Integrated clinical case session 2

12 Aug 17

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https://tinyurl.com/y73txq4q

Case 2.1:

Mdm Ang is a 78 year old Chinese female who is ADL independent, community ambulant. Her comorbidities include DM and HTN. She presents to the ED with cough and yellow sputum for the last 2 days, associated with shortness of breath.

On arrival at the ED, T is 38.3 BP is 165/90 HR is 113 SpO2 is 96% on room air, RR is 26. Patient is alert, oriented, looks breathless.

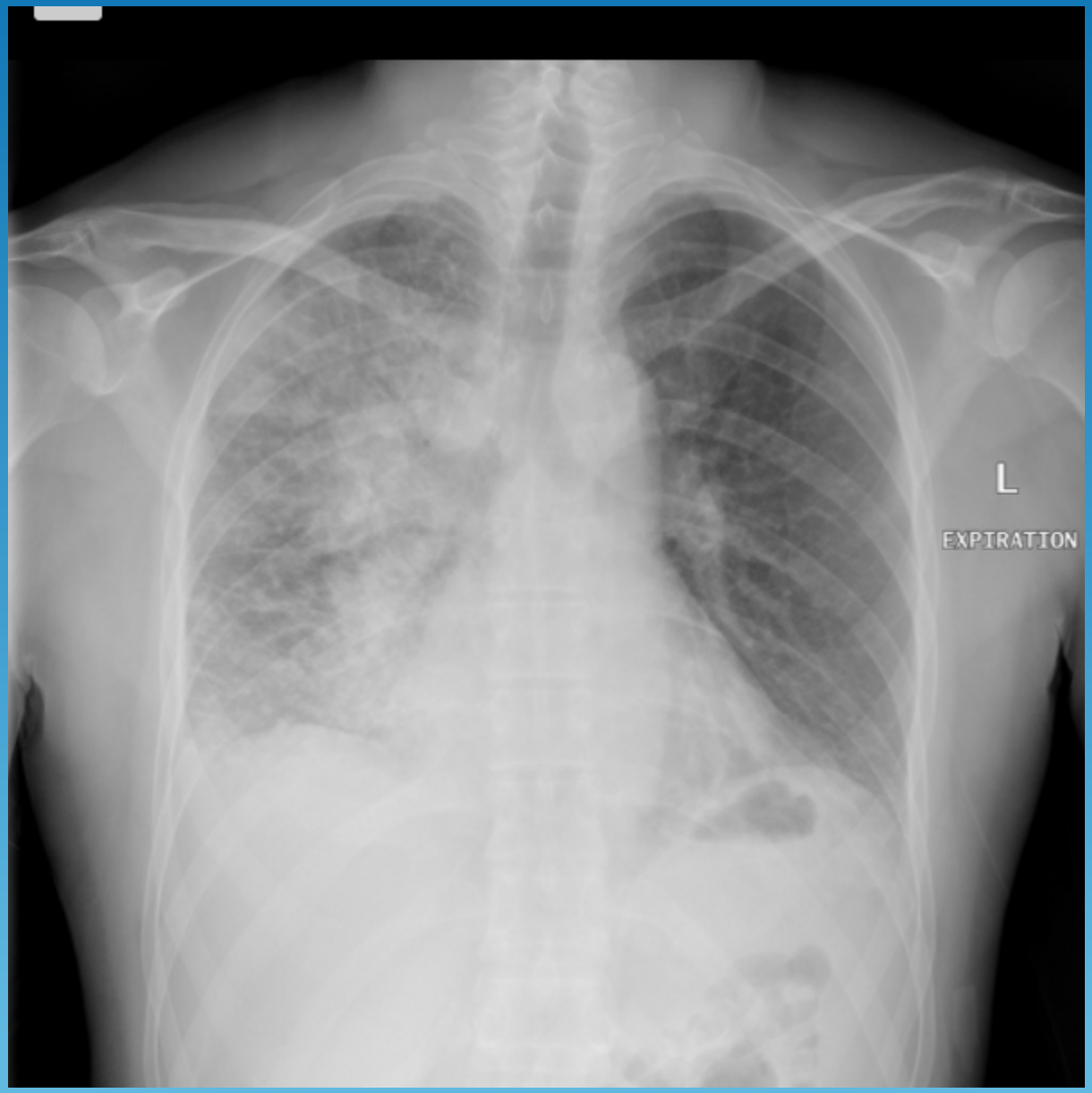
H: S1S2. L: right sided crepitations, intermittently wheezing. A Soft, non tender. There is no pedal edema.

Case 2.1:

- What is your provisional diagnosis?
- What are your differentials?
- What other points in history are relevant to this case?

Other points in history:
Any sick contacts (daughter has flu like symptoms)
Any recent travel
Does the patient live at home or in a nursing home
When was the last hospital admission?
Did the patient receive treatment from GP/OPS before coming to ED
Is there any chest pain? (MI, also, pleuritic chest pain)
Any hemoptysis, night sweats (Less likely as history is rather acute but good screening question)
Any DRUG ALLERGIES

Case 2.1:



Case 2.1

Other investigations:

Hb 12.6 TWC 15.0 Platelet 350

Urea 10 Na 135 K 4.5 Cr 120 HCO3 20

ECG Sinus tachycardia

pH 7.353 pCO2 40 pO2 80 HCO3 20

Case 2.1

Qn 1: Where will you send the patient to? (choose 1 out of 5)

- A: Home with follow up at general medicine clinic in 3 days, and repeat CXR
- B: Home with follow up at polyclinic in 1 week
- C: Admit to general ward
- D: Admit to high dependency
- E: Admit to medical ICU as chest XR looks very bad and patient is in respiratory distress

Pneumonia

- Definition of CAP: Acute infection of the pulmonary parenchyma acquired in the community
- Definition of HAP:
- Very common condition! Potentially serious, especially in older adults with comorbidities
- Diagnostic gold standard: CXR (IDSA, ATS 2007)

CURB-65 Score for Pneumonia Severity ☆

Estimates mortality of community-acquired pneumonia to help determine inpatient vs. outpatient treatment.

When to Use ⌄ | Pearls/Pitfalls ⌄ | Why Use ⌄

Confusion	**No 0**	Yes +1
BUN > 19 mg/dL (> 7 mmol/L)	No 0	**Yes +1**
Respiratory Rate ≥ 30	**No 0**	Yes +1
Systolic BP < 90 mmHg or Diastolic BP ≤ 60 mmHg	**No 0**	Yes +1
Age ≥ 65	No 0	**Yes +1**

2 points

Moderate risk group: 6.8% 30-day mortality.

Consider inpatient treatment or outpatient with close followup.

About the Creator

Dr. John Macfarlane

Related Calcs

- A-a O_2 Gradient
- CPIS for VAP
- Light's Criteria

Next Steps

Copy Results

Case 2.1

Qn 2: What other investigations are pertinent? (choose 3 out of 10)

- A: UFEME, urine culture
- B: Sputum gram stain, culture
- C: CT Thorax
- D: Sputum for AFB, TB PCR, AFB culture
- E: TB Quantiferon
- F: CRP
- G: Procalcitonin
- H: Respiratory swab
- I: Urine Streptococcus antigen, urine Legionella antigen
- J: blood cultures

A note on blood cultures in the setting of pneumonia

- Yield is generally low in the setting of pneumonia, about 7-16% in the setting of pneumonia
- Consider Pros and Cons
- It is advocated in hospital setting because if positive, you clinch microbial diagnosis, can get sensitivities, may change to culture directed antibiotics.
- Cons: false positive, low yield.
- By IDSA guidelines, do blood cultures only with specific indications. Otherwise, it is **optional.**

Clinical indications for diagnostic testing for community-acquired pneumonia*

Indication	Blood culture	Sputum culture	*Legionella* UAT	Pneumococcal UAT	Multiplex PCR¶
Intensive care unit admission	X	X	X	X	X
Failure of outpatient antibiotic therapy		X	X	X	X
Cavitary infiltrates	X	X			
Leukopenia	X			X	X
Active alcohol abuse	X	X	X	X	X
Chronic severe liver disease	X			X	X
Severe obstructive/structural lung disease		X			X
Asplenia (anatomic or functional)	X			X	X
Recent travel (within past two weeks)			X		X
Positive *Legionella* UAT result		X¥	NA		
Positive pneumococcal UAT result	X	X		NA	
Pleural effusion	X	X	X	X	

A note on CT thorax in the setting of pneumonia

- If symptoms are suggestive of pneumonia but CXR is normal in the first 24 hours from onset of symptoms, consider repeat CXR 1-2 days later.
- Alternatively, CT thorax more sensitive
- (**NOT** routine)

A note on sputum culture in the setting of pneumonia

- Quality of the sample is an issue
- Often the 'sample' obtains is from the upper respiratory tract
- Ways to optimise the yield : Rinsing mouth before, pre-antibiotic, no food 1-2 hours before, rapid transport to the lab and inoculation onto the culture media
- Usefulness of gram stain?

Assess suitability of the sample (high polymorphonuclear leukocytes, low squamous epithelium cells)

Predict likely etiologic agent by identification of predominant bacterial morphology (Especially useful if causative organism is the fastiduous kind e.g. S pneumonia, H influenzae)

Case 2.1

Qn 3: What is your empirical antibiotics of choice? (Choose 1 out of 5)

- A: PO Klacid alone
- B: IV Tazocin
- C: IV Ceftriaxone + PO Metronidazole
- D: IV Augmentin + PO Klacid
- E: IV Augmentin + PO Klacid + PO Oseltamivir

Antibiotics

- Empiric vs culture directed
- Each hospital has slightly different empirical guidelines but similar pattern
- IDSA/ATS 2007: Anti pneumococcal beta lactam + macrolide OR a respiratory flouroquinolone as monotherapy
- Important considerations:

Risk of C difficile infection

Pre treatment before admission to hospital

QT interval

- Duration of therapy: minimum of 5 days. Generally 5-7 days. May lengthen the course for dif reasons.

Case 2.1

Qn 4: What are the other things you will order for this patient? (Choose 2 out of 7)

A: Complete rest in bed

B: Dextromethorphan 10ml TDS regular

C: Acetylcysteine 600mg OM

D: Daily FBC, UeCr at the start

E: Q1hourly parameters

F: Insert IDC for strict I/O and for easier collection of urine

G: Refer physiotherapy

Practical points

- **Mucolytic**: acetylcysteine (loosen phlegm, esp in elderly, avoid mucous plugging, atelactasis)
- **Cough suppressant:** Dextromethorphan- structurally simillary to codeine, NMDA antagonist.
- **Expectorant:** guaphenisin, bromhexine (secretolytic effect, increase sputum volume, reduce viscosity, stimulate clearance)
- Mobilise early, deconditioning happens faster than you think!
- Avoid unnecessary distress to the patient and the ward nurses!

Case 2.1

Qn 5: What will you do about the pleural effusion ? (Choose 1 out of 5)

A: Arrange for urgent diagnostic tap overnight

B: Call IR to schedule chest drain the next morning

C: Leave it alone, give antibiotics

D: Give IV diuretics like furosemide

E: Do a therapeutic tap as pt is very breathless

Parapneumonic effusion

- **Uncomplicated parapneumonic** effusion

  -> forms when interstitial fluid increases and moves into pleural space

- **Complicated parapneumonic** effusion

  -> bacterial invasion of the pleural space

- **Empyema**

  -> bacterial invasion of pleural space resulting in either pus or the presence of bacterial organisms on Gram stain

  -> no need to have culture positive

Chest drain

When to drain ?

- All effusions >10mm thick associated with pneumonia require diagnostic fluid analysis
- Present of frank pus→ diagnostic of empyema→ drainage
- Organism seen on
  positive→ drainag
- Pleural fluid pH <
  tube drainage
- Alternative to pH→
  (<3.4 mmol/l as a
  drainage)
- Poor clinical respo
  repeat pleural flui
  drainage

Management of pleural infection in adults: British Thoracic Society pleural disease guideline 2010

Helen E Davies,[1,2] Robert J O Davies,[1] Christopher W H Davies,[2] on behalf of the BTS Pleural Disease Guideline Group

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INTRODUCTION

Pleural infection is a frequent clinical problem with an approximate annual incidence of up to 80 000 cases in the UK and USA combined. The associated mortality and morbidity is high; in the UK 20% of patients with empyema die and approximately 20% require surgery to recover within 12 months of their infection.[1 2] Prompt evaluation and therapeutic intervention appears to reduce morbidity and mortality as well as healthcare costs.[3]

This article presents the results of a peer-reviewed systematic literature review combined with expert opinion of the preferred management

to *Streptococcus pneumoniae* which now only accounts for approximately 10% of culture-positive cases.[6] The prevalence of *Staphylococcus aureu* rose and the development of staphylococcal resistance in the 1950s increased complications and mortality.[7 8] More recently, the reported prevalence of anaerobic infections[7 9 10] and Gram-negative organisms[9 10] has risen. Use of intrapleural fibrinolytic therapy was first suggested in 1949[11] but the impure agents available caused adverse reactions. Most recently, early use of video-assisted thoracoscopic surgical (VATS) techniques has been introduced.[12]

Case 2.1

Qn 6: The respiratory swab turns out positive for Influenza A. What are the common organisms that cause super imposed pneumonia on Influenza? (Choose 1 out of 5)

A:Moraxella catarrhalis

B: Burkholderia pseudomallei

C: Staphylococcus aureus

D: Streptococcus pneumoniae

E: Haemophilus influenzae

Case 2.1

Qn 7: With good care under the gen med team, the patient's condition is much improved better on day 3 of admission. Fever has lysed for 24 hours. The blood cultures are negative. The patient feels much better and is grateful for the care she received. What is the most appropriate next course of action? (choose 1 out of 5)

A: Discharge. NFU gen med, arrange day rehab as patient is deconditioned.

B: Keep patient admitted and complete minimum 5 days of IV antibtiotics.

C: Oralise antibiotics. Discharge. TCU OPS 6-8 weeks, CXR on arrival

D: Oralise antibiotics, but keep 1-2 more days to monitor symptoms.

E: Repeat CXR and FBC before deciding on discharge.

Take home messages

Questions

Thank you ☺