ER & infection conference

A 25 y/o male,
Dizziness and short of breath

Supervisor: VS洪世文
Presentor: R1劉邦民
102.12.21

Visit ER at 21:54

- Chief complaint: short of breath
- Triage: I
- T/P/R:37.5/138/26, BP=117/52mmHg, SpO2=88%
- Conscious: E4V6M5

Present illlness

- AAD from 慈濟
- 這兩天有cough, 大便較黑
- Mild fever, 之前沒特別覺得會喘(骨折s/p OP 已三個月)
- 1週前有驗過HIV(Negative)
- 慈濟: Hb:5.3→ 輸兩袋血

Past history

- Allergy: NKA
- Medical history
  - Denied GU history
  - HIV: negative
- Surgical history
  - Left tibial fracture s/p ORIF 4 months ago
- TOCC:
  - Travel history: denied, occupation: 待業中, contact history: denied, cluster: denied

Physical examination

- Cons: E4V5M6
- Head & neck: Pale looking
- Chest: coarse breath sounds, tachypnea, RHB
- abdomen: soft, no tenderness
- Extremity: freely, but weakness & cold limb

Impression

- Anemia
- Pneumonia with sepsis

DAY 1(2150)

- On monitor
- N/S 500 ml iv st, then 100 ml/hr
- O2 mask 10 L/min
- ECG, CXR(portable)
- ABG (4)
- B/C X II
- CBC/DC/platelet
- PT/PTT
- BUN/Cr, AST, Na, K, Cl, CRP, enzyme
- 預備血
- DRE(empty)
- Tapimycin 4.5 g iv st (PCT: neg)

22:05

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PH=7.476
PCO2=23.4 mmHg
PO2=55 mmHg
BE=-6 mmol/L
HCO3=17.3 mmol/L
TCO2=18 mmol/L
SO2=91 %
LAC=17.7 mg/dL
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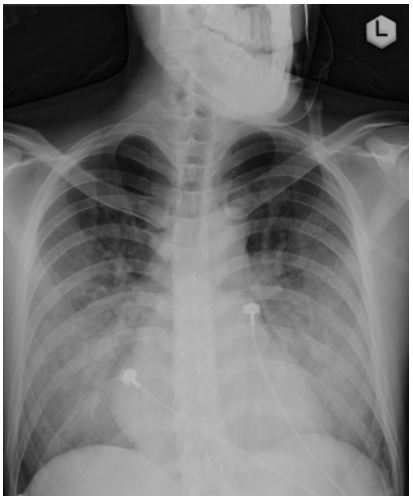
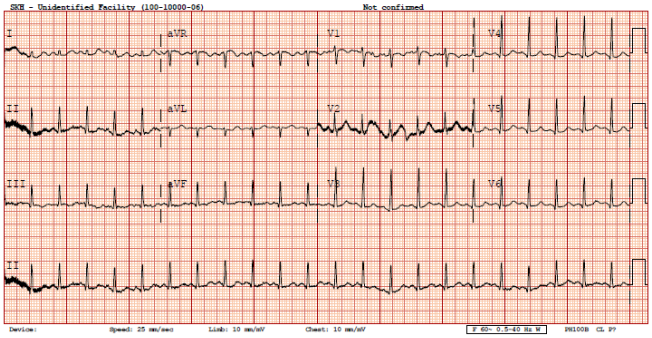


EKG



DAY 1

(22:15)

- U/A
- 備PRBC 4U

(22:25)

- O2 NRM 15L/min
- Contact 總值
- HIV screening
- Zithromax 2 tab po st

Laboratory data

檢驗項目名稱	檢驗值	檢驗值單位
CBC/Platelet/DC	**********	
WBC	8.5	X1000/ul
RBC	2.09	million
Hb	6.3	gm/dl
Ht	20.4	%
MCV	97.6	fl
MCH	30.1	pg
MCHC	30.9	%
RDW	17.0	%
Platelet	185	x1000/ul

檢驗項目名稱	檢驗值	檢驗值單位
Differential count	**********	
Segmented Neutro.	79.0	%
Lymphocyte	12.0	%
Monocyte	6.0	%
Eosinophil	0.0	%
Basophil	0.0	%
Atypical lymphocyte	2.0	%
Band	1.0	%
Metamyelocyte	0.0	%
Myelocyte	0.0	%

檢驗項目名稱	檢驗值	檢驗值單位
Promyelocyte	0.0	%
Blast	0.0	%
Nucleated RBC	1.0	/100WBC

Labortary data

檢驗項目名稱	檢驗值	檢驗值單位
GOT(AST)	26	U/L
CPK	57	U/L
BUN	14	mg/dL
Creatinine	0.82	mg/dL
eGFR	114.48	
Na	131	meq/L
K	3.8	meq/L
Cl	105	meq/L
Troponin I	<0.01	ug/L
CRP	0.100	mg/dL

檢驗項目名稱	檢驗值	檢驗值單位
CK-MB	0.5	ng/mL

檢驗項目名稱	檢驗值	檢驗值單位
PT	12.5	second
Normal control	10.8	second
INR	1.15	Ratio
APTT	28.8	second
Normal control	33.4	second
APTT ratio	0.86	

檢驗項目名稱	檢驗值	檢驗值單位
Sediment	**********	
RBC	1-2	/HPF
WBC	1-2	/HPF
Epithelial cell	1-2	/HPF
Cast	Granular	/LPF
.cast-amount	+	
Crystal	Not Found	/HPF
.Cry-amount	-	
Bacteria	-	
Others	Not Found	

DAY 1

(2340)

- Sevatrim 960 mg iv st
- Cravit 750 mg iv st
- Pantoloc 80 mg iv st
- 輸 pRBC 2 U
- On critical
- Admission to MICU

MICU course

Tamiflu 1 tab bid po D1

Erythromycin+ Tapimycin + doxymycin D1

DAY2

ABG

pH	7.431
PCO2	23.9
PO2	82.3
Hct	24
BEb	-5.7
HCO3	16.0
SO2%	96.7

BCS

GPT(ALT)	<3	U/L
LDH	404	U/L
iCa	3.89	mg/dL
P	3.20	mg/dL
Lipase	7	U/L
CRP	1.400	mg/dL
Total-protein	6.98	g/dL
T-Bilirubin	2.37	mg/dL
RA	28.0	IU/mL
IgG	2240.0	mg/dL
IgM	41.3	mg/dL
Lactate	12.3	mg/dL

D-Bilirubin	0.54	mg/dL
CPK	166	U/L
Troponin I	0.01	ug/L
CK-MB	0.8	ng/mL
Occult blood (Chem)	2+	

Management

Hb:8.5→pRBC 2U
consult infection doctor
流感重症通報

HIV: negative
Influenza: negative
Leiginella: neg
S. pneumococcus: neg
Mycoplasma, Chlamydia ag:pending
TB, S/C: pending
STS-RPR: pending
ANA, ANCA: pending

MICU course

Solumedrol 40 mg QD

Tamiflu 1 tab bid po D2

Erythromycin+ Tapimycin + doxymycin D2

DAY3 (On ETT with MV)

ABG

pH	7.448
PCO2	32.3
PO2	94.3
Hct	22
BEb	-0.1
HCO3	22.5
SO2%	97.8

WBC	9.2
Differential count	
Segmented Neutro.	86.6
Lymphocyte	10.2
Monocyte	3.2
Eosinophil	0.0
Basophil	0.0
Platelet	105

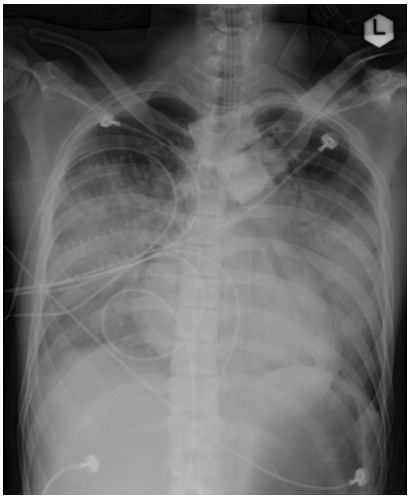
LAB

D-Bilirubin	0.54	mg/dL
D dimer(ELISA)	3297.3	ng/mL
FDP	10-40	ug/ml
Fibrinogen	597	mg/dl
B12	172	pg/mL
Folate	12.0	ng/mL
G-6-PD	7.3	
Amylase	801	U/L
Lipase	1537	U/L
HBsAg	0.010	IU/mL
Anti-HCV	0.08	S/CO
IgA	230.0	mg/dL
C3	20.8	mg/dL
C4	4.53	mg/dL

Management

Hb:6.0→pRBC 2U
On endotracheal tube
PES: gastric ulcer(H1)
Consult hematologist
(for anemia)

AFS: negative
Coombs test: negative
PT INR:1.25
Heart echo:
-Fair LV contracity(EF 75%)
-Insignificant pericardial effusion



MICU course

Solumedrol 40 mg QD

Tamiflu 1 tab bid po D3

Erythromycin+ Tapimycin + doxymycin D3

DAY4

ABG

pH	7.418
PCO2	34.6
PO2	94.9
Hct	37
BEb	-0.8
HCO3	22.5
SO2%	97.6

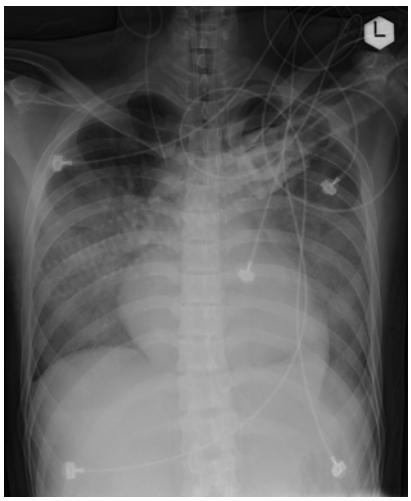
LAB

Hb	7.4	gm/dl
GOT(AST)	25	U/L
T-Bilirubin	2.21	mg/dL
Amylase	246	U/L
Lipase	370	U/L
ESR	69	mm/hr
CRP	5.940	mg/dL

Management

通報漢他肺症候群
通報不明原因肺炎
Consult GI
Arrange Abdominal CT
Check anticardiolipin
antibody, BM zone ab

AFS: negative
Cold hemagglutinin: 8x+



MICU course

Solumedrol 40 mg QD

Tamiflu 1 tab bid po

Erythromycin+ Tapimycin + doxymycin

D5 | D6

LAB

Hb	7.5	gm/dl
BUN	16	mg/dL
Creatinine	0.66	mg/dL
eGFR	147.06	
Na	136	meq/L
K	4.3	meq/L
Amylase	92	U/L
Lipase	46	U/L

TSH	1.8785	uIU/mL
T4,Free	0.96	ng/dL

CMV IgM: negative
Albumin:3.18
24 hr urine protein: 918 mg/day

Try D10W
Chlamydia: neg
Mycoplasma: neg

CT

MICU course

Solumedrol 40 mg QD

Erythromycin+ Tapimycin + doxymycin

D7

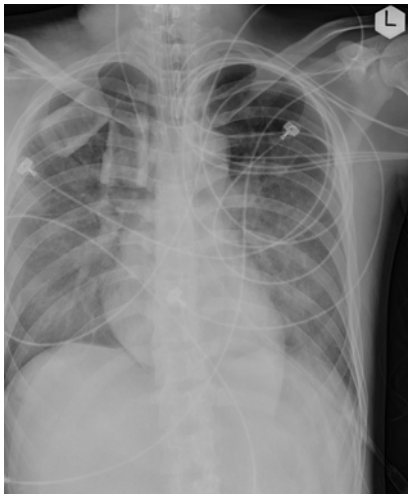
Bronchoscopy BAL
--Suspected diffuse hemorrhage over RLL

Color	Bloody
Appearance	Cloudy
Sp.gr.	1.006
Rivalta's test	Negative
RBC	159570
WBC	20
L:N	25%:75%

Hb	6.5	gm/dl
Ht	19.9	%
WBC	5.2	x1000/ul
Differential count	**********	
Segmented Neutro.	75.6	%
Lymphocyte	19.0	%
Monocyte	5.2	%
Eosinophil	0.2	%
Basophil	0.0	%
Platelet	162	x1000/ul

Management

HB:6.5->pRBC 2U
Try element diet



MICU course

Solumedrol 40 mg QD | Solumedrol 40 mg Q6H

Erythromycin+ Tapimycin + doxymycin | Erythromycin+ Imipenem+ doxymycin

D8

STS-RPR	Nonreactiv	
Myco.pneumonia Ab	80x+	
Myco.pneumonia IgM.	6.6	
##Negative		BU/mL
##Equivocal		BU/mL
##Positive		BU/mL
ANA(IFA)	1280x+SPE	
Anti-ds DNA.	160x+	
ANCA		
MPO ANCA.	0.10	IU/mL
Anti-cardiolipin IgG	6.2	GPL
)Negative		GPL U/mL
)Equivocal		GPL U/mL
)Positive		GPL U/mL
BM zone Ab	20x-	

T-Bilirubin	1.93	mg/dL
BUN	15	mg/dL
Creatinine	0.60	mg/dL
eGFR	164.16	
Na	134	meq/L
K	4.1	meq/L
Amylase	39	U/L
Lipase	19	U/L
Hb	7.5	gm/dl

Management
Consult infection doctor
Consult rheumatologist

AFS(Broncho):neg
Blood culture: no growth
Sputum culture: no growth

MICU course

Solumedrol 40 mg Q6H

Erythromycin+ Imipenem+ doxymycin | Erythromycin+ pipril+ doxymycin | Erythromycin+ pipril

D9 | D10 | D11 | D12 | D13

Hb:8.6
Mycoplasma: 160x+

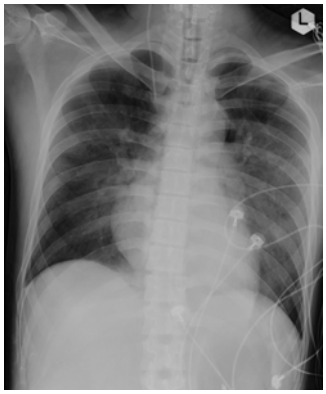
CRP: 0.99
WBC:10800(S:90.5%)

CDC for influenza & Viral pneumonia: neg
三總 PJP PCR:Neg

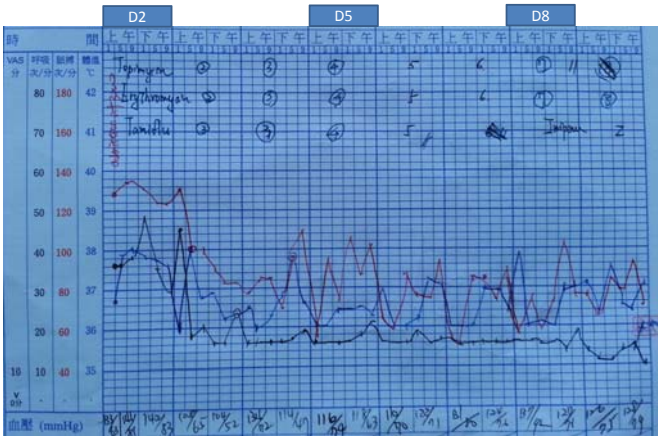
Extubation

To general ward

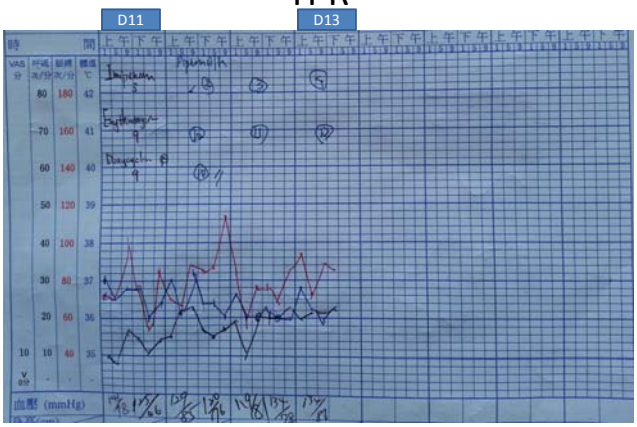
CXR (DAY 10)



TPR



TPR



Discussion

Pneumonia

- Community acquired pneumonia
- Hospital-acquired pneumonia
  - New infection occurring 48 or more hours after hospital admission
- Ventilator-acquired pneumonia
  - New infection occurring 48 or more hours after endotracheal intubation
- Health care–associated pneumonia
  - hospitalized for 2 or more days within the past 90 d
  - Nursing home/long-term care residents
  - home IV antibiotic therapy
  - Dialysis patients
  - Patients receiving chemotherapy
  - Immunocompromised patients
  - Patients receiving chronic wound care

History

Table 251-3 Epidemiologic Factors Suggesting Possible Causes of Community-Acquired Pneumonia

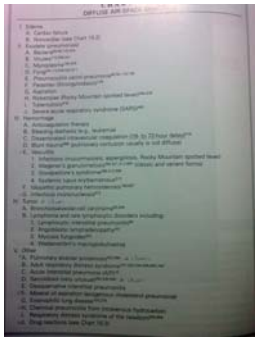
Factor	Possible Pathogen(s)
Alcoholism	*Streptococcus pneumoniae*, oral anaerobes, *Klebsiella pneumoniae*, *Acinetobacter* spp., *Mycoba tuberculosis*
COPD and/or smoking	*Haemophilus influenzae*, *Pseudomonas aeruginosa*, *Legionella* spp., *S. pneumoniae*, *Moraxella ca Chlamydophila pneumoniae*
Structural lung disease (e.g., bronchiectasis)	*P. aeruginosa*, *Burkholderia cepacia*, *Staphylococcus aureus*
Dementia, stroke, decreased level of consciousness	Oral anaerobes, gram-negative enteric bacteria
Lung abscess	CA-MRSA, oral anaerobes, endemic fungi, *M. tuberculosis*, atypical mycobacteria
Travel to Ohio or St. Lawrence river valleys	*Histoplasma capsulatum*
Travel to southwestern United States	Hantavirus, *Coccidioides* spp.
Travel to Southeast Asia	*Burkholderia pseudomallei*, avian influenza virus
Stay in hotel or on cruise ship in previous 2 weeks	*Legionella* spp.
Local influenza activity	Influenza virus, *S. pneumoniae*, *S. aureus*
Exposure to bats or birds	*H. capsulatum*
Exposure to birds	*Chlamydophila psittaci*
Exposure to rabbits	*Francisella tularensis*
Exposure to sheep, goats, parturient cats	*Coxiella burnetii*

Diagnostic test

- Clinical manifestation and Physical exam
  - no clear constellation of S/S can accurately predict whether or not the patient has pneumonia
- CXR
- Gram's Stain and Culture of Sputum
- Blood Cultures
- Antigen Tests
  - Urine pneumococcal and *Legionella Ag*
  - rapid test for influenza virus

DIFFUSE AIR SPACE OPACITY

- Fluid: pulmonary edema, ARDS
- Blood: pulmonary hemorrhage
- Pus: pneumonia
- Cells: alveolar cell carcinoma, lymphoma
- Protein: alveolar proteinosis



Chest radiology-- plain film pattern and differential diagnosis table 15-1

DDx of alveolar lung disease

- Chronicity of the process
- Radiographic distribution
- Associated radiographic findings
- Clinical history

Airspace Shadows - Acute

- Pulmonary edema
  - Cardiogenic
  - Non-cardiogenic
- Pneumonia
  - Infectious: bacterial, atypical
  - Noninfectious: ARDS, aspiration, AEP
- Pulmonary hemorrhage
  - Trauma
  - Bleeding tendency
  - Diffuse alveolar hemorrhage(DAH)
    - immunocompetent: vasculitis
    - Immunocompromised: coagulopathy, invasive infection, idiopathic

Airspace shadows- chronic

- Inflammation:
  - Infectious (granulomatous disease): TB, NTM, fungus, norcardia, actinomycosis
  - Non-infectious: alveolar alveolitis(HP), BOOP, DIP, CEP, radiation pneumonitis, lipoid pneumonia, sarcoidosis
- Neoplasm
  - BAC
  - Lymphoma
- Pulmonary alveolar proteinosis(PAP)

Perihilar Alveolar Process (central)

- Pulmonary edema: esp. cardiogenic
- Overhydration / Uremic lung
- PAP
- PCP
- Pulmonary hemorrhage (DAH)
- Inhalation injury
- 較少見：tumor (BAC, lymphoma), drug,
- lymphangitic carcinomatosis

Reverse butterfly pattern (peripheral)

- Chronic eosinophilic pneumonia(CEP)
- BOOP (COP)
- DIP
- NSIP
- Collagen-vascular disease(CVD)
- ARDS
- Pulmonary hemorrhage (DAH)
- Pneumonia

Drug reaction

- Edema
  - Nacrotics, radiologic contrast, IL-2, B-adernergic drugs
- Hemorrhage
  - Anticoagulants, amphotercin B, Cytarabine, cyclophosphamide, pencillamine
- Diffuse alveolar damage
  - Bleomycin, busulfan, carmustine, cyclophosphamide, gold, melphalan, mitomycin

Reference

- Chest radiology-- plain film pattern and differential diagnosis
- 北榮CXR教學檔案