!
4. 1 and 3

In general, hemoptysis is an indication for bronchoscopy usually for evaluation of an endobronchial tumor. The patient has signs and symptoms of disease in the upper airway, genitourinary symptoms and neurological system. Disorders of the blood vessels is one way of connecting these diffuse abnormalities. A positive serum ANCA is often seen with some vasculitides. Although prostate cancer can occasionally metastasize to the lung it would seem unlikely to explain the diffuse symptoms. Furthermore, a digital rectal exam and prostate specific antigen (PSA) were normal.

Bronchoscopy was performed and showed diffusely erythematous and edematous bronchi (Figure 3A and 3B) with some blood in the airways (Figure 3C).

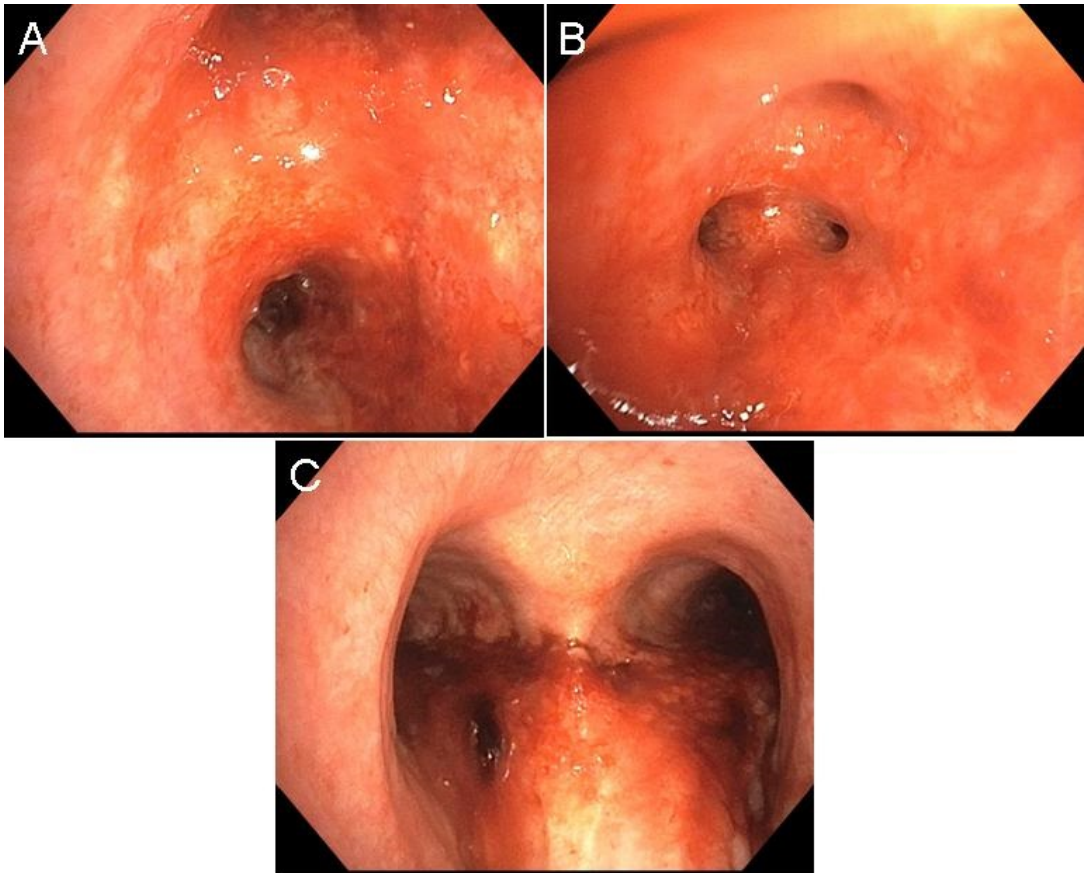

Figure 3. Representative photographs taken at bronchoscopy.

A serum c-ANCA was positive at 1:1024.

Bronchial biopsies were interpreted as showing necrotizing vasculitis with granulomatous inflammation accompanied by an inflammatory infiltrate composed of a mixture of neutrophils, lymphocytes, plasma cells, histiocytes, and eosinophils (Figure 4).

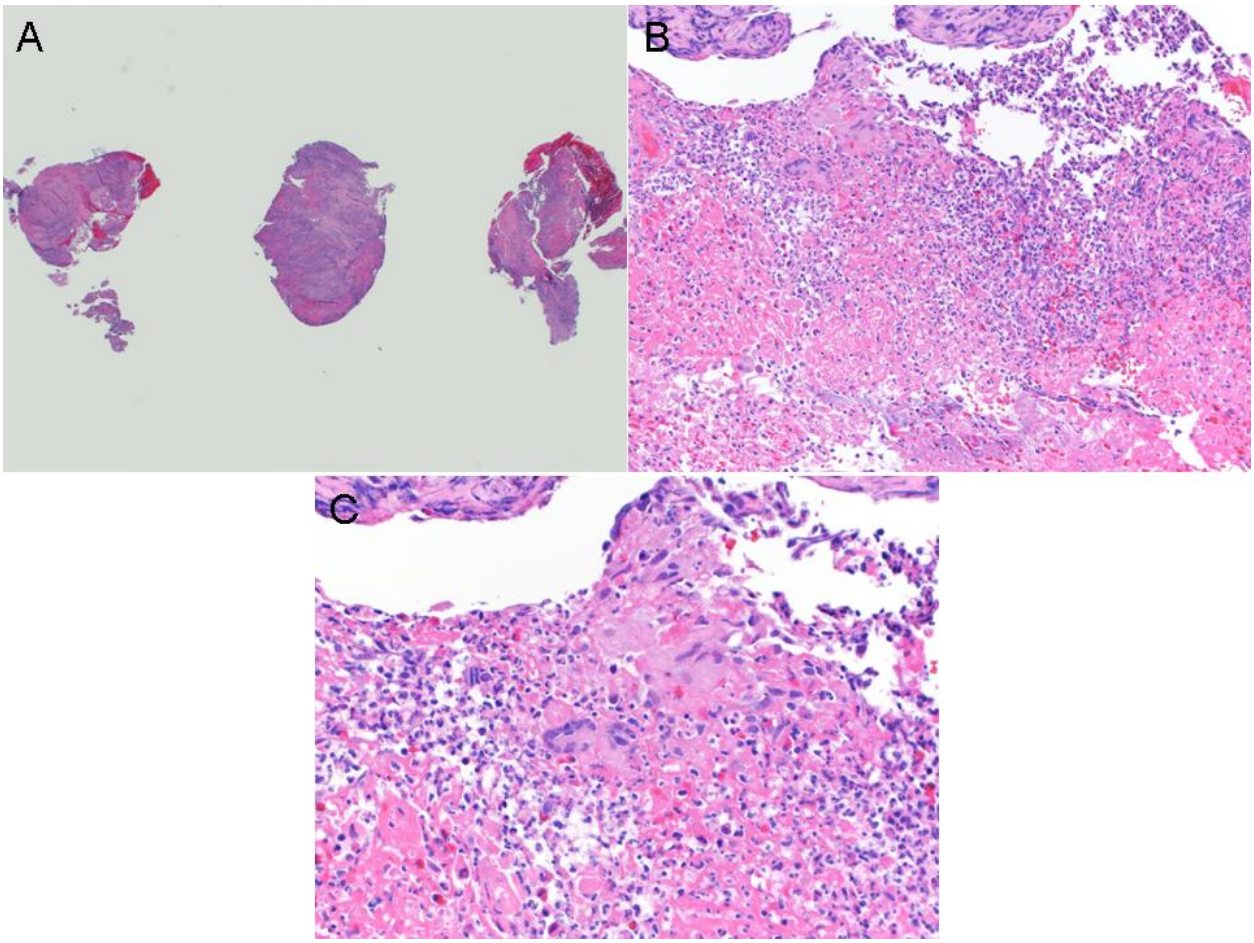

Figure 4. Panel A: Low power view showing endobronchial biopsies. Panels B & C: higher power views showing vasculitis with granulomata.

What is the likely ***diagnosis***?

1. Eosinophilic granulomatosis with polyangiitis (Churg-Straus syndrome)
2. Goodpasture's syndrome
3. Granulomatosis with polyangiitis (Wegner's granulomatosis)
4. Microscopic polyangiitis
5. Systemic lupus erythematosus

Correct!
3. Granulomatosis with polyangiitis (Wegner's granulomatosis)

There are three ANCA-associated vasculitides (AAV):

- Microscopic polyangiitis (MPA)
- Granulomatosis with polyangiitis (GPA, Wegener's granulomatosis)
- Eosinophilic granulomatosis with polyangiitis (EGPA, Churg– Strauss syndrome)

These are pauci-immune, necrotizing, small-vessel vasculitis. They often affect the kidneys, lungs, and peripheral nervous system. GPA has +ANCA in a cytoplasmic immunofluorescence pattern (cANCA) with a positive auto-antibodies to proteinase 3 (PR3). Our patient was PR3+ at >8 U (normal <0.4). MPA and EGPA have a perinuclear immunofluorescence pattern (pANCA) and a positive antibody to myeloperoxidase (MPO). The MPO was negative in our patient.

Which of the following are recommended ***therapy(ies) for GPA***?

1. Corticosteroids + cyclophosphamide
2. Corticosteroids + methotrexate
3. Corticosteroids + rituximab
4. 1 and 3
5. All of the above

Correct!
5. All of the above

Corticosteroids alone are inadequate for GPA. However, addition of a cytotoxic agent such as cyclophosphamide or methotrexate or a biologic agent such rituximab which is a monoclonal antibody against CD20, an antigen predominately on B cells result in high rates of remission. Our patient was treated with rituximab and corticosteroids and obtained complete remission.

References

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