

Location: Emergency Room

Vitals: BP: 120/80 mm Hg; HR: 112/min; RR: 28/min; Temp: 37.8C(100F)

C.C: Fatigue and right upper quadrant abdominal pain

HPI:

A 74-year-old white male presents to the ER with a 3 days history of fatigue and right upper quadrant abdominal pain. His pain is a dull in character, moderate intensity, poorly localized with no radiation to back or shoulder. It increases with deep inspiration. He denies any fever, cough or sputum production but complains of profuse sweating off and on. He has poor appetite with some nausea but no vomiting. There is no history of bowel or bladder problems. The past medical history is significant for type II diabetes mellitus. He has no allergies and is taking glipizide for his diabetes. The patient denies any tobacco or alcohol abuse. There is no history of sick contacts. He is a widower and lives alone. Family history is non-contributory. Rest of the review of systems is unremarkable.

How would you approach this patient?

This is a 74-year-old patient with acute onset right upper quadrant pain and non-specific constitutional symptoms. First think of a differential diagnosis of right upper quadrant pain. The possibilities are: acute cholecystitis, cholangitis, choledocholithiasis, hepatitis, pyelonephritis, appendicitis, and pneumonia. The absence of dysuria, back pain and normal urine color make the possibility of hepato-biliary and renal pathology a little less likely but not impossible. Moreover, absence of fever, cough and sputum point against the diagnosis of pneumonia. In such a situation one should perform a good physical examination to narrow down the list of differential diagnosis and order relevant tests.

Order No. 1

Pulse Oximetry, stat

Results of Order No.1

Oxygen Saturation- 89 % on room air
IV access, stat

Order No. 2

Start oxygen by nasal canula @ 4 L/min

Order physical exam:

General appearance
HEENT/Neck
Examination of heart
Examination of lungs
Examination of abdomen
Examination of extremities
Skin

Results of Physical Examination:

General appearance: Well built male, toxic looking, tachypneic. HEENT: Anicteric sclera, No JVD. Lungs: crackles over the right lung base, no rhonchi or rub; Cardiovascular: Tachycardic, S1 and S2 are normal, no murmurs, rub or gallop. Abdomen is soft, non-tender, no rigidity, rebound or guarding; normal bowel sounds; no organomegaly or free fluid. Extremities: No edema, clubbing or cyanosis, no calf tenderness, peripheral pulses palpable. Skin: No rash.

Order No. 3:

X-ray Chest (CXR), PA and lateral, stat
EKG, 12 lead, stat
CBC with differential, stat

BMP, stat
LFT, stat
Lipase, stat

Results for Order No. 3:

X-ray Chest- Right lower lobe infiltrate suggestive of right lower lobe pneumonia, normal cardiac size, no pleural effusion

Hgb -13.5 g/dl, WBC - 16,500/uL, Platelet - 350,000/mm³, Differential count: 90 % polymorphs, 8% lymphocytes, 20 % bands

BUN - 18, Creatinine-1.1, Sodium -138 mEq/L, Potassium - 3.8 mEq/L, Chloride -105 mEq/L, Bicarbonate - 26 mEq/L, Calcium -10.1 mg %

LFTs and Lipase - Completely normal

EKG - Sinus tachycardia

Order No. 4:

Admit the patient on regular floor

Blood cultures, stat

Sputum Gram stain, stat (Optional)

Sputum cultures, stat (Optional)

Start antibiotics after drawing blood cultures - Levofloxacin/gatifloxacin or Ceftriaxone + azithromycin, IV continuous

Acetaminophen, continuous (for fever and pain)

Vitals every 4 hours

Pulse Oximetry, Q 2 hours

Bed rest with bathroom privileges

Pneumatic compression for DVT prophylaxis

Diabetic diet

Diet, oral fluids

Acu checks, QID (4 times a day)

Continue his oral glipizide

Pneumovax and Influenza vaccination if not received earlier

Review after 12 hours

Order interim history and focused physical exam

Results for Order No. 4:

Vitals: BP: 120/80 mm Hg; HR: 96/min; RR: 20/min; Temp: 99 F

Oxygen saturation- 100% on 4L/min of oxygen by nasal canula

Order No. 5:

Continue same treatment

CBC/differential after 24 hours

*Call me with the results

Results for Order No. 5:

After 24 hours, the nurse reports that patient feels better.

No nausea; feels stronger and wants to eat

Vitals: BP: 120/80 mm Hg; HR: 80/min; RR: 16/min; Temp: 98 F

Oxygen saturation- 95% on room air

Blood cultures - no growth after 24 hours

Hgb -13.0 g/dl, WBC - 11,500/uL, Platelet - 350,000/mm³, Differential count: 82 % polymorphs, 8% lymphocytes, and 10% bands

Blood sugar - stable on diet and oral hypoglycemics

If case continues- Stop IV antibiotics; plan to send patient home on oral antibiotics for 7-10 days. Make a follow-up in one week.

Counseling:

Patient counseling

Medication compliance

Discussion:

This is a case of community-acquired pneumonia (CAP) with an atypical presentation. With an abnormal chest x-ray, normal LFTs and a benign abdominal examination, no abdominal imaging studies are needed in this patient.

Certain important points to remember regarding CAP:

1.Pathogens: The most common pathogens are *Streptococcus pneumoniae* and *Hemophilus influenzae*. *Staphylococcus aureus*, gram-negative bacilli and *Moraxella catarrhalis* are less common organisms causing CAP. Atypical agents including *Legionella*, *Mycoplasma pneumoniae* and *Chlamydia pneumoniae* although not very common need to be considered when choosing a broad-spectrum antibiotic for empiric treatment of CAP.

2.Clinical Presentation: Cough, sputum production, dyspnea, fevers and sweats are the typical symptoms. However fatigue, headaches, nausea, vomiting, diarrhea and abdominal pain are some of the non-specific and atypical symptoms. Elderly patients (> 75 years) have fewer symptoms of CAP.

3.Diagnostic studies: Chest X-ray is a must for diagnosis of CAP. CBC/Diff, basal metabolic profile, sputum cultures, blood cultures, and pulse oximetry (or ABG) are recommended before starting antibiotics. The role of routine sputum Gram stain and sputum cultures is controversial. These labs may support the diagnosis, identify the pathogen and help in making treatment decisions, regarding the need for admission. Blood cultures are positive in only 11% cases of CAP with *Streptococcus pneumoniae* accounting for 67% of the positive cultures. In case Legionnaire's disease is suspected (hyponatremia, immunocompromised, no response to Beta-lactam antibiotics) then urine should be tested for *Legionella* antigen.

4.Choice of antibiotics:

For a patient being admitted in the general medical floor/ward:

- a. Fluoroquinolone alone - levofloxacin or gatifloxacin; Do not use ciprofloxacin
- b. 2nd /3rd generation Cephalosporin (e.g. Ceftriaxone) + Macrolide (e.g. Azithromycin)

*Remember, the cephalosporins are not effective against atypicals like legionella, mycoplasma and Chlamydia; hence, it should be combined with a macrolide. Levofloxacin alone also covers atypical organisms.

For uncomplicated pneumonia in the out patient setting:

- a. Azithromycin or Doxycycline alone

Duration of antibiotics depends upon the pathogen being suspected and treated. In general it varies from 7-10 days. However, it may be 10-14 days for *Mycoplasma* and *Chlamydia* and 14-21 days for *Legionella*.

5.Decision to admit: Various guidelines and scoring systems have been developed to help in deciding whether to admit the patient or not. However, these are difficult to remember off hand. The following major points are poor prognostic factors in patients with CAP. The presence of any of these may necessitate admission.

1. **Age** greater than 65 years
2. **Coexisting disease:** Diabetes, renal failure, heart failure, chronic lung disease, chronic alcoholism, immunosuppression, and neoplastic disease.
3. **Clinical findings:** Hypoxia requiring oxygen; RR >30 breaths/min, Systolic BP <90mm Hg or Diastolic BP < 60 mm Hg, Temperature >38.3 C, altered mental status, extrapulmonary site of infection (meningitis, septic arthritis).
4. **Laboratory tests:** WBC <4,000/mm³ or >30,000/mm³; Pao₂ <60 mmHg; renal failure; multilobar involvement on chest radiograph; pleural effusion; Hct <30%.

Primary Diagnosis:

Pneumonia

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