

ER-INF COMBINED
MEETING

103-4-19

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Patient Profile

- 40Y/o ♀
- 2014/xx/xx 11:43
- E₄V₅M₆
- T/P/R=36.3/128/30; BP = 130/68mmHg
- SpO₂ = 88%
- 檢傷主訴：家屬代訴呼吸短促
- Triage = I

Present Illness

- Intermittent fever for 5 days
- chills (+);
- SOB (+, progressed);
- cough with sputum;
- no dysuria;
- no wound;
- no vomiting; no diarrhea;

Past History

- NKDA;
- no DM or HTN;
- hyperthyroidism (+);
- no travel history;
- 公公肺炎剛出院

Physical Examination

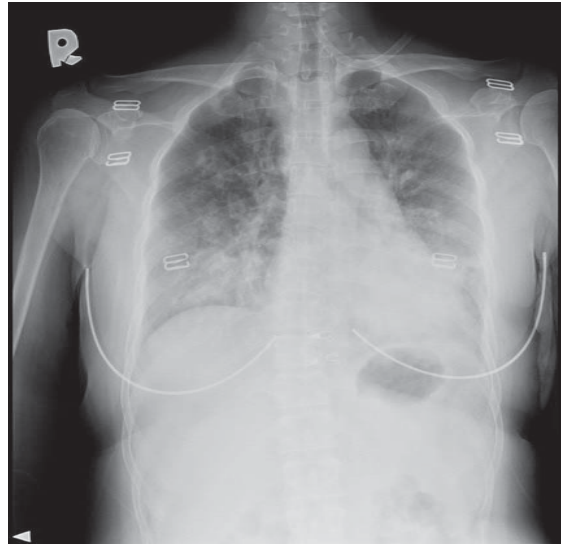
- Consciousness: Alert
- HENNT: supple
- Chest: coarsed breath sounds (crackles [+])
- Abd.: soft; no guarding;
- Ext.: warm; no pitting edema;

Impression

- SOB with fever, r/o pneumonia

Initial order (day 1, 11:50)

- On monitor
- O₂ mask 10L/min
- CBC, D/C, Plt
- AST, Crea., Troponin-I, CRP
- B/C*2
- ABG6
- N/S run 60mL/hr
- CXR
- sputum culture
- F/S (126)
- Influenza rapid test



Lab data

PH	7.415	
PCO2	35.9	mmHg
PO2	80	mmHg
BE	-2	mmol/L
HCO3	23	mmol/L
TCO2	24	mmol/L
SO2	96	%
NA	142	mmol/L
K	3.6	mmol/L
HCT	37	%PCV
HB	12.6	g/dL

檢驗名稱	檢驗值	單位	參考值範圍
CBC/Platelet/DC	*****	*****	-
.WBC	3.4	X1000/uL	3.8-10
.RBC	4.49	million	3.8-5
.Hb	12.3	gm/dl	11-16
.Ht	367	%	35-48
.MCV	81.7	fL	81-98
.MCH	27.4	pg	27-32
.MCHC	33.5	%	32-36
.RDW	13.6	%	11.5-14.5
.Platelet	232	x1000/uL	140-450
Differential count	*****	*****	-
.Segmented Neutro.	61.9	%	37-75
.Lymphocyte	31	%	20-55
.Monocyte	6.8	%	4-10
.Eosinophil	0	%	0-5
.Basophil	0.3	%	0-2
.Atypical lymphocyte		%	-
.Band		%	-
.Metamyelocyte		%	-
.Myelocyte		%	-
.Promyelocyte		%	-
.Blast		%	-
.Nucleated RBC		/100WBC	-

檢驗名稱	檢驗值	單位	符號	參考值範圍
GOT(AST)	20	U/L		5-35
T-Bilirubin	0.35	mg/dL		0.3-1.2
Creatinine	0.5	mg/dL		0.5-1.3
.eGFR	136.65			-
Troponin I	<0.01	ug/L		0-0.5
CRP	8.75	mg/dL	*H	0-0.5

Influenza A antigen	Negative
Influenza B antigen	Negative

day 1, 13:00

- PCT
- Teicoplanin 400mg ivd st
- consult Inf.&Chest
- on critical
- O₂ 改 NRM 15L/min

Day 1, 13:50

- Erythromycin 500mg iv q6h+st
- Urine S. Pneumonia & Legionella Ag
- ABG3
- PT, aPTT
- Mycoplasma IgM & IgG
- 排 chest 床

檢驗名稱	檢驗值	參考值範圍
Leginella Ag	Negative	Negative-
EIA S.pneumonia Ag	Negative	Negative-

Day 1, 16:10

- Tapimycin 4.5g iv st
- Erythromycin 500mg iv st and then 1g iv q6h
- Tamiflu 1# po bid*5days
- 通報流感重症
- TSH, fT4, Clamydia IgM & IgG
- Admit to 6061

After Admission

檢驗名稱	檢驗值	參考值範圍
Mycopl.pneumonia Ab	80x+	Negative-
Mycopl.pneumonia IgM	Positive	Negative-

- Day 2, 16:07
 - Mycoplasma 報告出爐
 - abx 改 Cravit 750mg ivd qd (∴ pt 打 erythromycin 手會痛)
- Day 4 → CDC Influenza PCR (-) → 解除隔離
- Day 7 → Discharge

Discussion

<http://www.mdcalc.com/curb-65-severity-score-community-acquired-pneumonia/>

CURB65	
Symptom	Points
Confusion	1
Urea > 7 mmol/l	1
Respiratory rate >= 30	1
SBP < 90 mmHg, DBP < 60 mmHg	1
Age >= 65	1

Table 68-3 Clinical Characteristics of Common Bacterial Pneumonias

Organism	Symptoms	Sputum	Chest X-Ray
<i>Streptococcus pneumoniae</i>	Sudden onset, fever, rigors, pleuritic chest pain, productive cough, dyspnea	Rust-colored, gram-positive encapsulated diplococci	Lobar infiltrate, occasionally patchy, occasional pleural effusion
<i>Staphylococcus aureus</i>	Gradual onset of productive cough, fever, dyspnea, especially just after viral illness	Purulent; gram-positive cocci in clusters	Patchy, multilobar infiltrate; empyema, lung abscess
<i>Klebsiella pneumoniae</i>	Sudden onset, rigors, dyspnea, chest pain, bloody sputum; especially in alcoholics or nursing home patients	Brown "currant jelly"; thick, short, plump, gram-negative, encapsulated, paired coccobacilli	Upper lobe infiltrate, bulging fissure sign, abscess formation
<i>Pseudomonas aeruginosa</i>	Recently hospitalized, debilitated, or immunocompromised patient with fever, dyspnea, cough	Gram-negative coccobacilli	Patchy infiltrate with frequent abscess formation
<i>Haemophilus influenzae</i>	Gradual onset, fever, dyspnea, pleuritic chest pain; especially in elderly and COPD	Short, tiny, gram-negative encapsulated coccobacilli	Patchy, frequently basilar infiltrate, occasional pleural effusion
<i>Legionella pneumophila</i>	Fever, chills, headache, malaise, dry cough, dyspnea, anorexia, diarrhea, nausea, vomiting	Few neutrophils and no predominant bacterial species	Multiple patchy nonsegmented infiltrates, progresses to consolidation, occasional cavitation and pleural effusion
<i>Moraxella catarrhalis</i>	Indolent course of cough, fever, sputum and chest pain; more common in COPD patients	Gram-negative diplococci found in sputum	Diffuse infiltrates
<i>Chlamydia pneumoniae</i>	Gradual onset, fever, dry cough, wheezing, occasionally sinus symptoms	Few neutrophils, organisms not visible	Patchy subsegmental infiltrates
<i>Mycoplasma pneumoniae</i>	Upper and lower respiratory tract symptoms, nonproductive cough, bulbous myringitis, headache, malaise, fever	Few neutrophils, organisms not visible	Interstitial infiltrates, (reticulonodular pattern), patchy densities, occasional consolidation
Anaerobic organisms	Gradual onset, putrid sputum, especially in alcoholics	Purulent; multiple neutrophils and mixed organisms	Consolidation of dependent portion of lung; abscess formation

Table 68-5 Therapy for Outpatient Management of Patients with Significant Comorbidities* Without Criteria for Health Care-Associated Pneumonia

Class	Examples	Comments
Fluoroquinolone	Levofloxacin, 750 milligrams daily for 5 d or Moxifloxacin, 400 milligrams daily for 7-14 d	Other respiratory fluoroquinolones may also be used. Telithromycin is also indicated in this setting.
β-Lactamase inhibitor penicillin derivative plus Macrolide	Amoxicillin-clavulanate, 2 grams twice daily plus Azithromycin, 500 milligrams PO on day 1 and 250 milligrams on days 2-5	A third-generation cephalosporin may be used instead of the ampenicillin.

*Significant comorbidities include chronic heart, lung, liver, or renal disease; diabetes mellitus, alcoholism, malignancies, asplenia. See text. Dosing may need adjustment for patients with renal insufficiency. Other therapies may also be effective.

Table 68-6 Inpatient Therapy for Nonintensive Care Unit Patients* with Community-Acquired Pneumonia

Class	Examples	Comments
Fluoroquinolone	Levofloxacin, 750 milligrams IV or Moxifloxacin, 400 milligrams IV	Other respiratory fluoroquinolones may also be used.
Cephalosporin plus Macrolide	Ceftriaxone, 1 gram IV plus Azithromycin, 500 milligrams IV	Other third-generation cephalosporins may also be used in combination with other macrolides or doxycycline.

Table 68-8 Inpatient Therapy for Intensive Care Unit Patients*

Class	Example	Comments
Cephalosporin plus Macrolide	Ceftriaxone, 1 gram IV plus Azithromycin, 500 milligrams IV	Other β-lactams may also be used in place of ceftriaxone. See Table 68-9 for additional recommendations.
Cephalosporin plus Fluoroquinolone	Ceftriaxone, 1 gram plus Either moxifloxacin, 400 milligrams IV or Levofloxacin, 750 milligrams IV	Other β-lactams may also be used in place of ceftriaxone. See Table 68-9 for additional recommendations.
Fluoroquinolone plus Either a monobactam or A lincosamide	Moxifloxacin, 400 milligrams IV or Levofloxacin, 750 milligrams IV plus Either aztreonam, 1-2 grams IV or Clindamycin, 600 milligrams IV	Aztreonam is generally well tolerated in penicillin-allergic patients.
Anti-MRSA drug (add if HCAP or MRSA risk)	Vanco mycin, 10-15 milligrams/kg IV or Linezolid, 600 milligrams IV	To be added to one of the above regimens for patients with MRSA or HCAP risk.

Class	Example	Comments
β -Lactam/ β -lactamase inhibitor	Piperacillin-tazobactam, 3.375 milligrams IV	Other antipseudomonal cephalosporins or quinolones may be used. Carbapenems are also appropriate. Consider adding an aminoglycoside if substituting a macrolide.
plus	plus	
Fluoroquinolone	Ciprofloxacin, 400 milligrams IV	May be used for patients with penicillin allergy. Carbapenems and aminoglycosides may also be appropriate.
Monobactam	Aztreonam, 1 gram IV	
plus	plus	
Fluoroquinolone	Either moxifloxacin, 400 milligrams IV or Levofloxacin, 750 milligrams IV	
Anti-MRSA drug (add if HCAP or MRSA risk)	Vancomycin, 10–15 milligrams/kg IV or Linezolid, 600 milligrams IV	To be added to one of the above regimens for patients with MRSA or HCAP risk.

Mycoplasma pneumoniae

UpToDate (20130724updated)

- Gram staining: not visible
- isolation isn't commonly performed in clinical laboratories
- pathogenic features
 - immune-mediated rather than induced directly by the bacteria

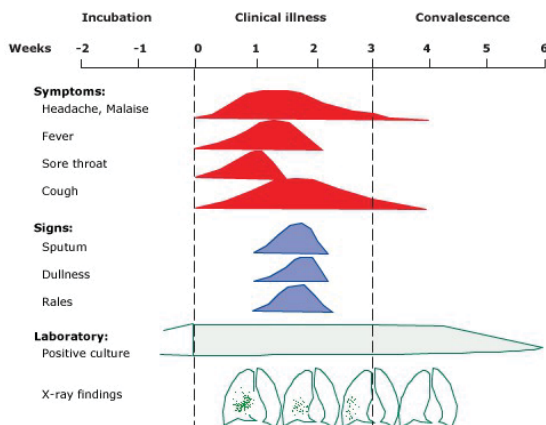
symptomatic M. pneumoniae infection

- associated factors
 - Lower preexisting IgG levels ([AOR] 7.8, 95% CI 1.3-42.5)
 - Smoking (AOR 5.6, 95% CI 1.5-20.4)
- the highest infection rates are among
 - school-aged children
 - military recruits
 - college students

clinical features

- asymptomatic ~ headache/malaise/low-grade fever
 - pharyngitis (6~59%)
 - rhinorrhea (2~40%)
 - ear pain (2~35%)
- dyspnea is not a common complaint
- Chills are frequent but rigors are rare
- Pleural effusion
 - 15~20% (patients with pneumonia)
 - usually serous in nature
 - pleuritic pain & empyema → rare

Chronology of untreated M. pneumoniae pneumonia



CXR

- The most common radiographic findings
 - reticulonodular pattern
 - unilateral or bilateral
 - patchy areas of consolidation
 - more common in the lower lobes
- None of the radiographic patterns be pathognomonic

Diagnostic tests

- Cold agglutinins
 - neither sensitive nor specific, utility ?
- Serology
 - enzyme immunoassay (EIA) techniques
 - sensitivity 97.8%
 - specificity 99.7%
 - titer $\uparrow 4x$ → indicative of infection
- PCR/culture

Specific mycoplasma therapy

- macrolides
 - erythromycin
 - azithromycin
- doxycycline
- fluoroquinolone
 - levofloxacin
 - moxifloxacin

SUMMARY AND RECOMMENDATIONS

- respiratory infection → cough / pharyngitis / rhinorrhea / ear pain
 - only 10% of patients develop pneumonia
- Extrapulmonary manifestations
 - hemolysis (rarely clinically significant)
 - skin rash including Stevens-Johnson syndrome
 - carditis
 - encephalitis/other CNS complications (more common in children)
- multiplex PCR is the diagnostic test of choice
 - Serology should be performed if PCR is not available
- empiric treatment
 - Azithromycin (500 mg po [1st dose] + 250 mg po qd*4days)
 - other agents should receive 7 to 14 days of therapy