

Interesting case

29/4/2024

R1 Warunya/ R3 Jitsupa/ A.Yiwa

R1 Chanakan/ R3 Chanikan/ A. Wilaiporn



Patient profile

- ผู้ป่วยหญิงไทย 5 ปี
- เชื้อชาติไทย สัญชาติไทย
- ประวัติได้จากผู้ป่วย มารดา และเวชระเบียน มีความน่าเชื่อถือสูง
- Admit 18/4/2024 - ปัจจุบัน

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Chief complaint

ไข้ 5 วัน ก่อนมาโรงพยาบาล



Present illness

- 5 วันก่อนมาโรงพยาบาล มีไข้ วัดไข้ที่บ้านได้ 39 มีอาการปวดหัว ปวดเมื่อยตามตัว มีน้ำมูกใสๆ เล็กน้อย ไม่มีไอ ไม่มีคลื่นไส้ อาเจียน ไม่มีถ่ายเหลว ไม่มีหอบเหนื่อย ทานได้น้อย อ่อนเพลีย
- 1 วันก่อนมาโรงพยาบาล ยังมีไข้สูง ทานได้น้อย น้ำมูกเล็กน้อย มาตรวจที่ OPD

V/S BT 37.4, PR156, RR 22 , BP 116/82 PE: WNL

Swab Influenza A : positive >> Diagnosis : Influenza A nasopharyngitis ได้รับยา

Oseltamivir, Paracetamol ,Fluifort, Cetirizine >Discharge

- หลังกลับบ้าน ยังมีไข้สูง ทานไม่ได้อ่อนเพลีย ไอ เจ็บคอ เสมหะ พอๆ เดิม ไม่มีหอบเหนื่อย จึงกลับมาโรงพยาบาล พิจารณาให้นอนโรงพยาบาล



Past history

- ปฏิเสธโรคประจำตัว
- ปฏิเสธใช้ยาได้เป็นประจำ
- ปฏิเสษ คนในบ้านมีอาการเดียวกัน
- ไปเรียน summer ที่โรงเรียน และเล่นน้ำสงกรานต์กับเพื่อนๆ ไม่ทราบว่ามีเพื่อนที่โรงเรียนป่วยหรือไม่

Personal history

- **Perinatal history** : Term female newborn GA 38 week, NL, APGAR 8,9 , No complication
- **Nutrition** : รับประทานอาหาร 3 มื้อ ชอบทานผักผลไม้ ไม่ค่อยทานเนื้อสัตว์
- **Growth and development** : เรียนชั้นอนุบาล3 พัฒนาการสมวัย
- **Vaccination** : ครบตาม EPI , Influenza vaccine ล่าสุด มิ.ย. 2023,
Vaccine เสริม complete PCV13
- **Food and drug allergy** : ปฏิเสธแพ้ยาแพ้อาหาร

Family history

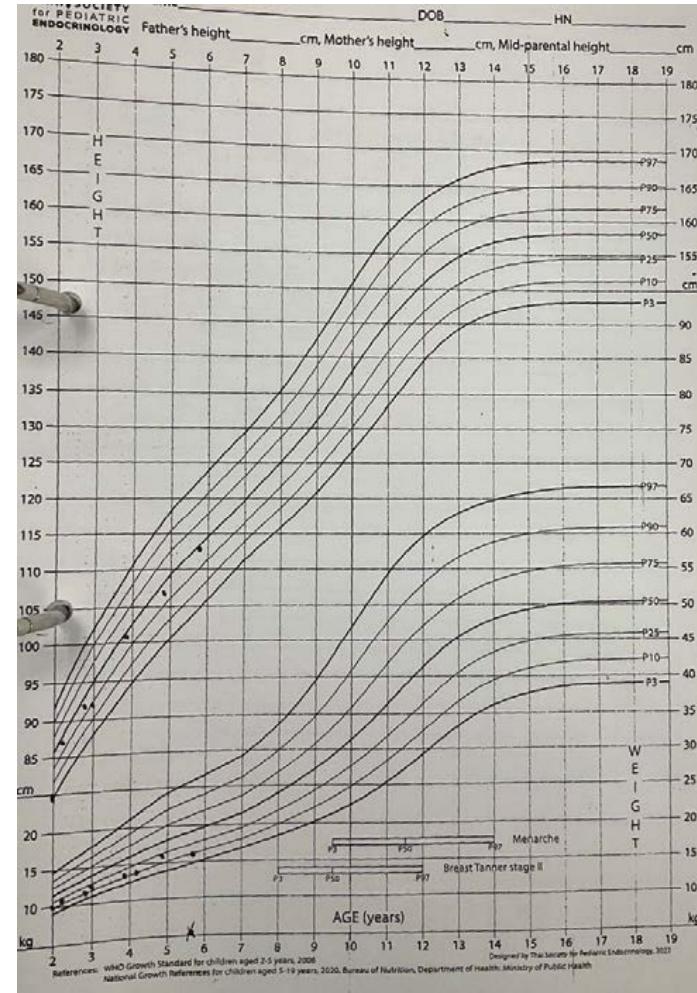
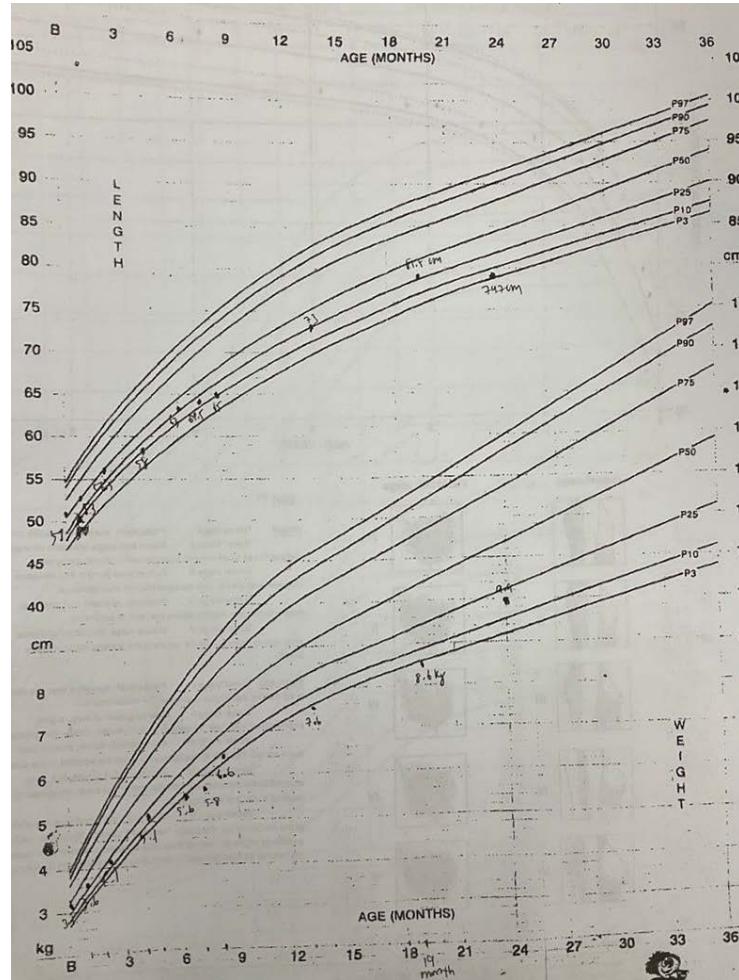
- บิดา อายุ 42 ปี ปั๊วิเศษโรคประจำตัว
- มารดา อายุ 42 ปี พาหะ Thalassemia



Physical examination

- **Vital sign** : BT 38.4°C PR135 bpm, RR 30 , BP98/64 , SpO2 99%(Room air)
- **Body weight** : 15.7 kg (P3-10), Height 113 cm (P50)
- **GA** : alert , look fatigue
- **HEENT** : not pale conjunctivae, anicteric sclera ,dry lip, no sunken eyeball, mild injected pharynx, no exudate, impalpable lymph node
- **Heart** : Normal S1S2, no murmur, pulse full, Regular, Capillary refill <2 sec
- **Lung** : normal breath sound both lung , no adventitious sound
- **Abdomen** : soft , not tender ,liver and spleen impalpable
- **Ext:** no rash
- **Neuro** : E4V5M6 , pupil 3mm RTLBE, Motor gr. V all

• Measurement



Provisional diagnosis and Management

- Diagnosis :
 - Influenza A nasopharyngitis with moderate dehydration with poor intake
 - Admit 18/4/204 for IV hydration
- Management
 - 5%DNSS 1000 ml iv 70 ml/hr (MT+3%def)
 - Oseltamivir 45 mg po bid * 5 day



Progression

19/4/2024

- ตั้งแต่ช่วงเย็น วันที่ 18/4/2024 ยังมีไข้สูง เริ่มไอมีเสมหะมากขึ้น 痰ไม่ได้ เริ่มมีหายใจลำบาก
- PE : BT 38 °C , RR 50/min, PR130 bpm ,BP 96/60 SpO₂ 99 % (room air)
- GA : looked dyspnea
- Lung : fine crepitation Right lung, decrease breath sound right lower lung, dullness on percussion Rt. side, no trachea shift, suprasternal and subcostal retraction
- Heart : Normal S1S2, no murmur, pulse full and regular, PMI at 5th intercostal space, no gallop
- Abdomen : soft not tender, liver and spleen impalpable



Pertinent finding and Problem list

RESIDENT 1

Positive finding

- Acute fever for 5 day
- Rhinorrhea with productive cough
- Myalgia
- Poor intake
- Acute dyspnea for 1 day
- Positive nasopharyngeal swab for

Influenza A treat with oseltamivir 2
days

Negative finding

- No underlying disease
- No lymphadenopathy
- No exudate tonsil
- No chronic cough
- No weight loss
- No gallop/no hepatomegaly





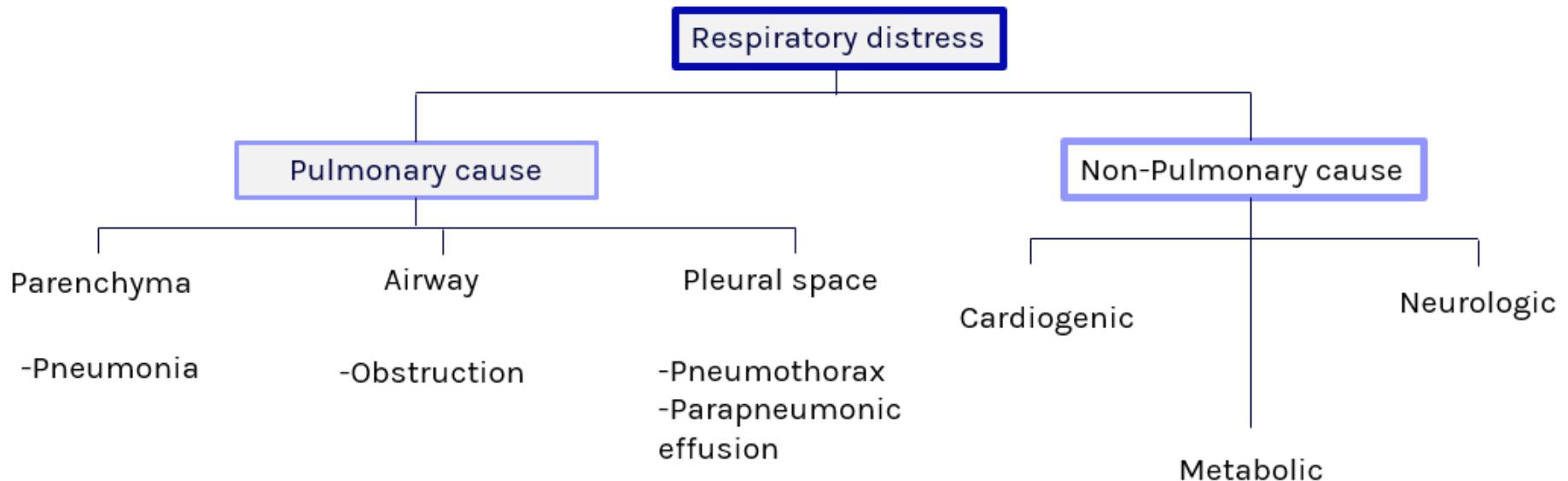
Problem list



**A 5 years old Thai girl presented with influenza A nasopharyngitis
with poor intake with new onset of acute dyspnea for 1day**



Approach : Respiratory distress



Differential diagnosis

	Pros	Cons
1. Influenza A infection with bacterial pneumonia on top	<ul style="list-style-type: none">-Common complication after viral infection-Acute dyspnea with fever not improve-Rt. Lung crepitation	-
2. Pneumonia with parapneumonic effusion	<ul style="list-style-type: none">-Acute dyspnea with fever not improve-Decrease BS Rt. lung-Dullness on percussion Rt. side	<ul style="list-style-type: none">-No trachea shift
3. Influenza A myocarditis	<ul style="list-style-type: none">-Acute dyspnea and tachycardia-Dyspnea after fluid resuscitation	<ul style="list-style-type: none">-Crepitation only on Rt. Side-No cardiomegaly, no gallop-No hepatomegaly

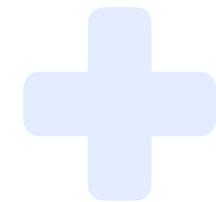


Lab investigation

RESIDENT 2

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Chest X-ray



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Laboratory

CBC	18/4/2024
Hb(g/dL)	10.2
Hct(%)	30.4
WBC(/uL)	2100
PMN(%)	49
Lymphocyte(%)	47
Monocyte(%)	4
Eosinophil(%)	0
Basophil(%)	0

MCV(fL)	54.8
MCH(pg)	18.4
MCHC(g/dL)	33.6
RDW(%)	17.3
Platelet	382,000

Laboratory

Electrolyte	18/4/2024
BUN	9.6
Cr	0.31
Na	133.4
K	4.29
Cl	97.2
HCO3	17
AG	19.2



Laboratory

Urinalysis		18/4/67							
Color/Tran	Sp.gr	PH	Nitrite	Protein	Sugar	Ketone	WBC	RBC	Epi
Yellow/clear	1.022	6	Neg	2+	Normal	2+	2-3	5-10	0-1

+



Progression

19/4/2024

Diagnosis : Influenza A with bacterial pneumonia on top with suspected Right parapneumonic effusion with respiratory distress

Management

- On HHHFNC 23 LPM Fio₂ 0.3 keep SpO₂ \geq 95%
- NPO
- 5%DNSS 1000 ml iv 55 ml/hr (MT)
- Repeat lab and take H/C before empirical ATB
- ATB: ceftriaxone , azithromycin and continue oseltamivir



**After proper management
clinical dyspnea not improve!**

Imp : severe pneumonia with impending respiratory failure

Management

- Transfer to PICU for close observation

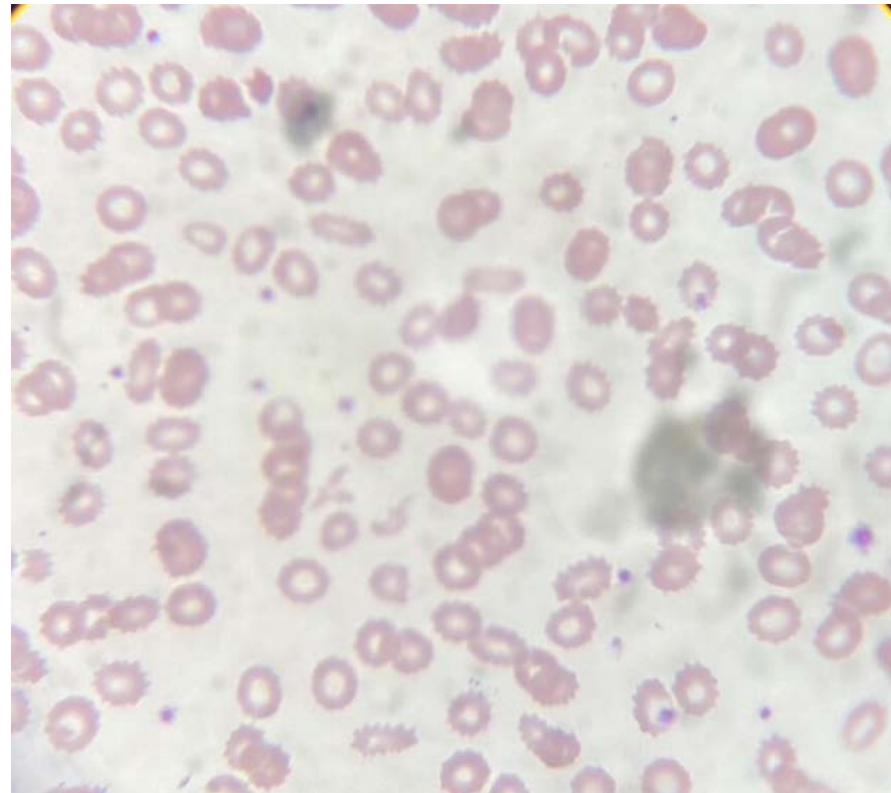
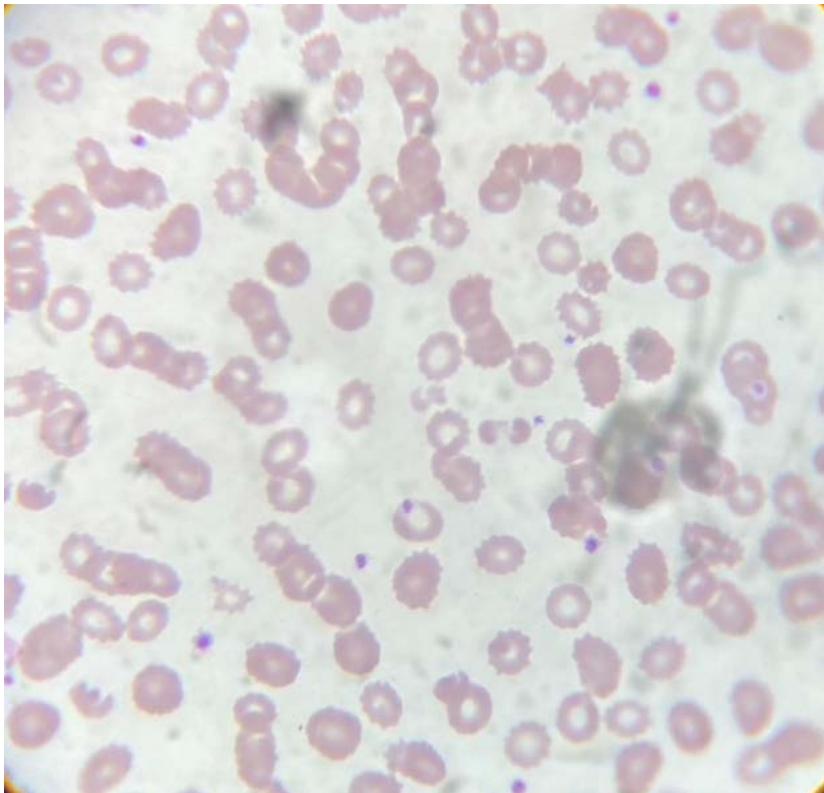
Laboratory

CBC		19/4/2024
Hb(g/dL)	8.6	
Hct(%)	26.2	
WBC(/uL)	2,200	
PMN(%)	48	
Lymphocyte(%)	50	
Monocyte(%)	4	
Eosinophil(%)	0	
Basophil(%)	0	

MCV(fL)	56.8
MCH(pg)	18.6
MCHC(g/dL)	32.7
RDW(%)	17.3
Platelet	334,000



PBS



DCT weakly positive, ICT negative ,%Transferrin sat= 6%

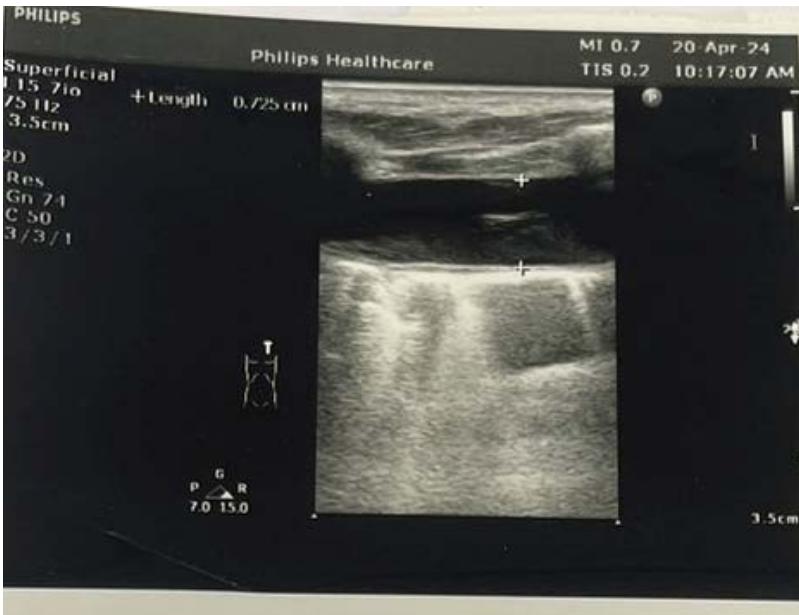
Laboratory

Liver function test		19/4/2024
Total protein	6.16	
Albumin	2.71	
TB	0.37	
DB	0.34	
AST	197	
ALT	87	
ALP	104	

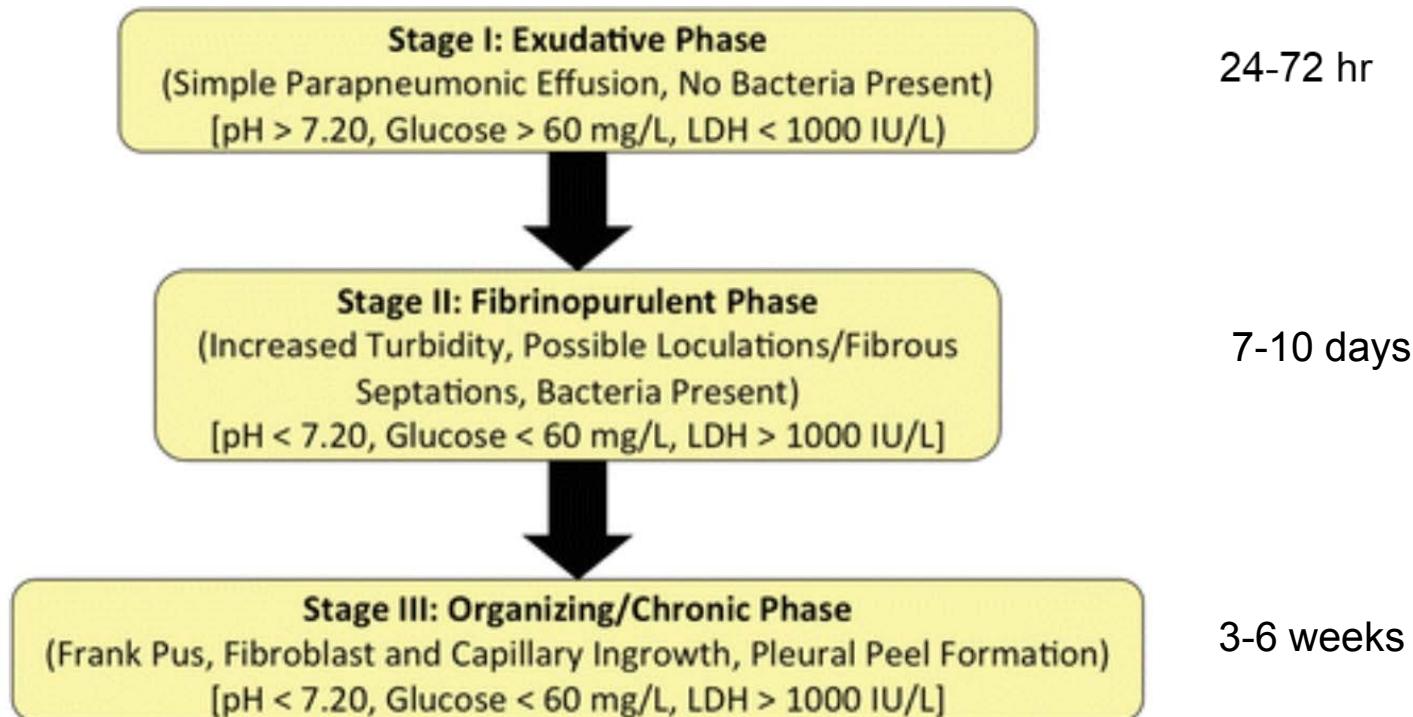
19/4/2024	
Dengue NS1Ag	Negative
Dengue IgM	Negative
Dengue IgG	Negative

Ultrasound bedside

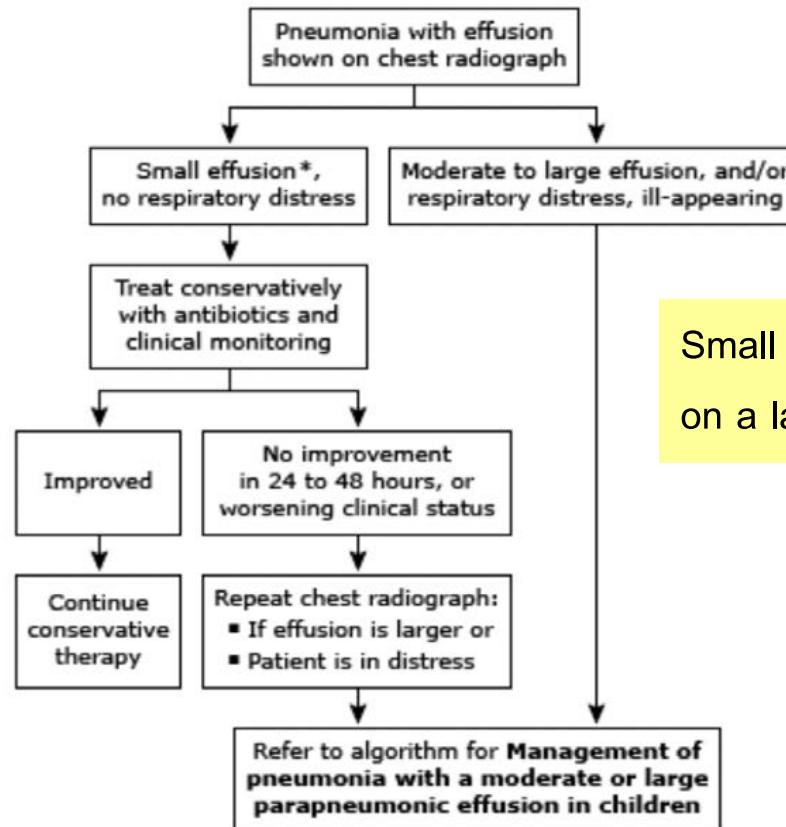
- Rt. Lung anterior side : maximum pleural effusion 1 cm during inspiration and 0.7 during expiration, clear fluid, lung hepatization



Parapneumonic effusion



Indication for thoracocentesis



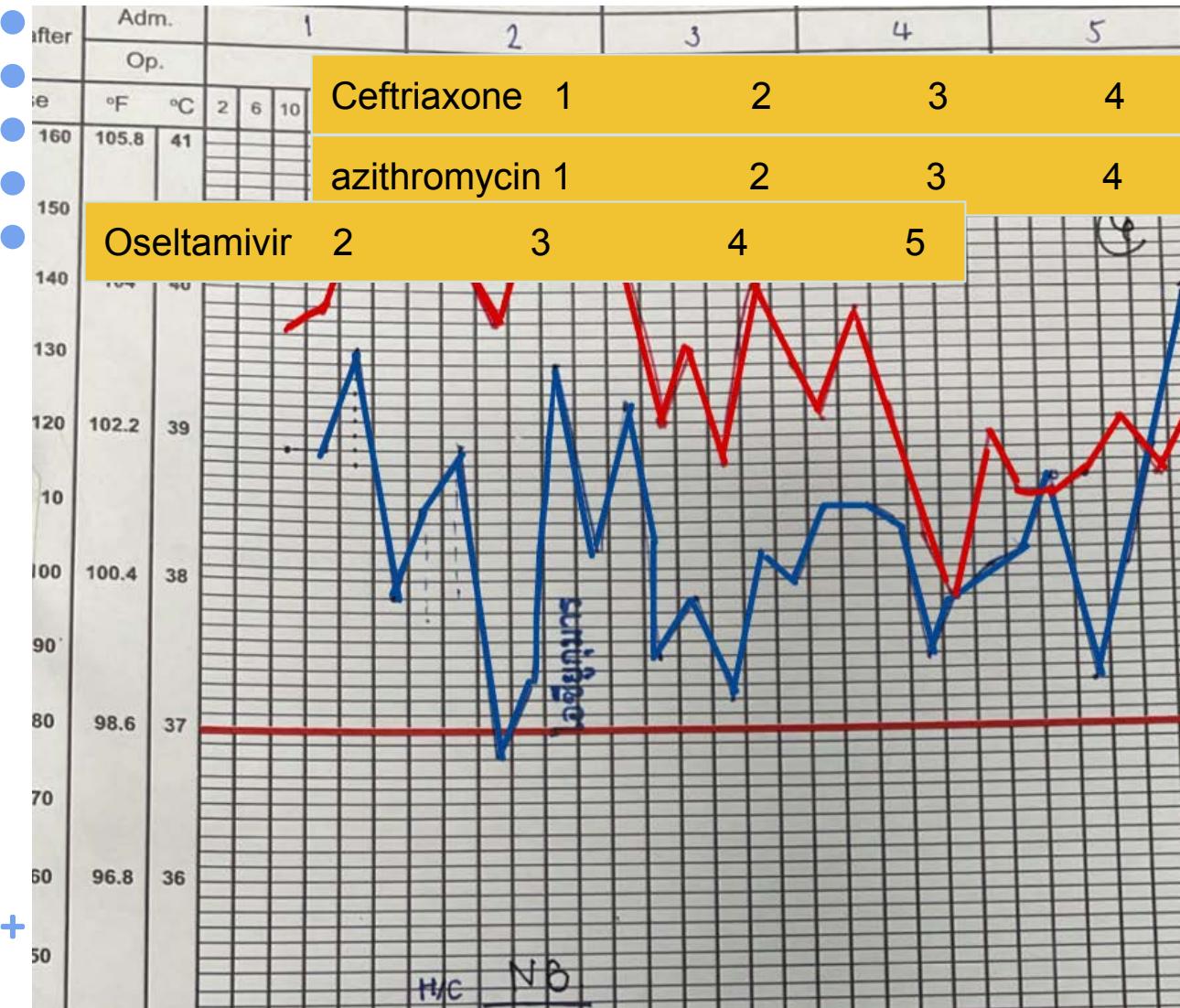
Small effusion is defined as < 10mm on a lateral decubitus radiograph

Pleural fluid profile

Table 428.8

Features Differentiating Exudative From Transudative Pleural Effusion

FEATURE	TRANSUDATE	EXUDATE
Appearance	Serous	Cloudy
Leukocyte count	<10,000/mm ³	>50,000/mm ³
pH	>7.2	<7.2
Protein	<3.0 g/dL	>3.0 g/dL
Ratio of pleural fluid protein to serum	<0.5	>0.5
LDH	<200 IU/L	>200 IU/L
Ratio of pleural fluid LDH to serum	<0.6	>0.6
Glucose	≥60 mg/dL	<60 mg/dL



F/U U/S bedside :



Rt. Lung : pleural effusion
(anterior side) maximum depth 2
mm

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Follow up Chest X-ray



19/4/67



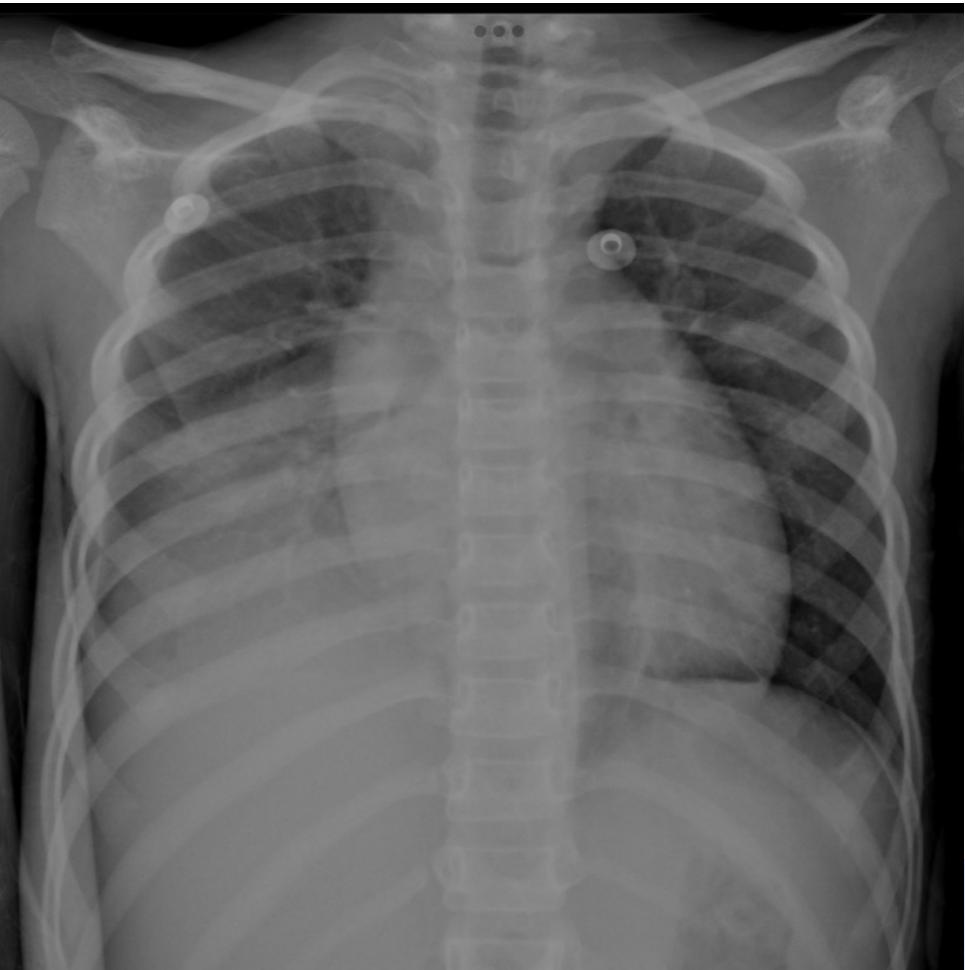
20/4/67

(L)

PORTABLE
SEMI-UPRIGHT



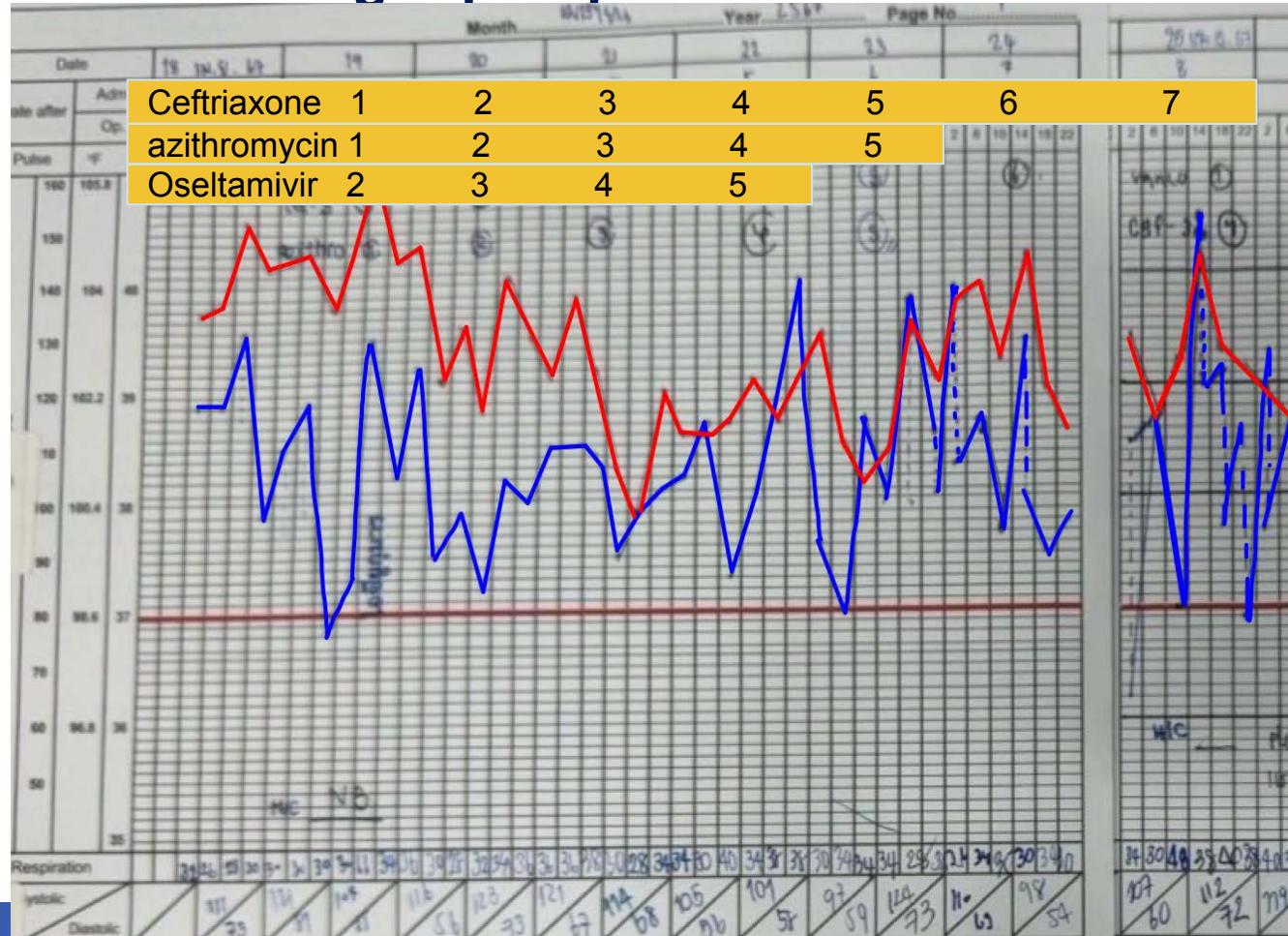
Follow up Chest X-ray



20/4/67

22/4/67

Case A 5 years old girl was diagnosed severe Influenza pneumonia with right parapneumonic effusion



RESIDENT 1,2

Progression 25/4/67 admission day 8 (Fever d13)

S : มีไข้สูง หายใจเหนื่อยเวลามีไข้สูง ไอเสmen มากขึ้น หายใจเร็วมากขึ้น

O : V/S : **BT 40° c, BP 121/67 mmHg, PR 142 bpm, RR 40/min, O₂ sat 100% (On HHHFNC 25 LPM, FiO₂ 0.4)**

GA : **Looked distress, Tachypnea**

HEENT : **Pale conjunctiva**, not icteric sclera, normal pharynx&tonsil, TM intact, no lymphadenopathy

RS : **Subcostal retraction, tachypnea, no dyspnea, decreased breath sound right lower lung, coarse crepitation Rt middle lung.**

CVS : **Tachycardia**, pulse full®ular, cap.refil < 2sec., Normal S₁S₂, no murmur

GI : Normoactive bowel sound, soft, distended, not tender, no hepatosplenomegaly

Others : WNL

Problem list

A 5 years old Thai girl known case severe influenza pneumonia with right parapneumonic effusion with subacute fever and dyspnea

Complicated pneumonia in children

Pulmonary complication

- Parapneumonic effusion/ Empyema thoracis
- Increased capillary permeability&accumulation of fluid in pleural space
- Pericardial effusion
- Usually co-exist with parapneumonic effusion

- Lung abscess
- Necrotizing pneumonia
- Atelectasis
- Bronchopleural fistula

Systemic complication

- Severe sepsis
- ARDS
 - Hypoxemia refractory to supplement O₂
- SIADH
- HUS
 - Atypical HUS following Pneumococcal infection

- DIC
- Consumptive coagulopathy present secondary to infection
- Secondary thrombocytosis
- Inflammatory response to infection



Differential Diagnosis

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Influenza pneumonia with right parapneumonic effusion with complication

- 1.** Parapneumonic effusion not response to antibiotics
- 2.** Empyema thoracis
- 3.** Necrotizing pneumonia
- 4.** Lung abscess/pneumatocele
- 5.** Sepsis



Influenza pneumonia with bacterial co-infection

DOI:10.1111/irv.12398
www.influenzajournal.com

Systematic Review

The frequency of influenza and bacterial coinfection: a systematic review and meta-analysis

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Accepted 14 May 2016.

There were 27 studies, including 3,215 participants. The most common coinfecting species were *Streptococcus pneumoniae* and *Staphylococcus aureus*, which accounted for 35% (95% CI, 14%–56%) and 28% (95% CI, 16%– 40%) of infections

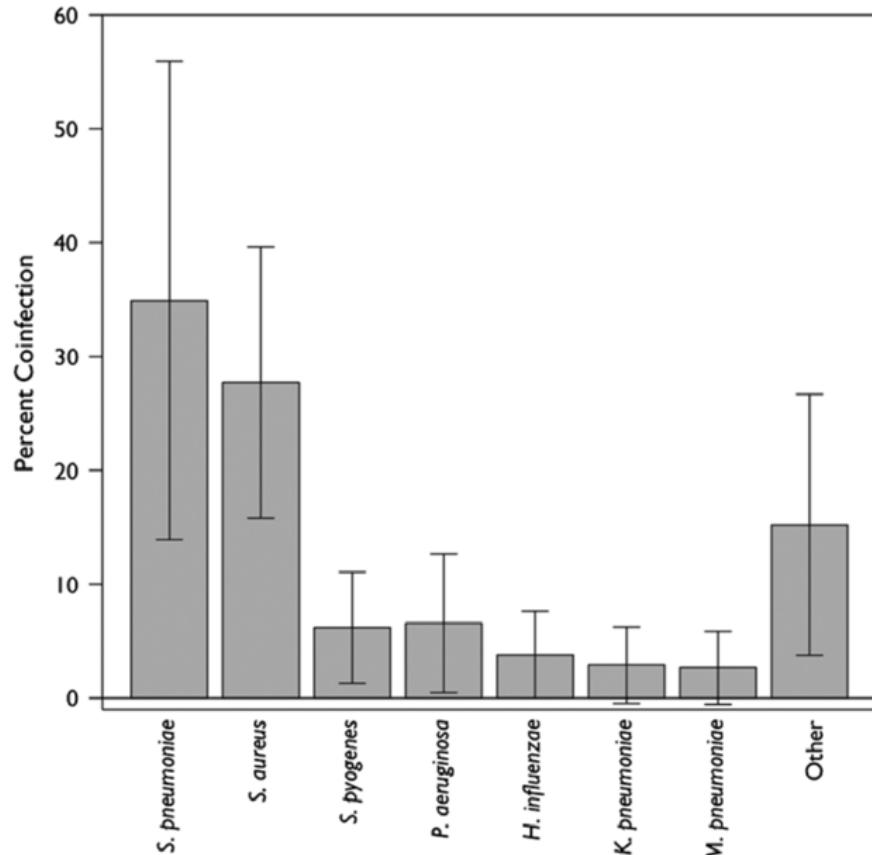


Figure 4. Percent of laboratory confirmed influenza infections that were coinfected by each bacterial species.

Pneumonia with complication

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S.pneumoniae

Empyema thoracis, necrotizing pneumonia, lung abscess, HUS

S.aureus

Pneumatocele, pneumothorax, lung abscess, MRSA

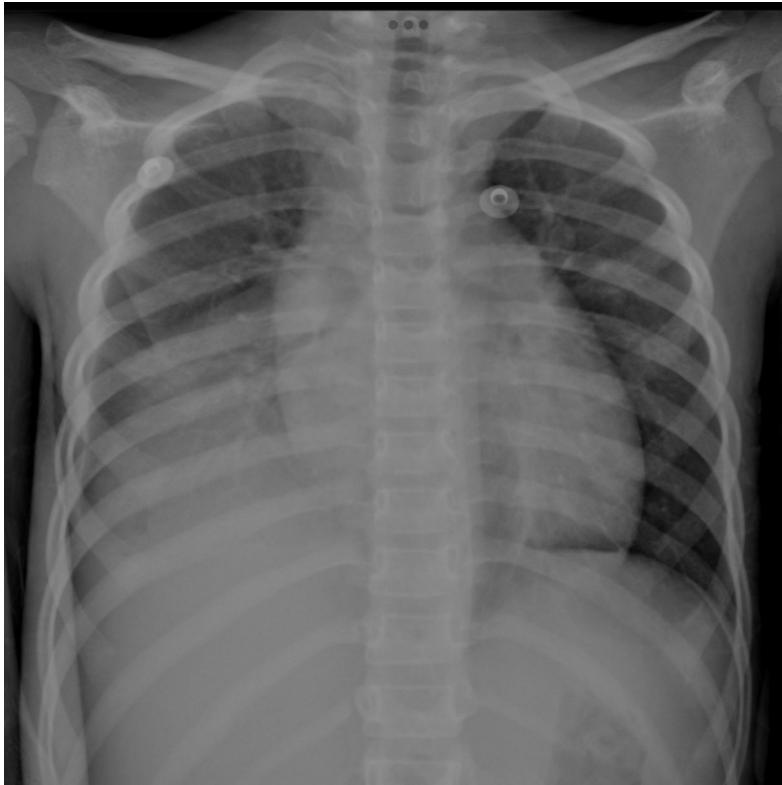
M.pneumoniae

Skin rash, SJS, hemolytic anemia, polyarthritis, pancreatitis,
myocarditis, encephalitis, aseptic meningitis, transverse myelitis

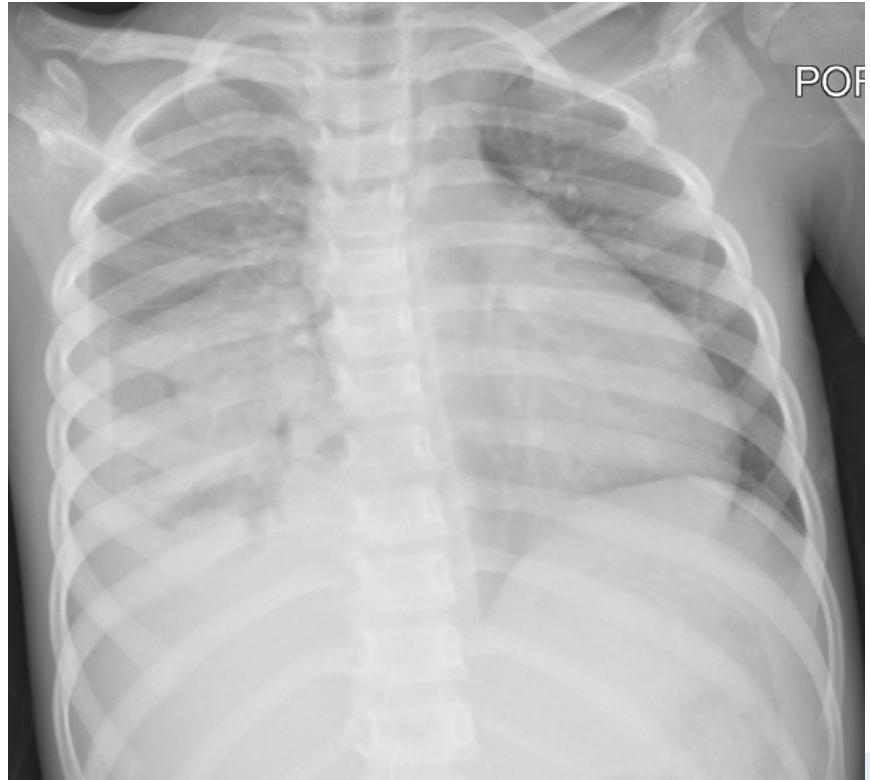


Investigation

- Chest radiography



22/4/67



25/4/67

Investigation

25/4/67

- CBC

Hb (g/dL)	6.7
Hct (%)	20.3
WBC (cells/cu.mm)	13,600
PMN(%)	75
L(%)	15
Platelet(cells/uL)	762,000
MCV(fL)	54.3

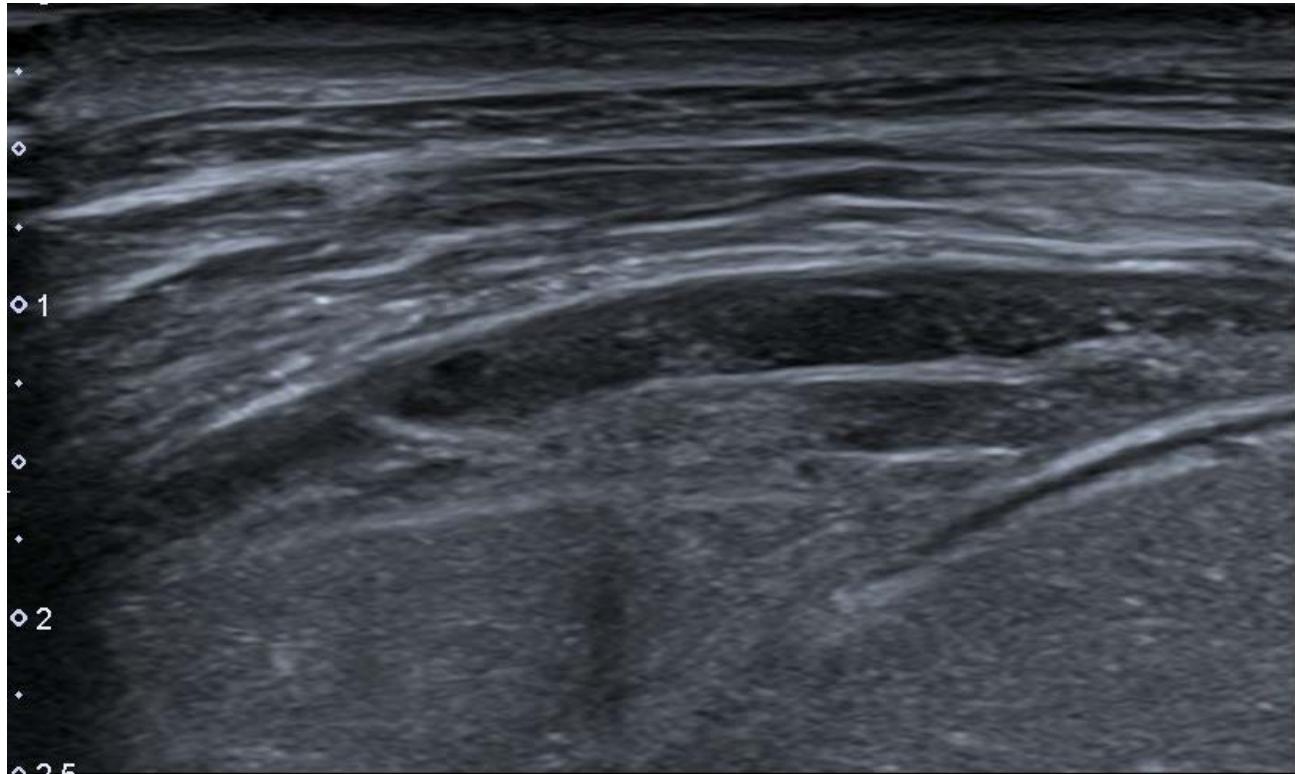
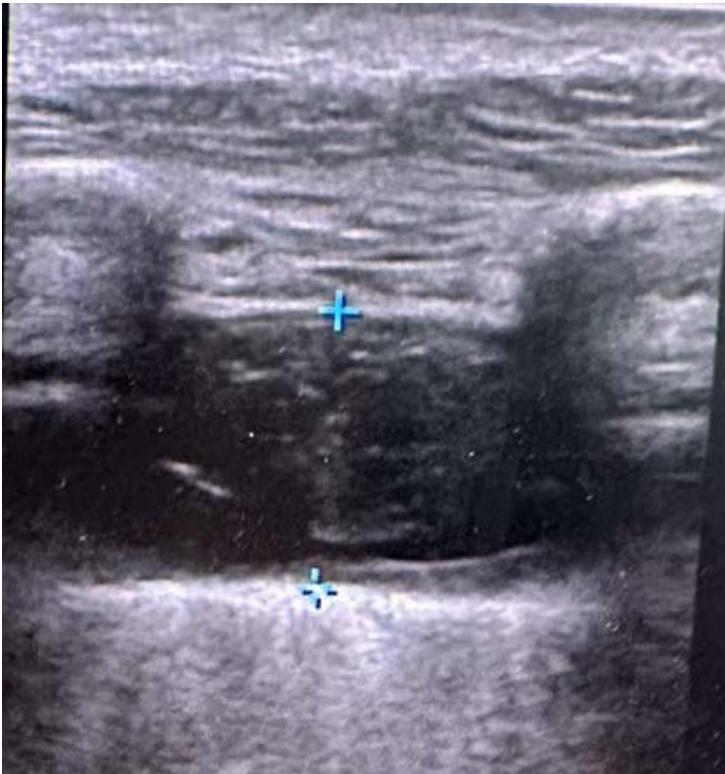
CRP(mg/dL)	186
Procalcitonin(ug/L)	10.8

H/C (25/4/67) : pending



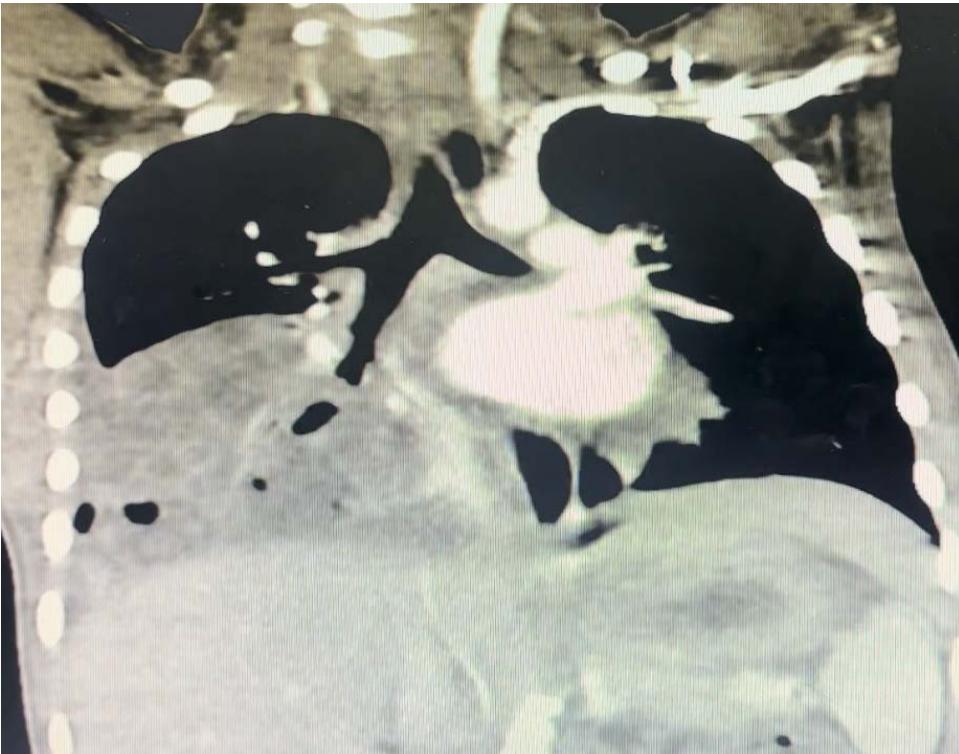
- # Investigation

- U/S bedside and official 26/4/67



Investigation

- CT- Chest with contrast 26/4/67



Investigation

26/4/67

Hb(g/dL)	5.9
Hct(%)	17.5
WBC(cell/cu.mm)	9,300
PMN(%)	67
L(%)	20
Platelet(cells/uL)	789,000
MCV(fL)	54
Reticulocyte	1
Correct reti	0.43

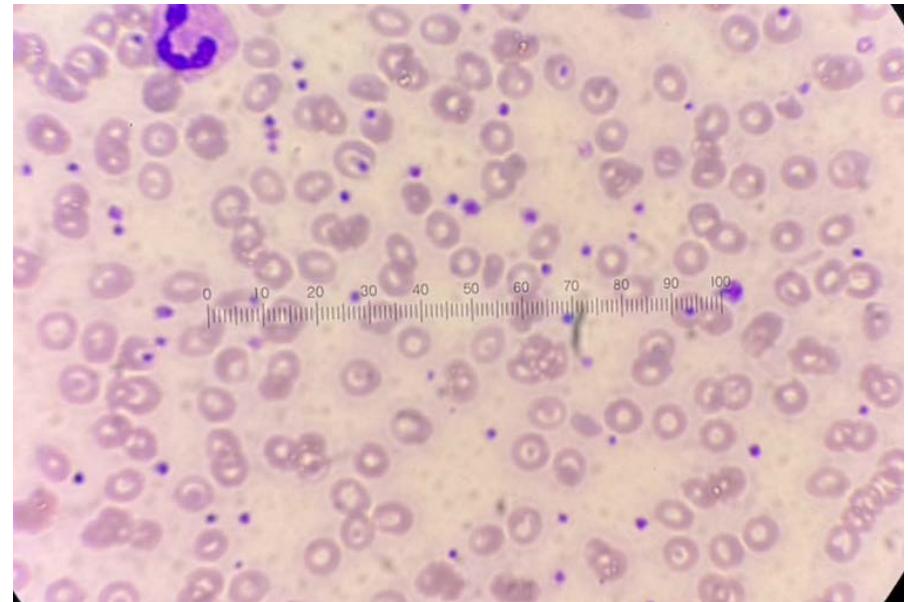
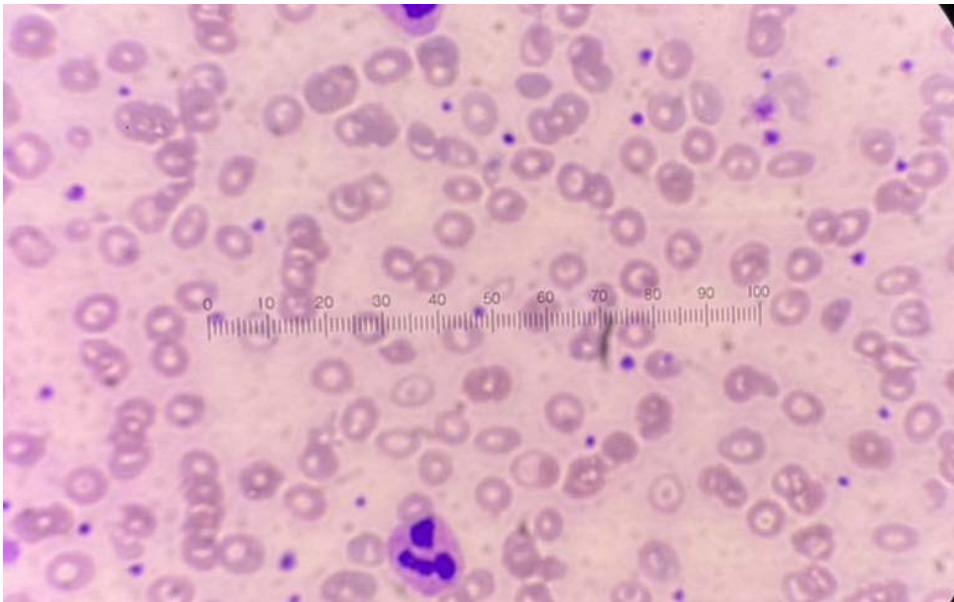
AST(U/L)	139
ALT(U/L)	132
Total protein(g/dL)	6.39
Albumin(g/dL)	2.69
ALP(U/L)	199
TB/DB(mg/dL)	0.25/0.21
LDH(U/L)	392
Ferritin(ng/ml)	583

Na(mmol/L)	137.1
K(mmol/L)	3.5
Cl(mmol/L)	103.3
CO ₂ (mmol/L)	20.4



Investigation

- Peripheral blood smear



RBC : Hypochromic microcytic anemia, poikiocytosis 2+, anisocytosis 1+,target 1+, schitocyte few

WBC : 2 cells/oil field, PMN predominate, not seen band form, no toxic granule/no vaculoliztion

+ Platelet : Increase platelet numbers, normal size and strain.

Investigation

Cold agglutination test : Negative

Direct coomb test : Weakly positive

Indirect coomb test : Negative

Hb typing : Pending





Provisional Diagnosis

- Severe influenza pneumonia with right parapneumonic effusion with necrotizing pneumonia
- Anemia due to iron deficiency anemia and severe infection





Management

Specific treatment

- Add Vancomycin
- Consult CVT and intervention

Supportive treatment

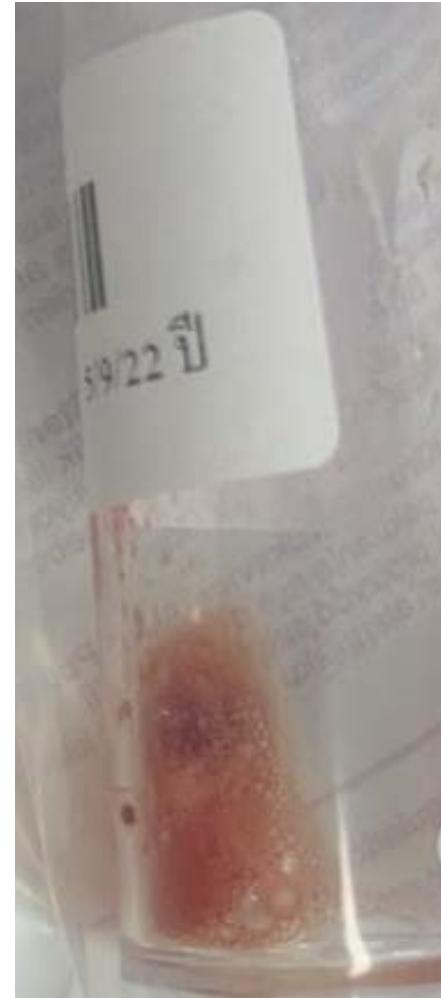
- Respiratory support
- Intravenous fluid hydration
- Antipyretic drug
- LRPRC iv transfusion

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Investigation

- Pleural tapping

Pleural fluid for 16S ribosome : Pending



Management of pneumonia with parapneumonic effusion

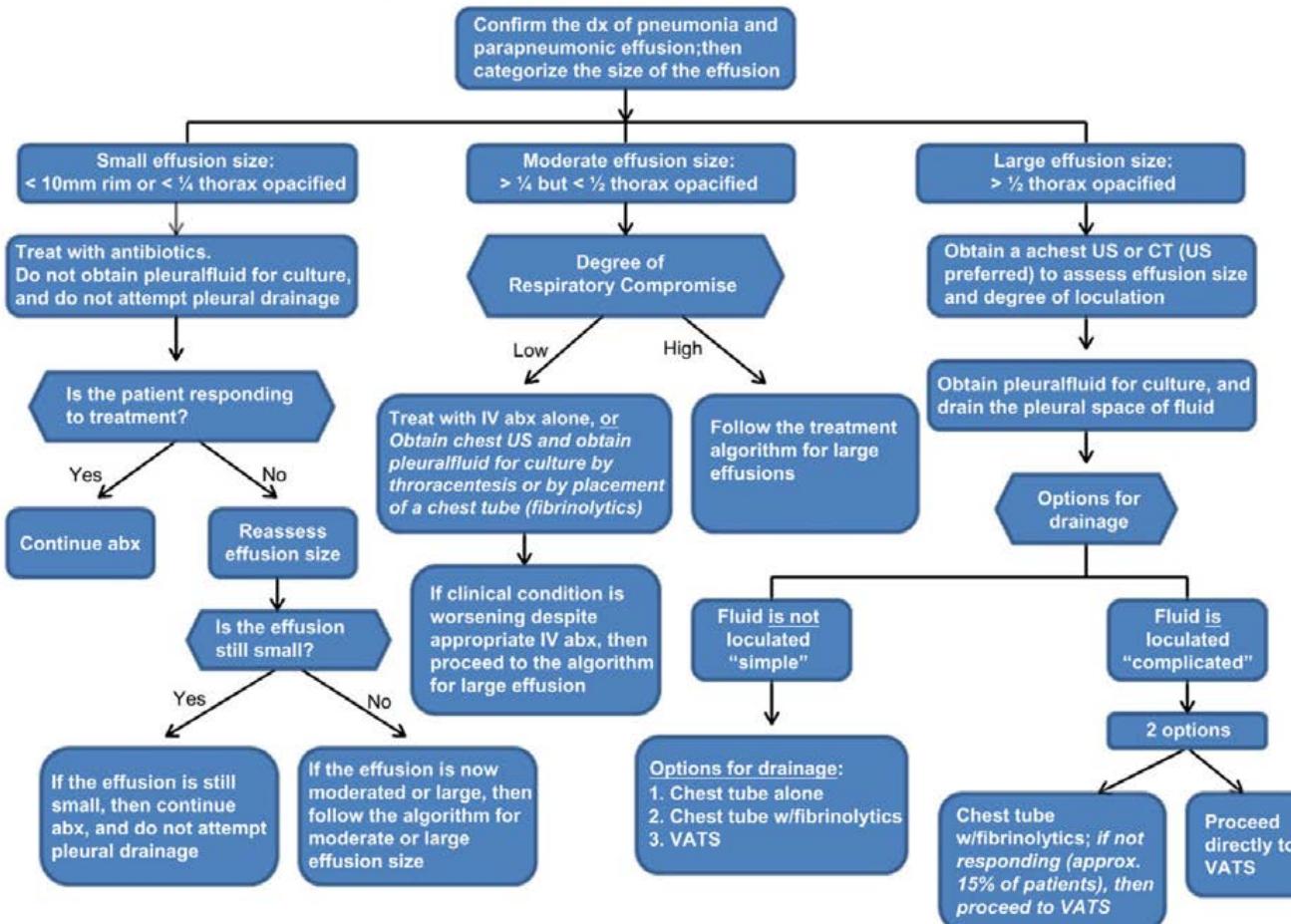
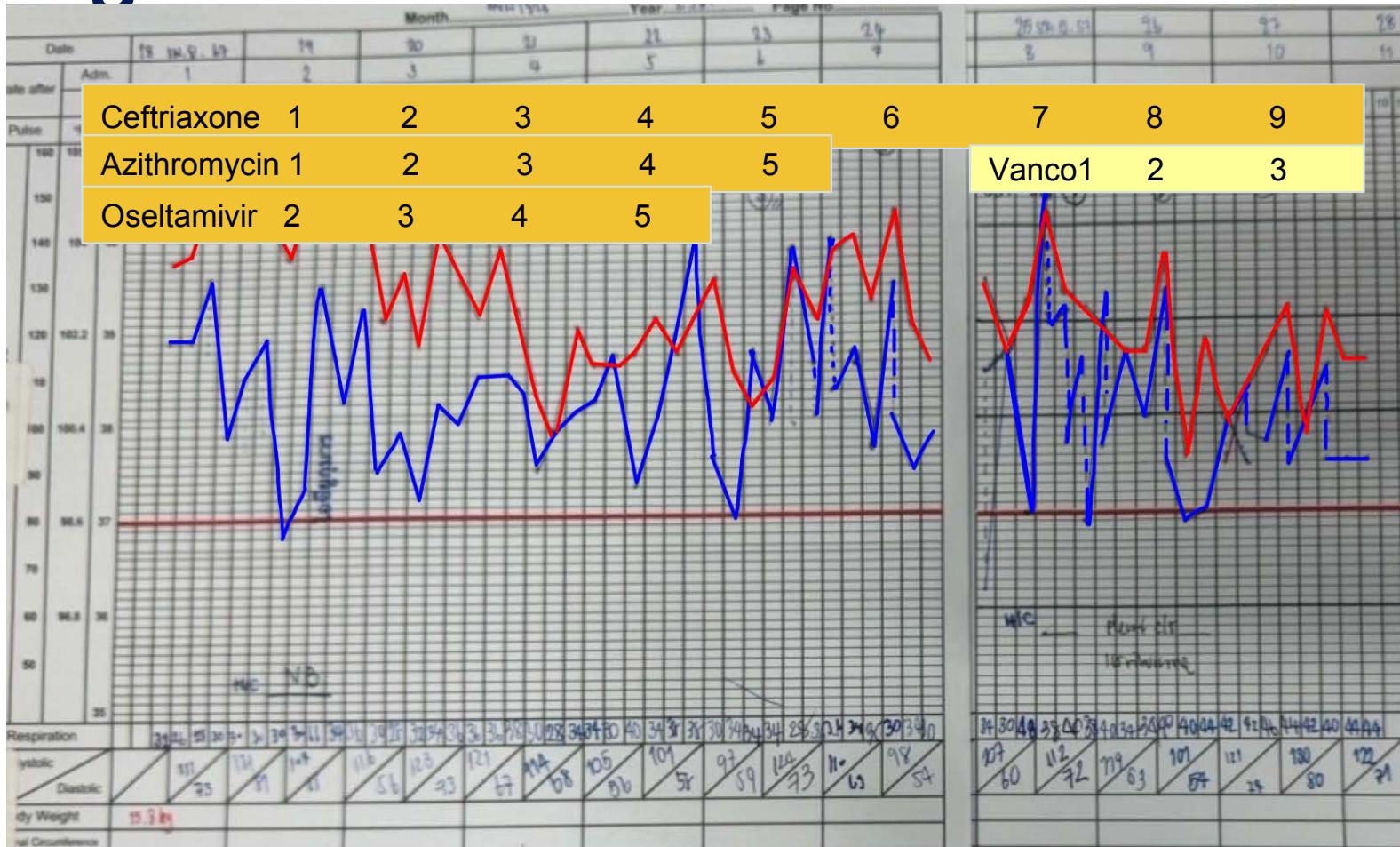


Figure 1. Management of pneumonia with parapneumonic effusion; abx, antibiotics; CT, computed tomography; dx, diagnosis; IV, intravenous; US, ultrasound; VATS, video-assisted thoracoscopic surgery.

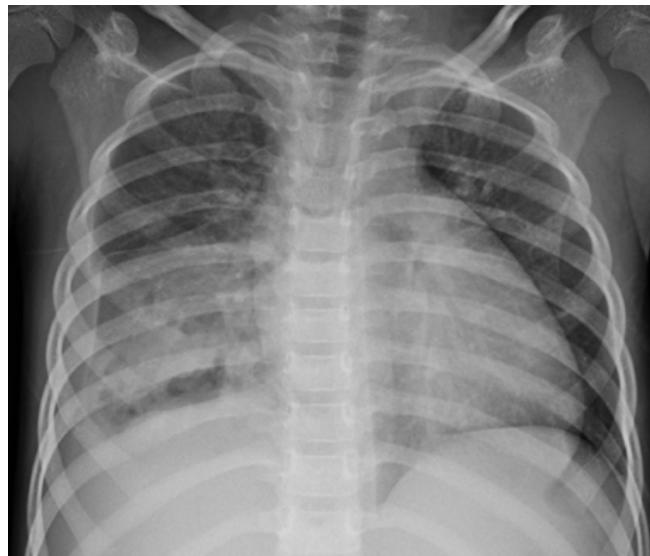
Progression



Progression



25/4/67



26/4/67



27/4/67



Further investigation ?

- **Flexible bronchoscopy and bronchoalveolar lavage [D1+/-]**

อาจพิจารณาทำ กรณีไม่สามารถเก็บน้ำเยื่อหุ้มปอดตรวจได้

1. ผู้ป่วยที่อาการรุนแรง หรือไม่ตอบสนองต่อการรักษา
2. ผู้ป่วยภูมิคุ้มกันบกพร่อง
3. สงสัยสิ่งแปรปรวนในหลอดลมซึ่งเป็นสาเหตุของการติดเชื้อที่ปอด





Take home message

- The typical duration of fever in an influenza infection typically persists for only 3 to 4 days.
- Leukopenia may manifest in both viral infections and severe bacterial infections.
- In cases where parapneumonic effusion is suspected, pleural tapping should be performed, except in instances where the volume of pleural fluid is very small (less than 10 mm on lateral decubitus).
- When clinical symptoms of pneumonia fail to improve, consideration should be given to factors such as the pathogen involved, immune status of the patient, antibiotic regimen, and potential complications such as loculated effusion, necrotizing pneumonia, and lung abscess.

