**PEARLS: PNEUMOCYSTIS PNEUMONIA IN NON-HIV PATIENTS**


**Take home points:**

1. Diagnosis of pneumocystis can be difficult. If suspected in non-HIV patients, induce sputum and if negative, proceed to BAL.
2. Even BAL can be negative in these patients because of low organism burden (as compared to HIV patients with pneumocystis).
3. Non-HIV patients at highest risk for pneumocystis are those with hematologic malignancy or s/p BMT.
4. Prognosis generally worse than HIV-infected patients; treatment is similar.

**Diagnosis of pneumocystis pneumonia:**

- Most studies have looked only at HIV patients, so we don’t have much information on non-HIV pts.
- Difficult to diagnosis pneumocystis because can’t culture it.
- Current standard of care for diagnosis is induced sputum with rapid detection of pneumocystis.
- **If induced sputum is negative and index of suspicion high, proceed to bronchoscopy with BAL.**
  - However, even BAL is not 100% sensitive (though high specificity). **BAL is positive much more often in HIV patients who tend to have a much higher burden of organism.**
  - What about the LDH? The LDH has high sensitivity but very low specificity for pneumocystis. The bottom line is that you cannot rely on this test. Even if the test is negative, it still doesn’t fully rule out pneumocystis and alters your pre-test probability only slightly.
  - CXR: classic teaching is alveolar infiltrates, “ground glass” opacity, and lack of pleural effusions. 10% “normal” CXR.
  - HRCT can help in the diagnosis; again looking for “ground glass” opacity (= opacification of lung parenchyma but can still see blood vessels; as opposed to consolidation where you can’t see underlying vessels).
  - Recent paper in *Lancet* showed high sensitivity and specificity of a low (or undetectable) S-adenosylmethionine concentration and this could be a powerful new test for pneumocystis

**Which non-HIV patients are at risk for pneumocystis?**

- Malnourished infants, children with primary immunodeficiencies were first cases described (1950’s)
- Adults patients:
  - Hematologic malignancies and bone marrow transplant patients
  - Patients with brain tumors on high dose steroids
  - Collagen-vascular: especially Wegener’s on immunosuppression
  - IBD patients on infliximab
  - Immunosuppressed patients in general (post-solid organ transplant)

**What is the prognosis of pneumocystis in non-HIV patients?**

- Although prognosis and mortality is improving in HIV patients, intubated HIV patients still do poorly
- HIV patients are likely doing better these days because of HAART and TMP-SMX prophylaxis
- In non-HIV patients, mortality and prognosis has not changed over the past 20-30 years, which probably reflects less prophylaxis against pneumocystis and less recognition of active disease in these patients

**Treatment of pneumocystis in non-HIV patients:**

- Similar to HIV patients (IV TMP-SMX is treatment of choice)
- One small study (retrospective) looked at non-HIV patients and found decreased mortality when adjunctive steroids were used.
- Most advocate for adjunctive steroids if PO₂ < 70 (similar to HIV patients).
For more information and resources developed by UCSF medical housestaff, please browse the following links:

UCSF Department of Medicine, Housestaff Website:
- Resources and information for our housestaff
- Location: http://medicine.ucsf.edu/housestaff/

UCSF Department of Medicine Hospitalist Handbook:
- Available free of charge for download to PDA
- Updated annually and written by UCSF medical residents
- Location: http://medicine.ucsf.edu/housestaff/handbook/

UCSF Chief Medical Residents’ Cover Sheets:
- Covering a wide array of topics that were discussed at morning report
- Location: http://medicine.ucsf.edu/housestaff/Chiefs_cover_sheets/