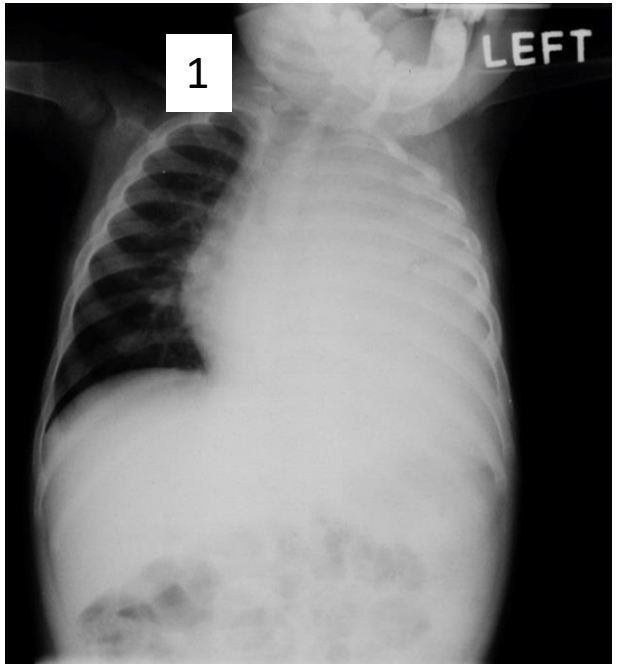
MMed and DCH Lectures

Common paediatric problems I

March 15, 2021

Prof Trevor Duke

A white out of the chest can only be 4 things: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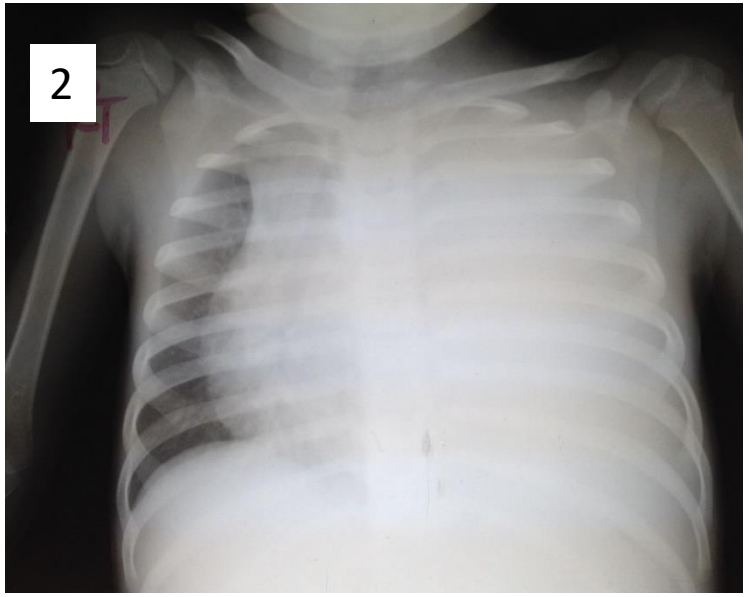
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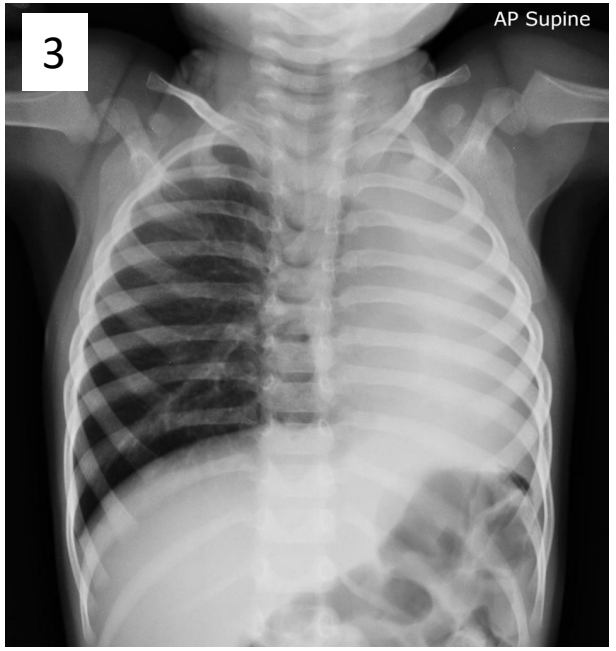
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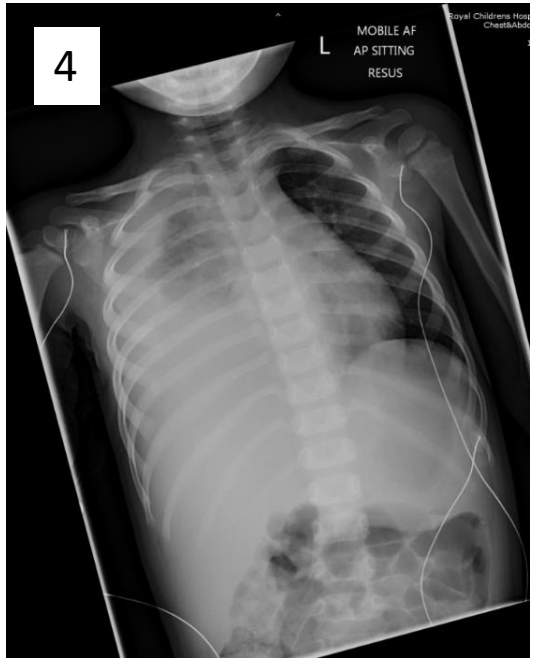
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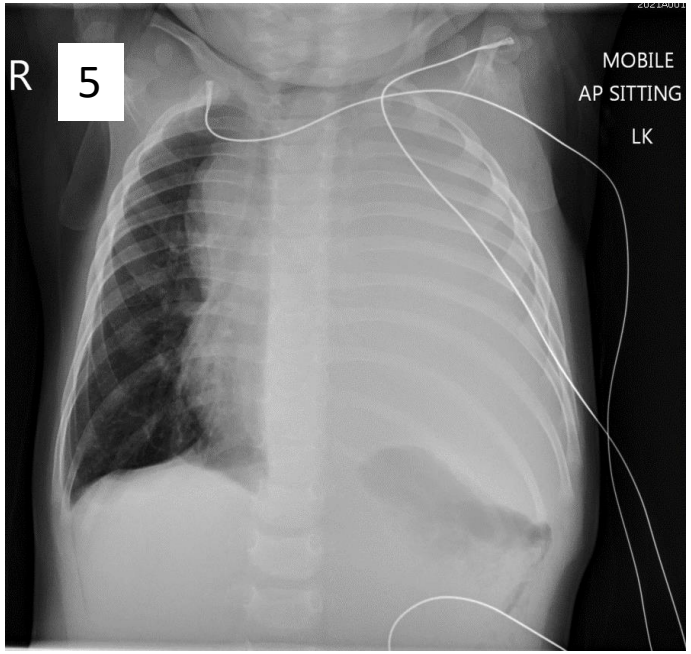
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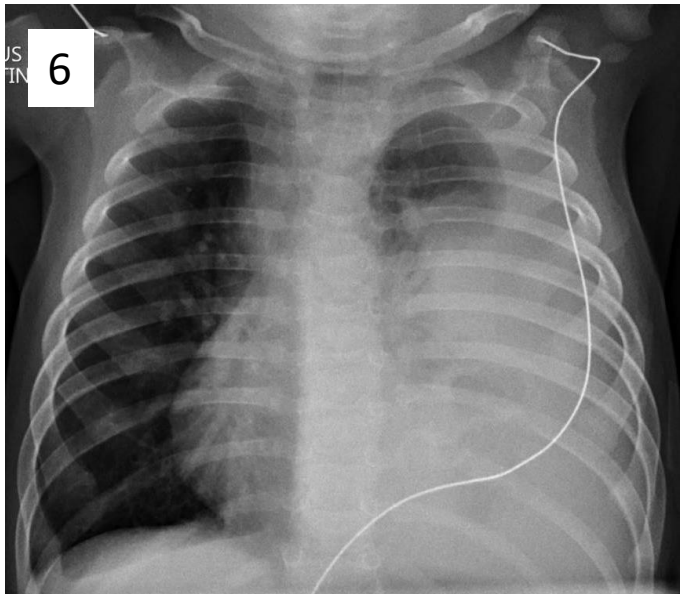
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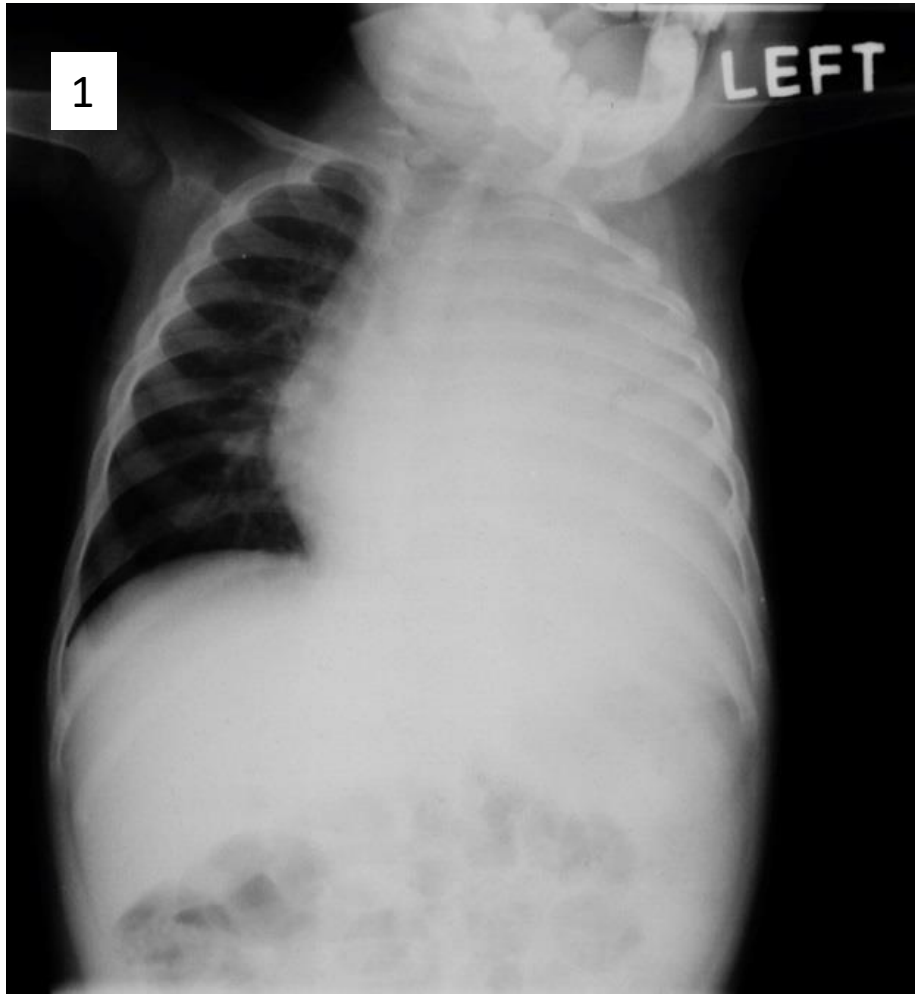
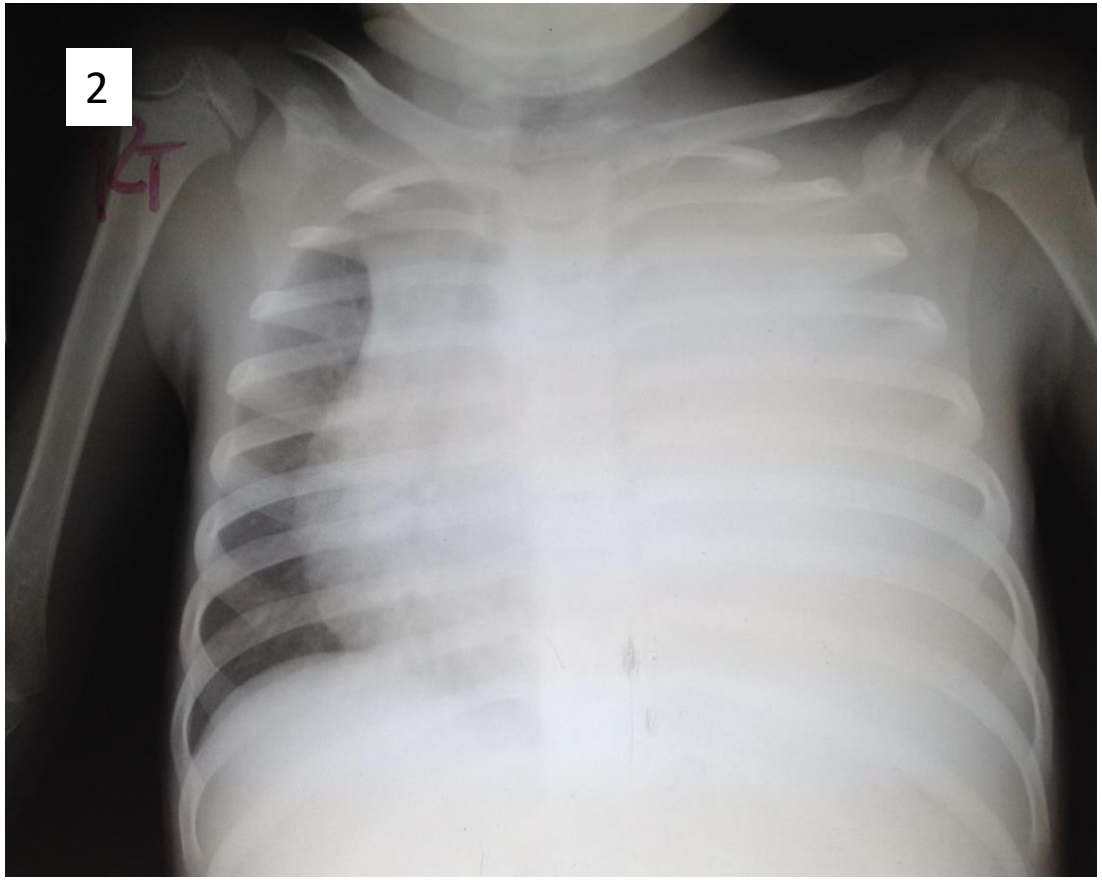
Acute management

- At triage, assess for emergency signs
- 2 month old girl, treated as moderate pneumonia
- Apnoea, cyanosis, high fever, gasping
- Near respiratory arrest→ percutaneous drainage → resuscitation

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TB pleural effusion – pathophysiology

- Paucibacillary mycobacterial infection within the pleural space
- Acquired from the initial parenchymal lesions
- Immunological response, initially neutrophil, but quickly lymphocyte
- Caseating granulomas form on pleura
- Inflammation → ↑ pleural fluid formation
- Lymphatic obstruction ↓ pleural fluid removal
- Parenchymal disease (50%) almost always on the same side

TB pleural effusion

- Confirmed: pleural fluid *Mycobacterium tuberculosis* on culture (50%), AFB (<10%), Gene X-pert
- Presumed: pleural biopsy showing caseating granulomas
- Probable: **Lymphocytic predominant exudate (>75%)**, *plus* ↑↑protein (>50g/L), **↑↑adenosine deaminase (ADA; 40-60 U/L)**, ↑↑LDH (>500 IU/L)
- If immune suppressed (HIV) – lower pleural fluid lymphocyte count, greater chance of isolating TB

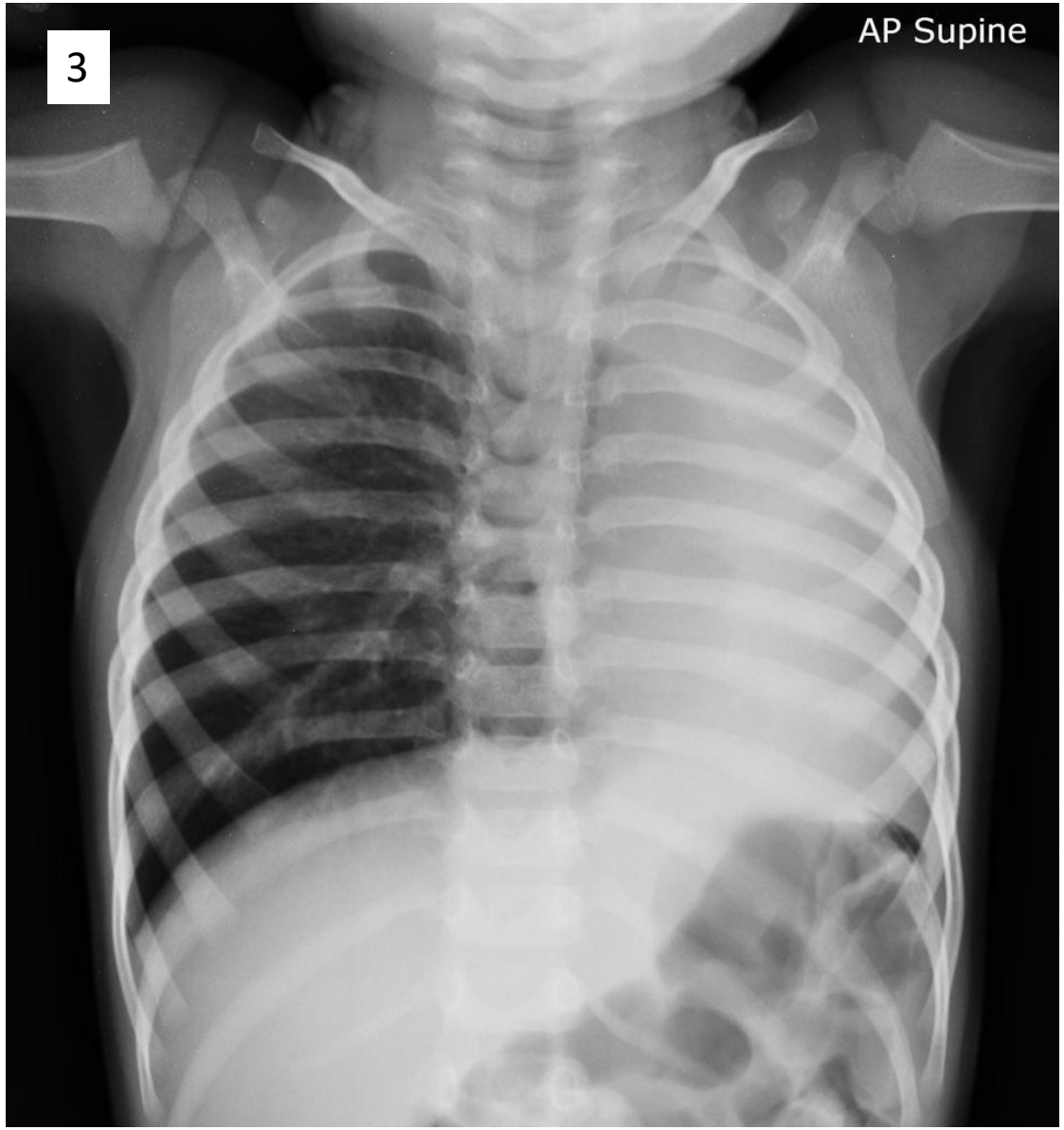
Pleural biopsy – Abrams needle

TB pleural effusion - stages

1. Exudative – uncomplicated simple effusion
2. Fibrinopurulent - empyema
3. Fibrous thickening – ultrasound or CT (“Fibrothorax”)
   - Micronodules in lung interstitium, with interlobular septal thickening, suggesting lymphatic spread of TB

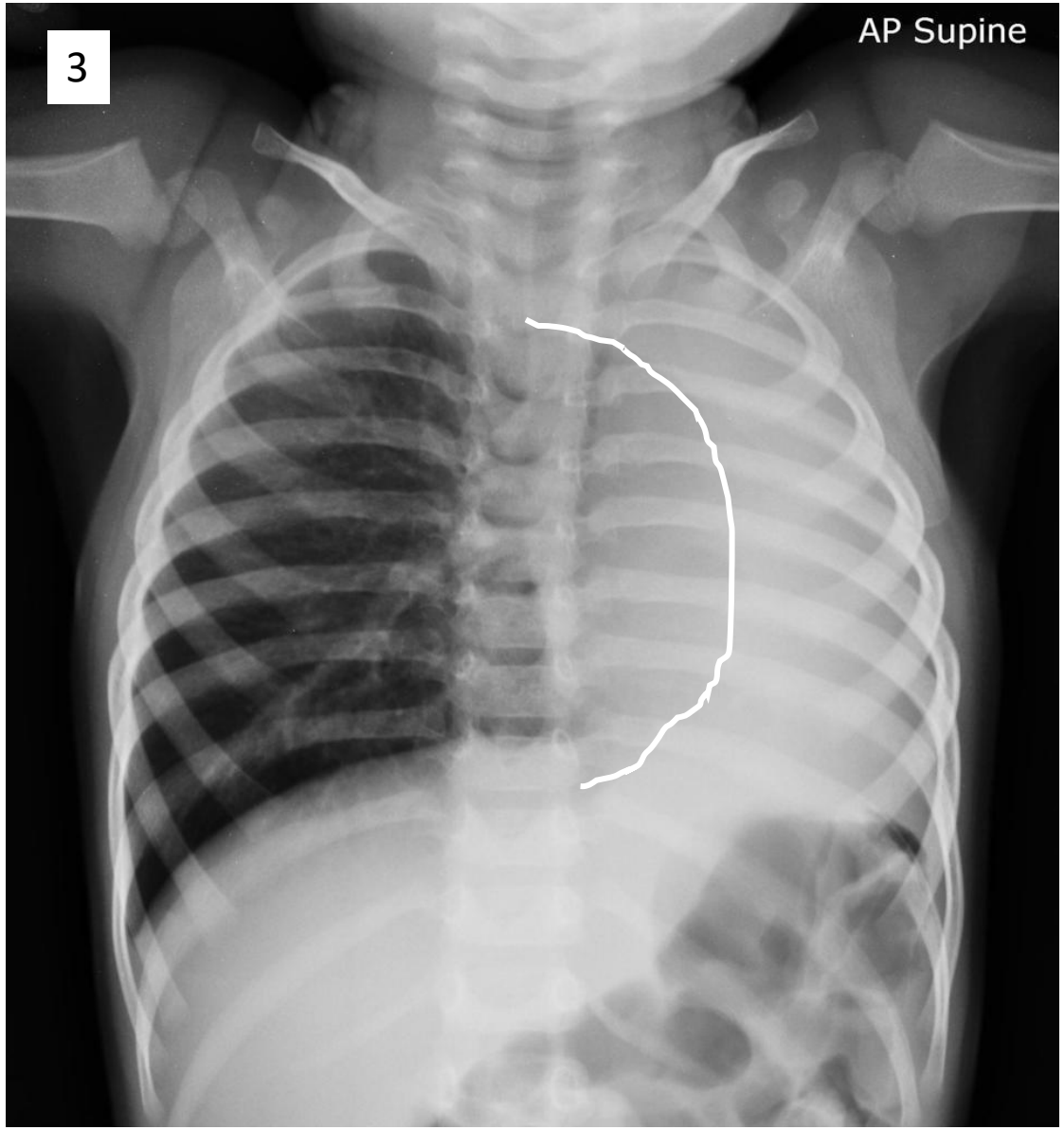
TB pleural effusion

- Successful treatment?
  - Improvement begins 1-2 weeks, reabsorption of pleural fluid within 6 weeks.
  - May take up to 2-4 months…
  - Corticosteroids reduce the risk of risk of residual effusion at 8 weeks and 6 months, but long-term lung function unchanged, and patients treated with corticosteroids have higher complication rate.



- 11 months old with sudden onset coughing and severe respiratory distress
- Had been eating chewing on a necklace

Aust J Gen Practice 2019; 48: 171-174



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Aust J Gen Practice 2019; 48: 171-174

Chart 3. How to manage a choking infant

Back slaps

- Lay the infant on your arm or thigh in a head-down position.
- Give five blows to the middle of the infant's back with the heel of the hand.
- If obstruction persists, turn the infant over and give five chest thrusts with two fingers on the lower half of the sternum.

Chest thrusts

- If obstruction persists, check infant's mouth for any obstruction that can be removed.
- If necessary, repeat sequence with back slaps.

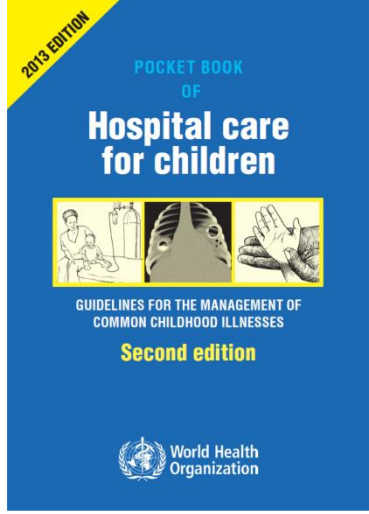
Chart 3. How to manage a choking child (> 1 year of age)

Back blows to clear airway obstruction in a choking child

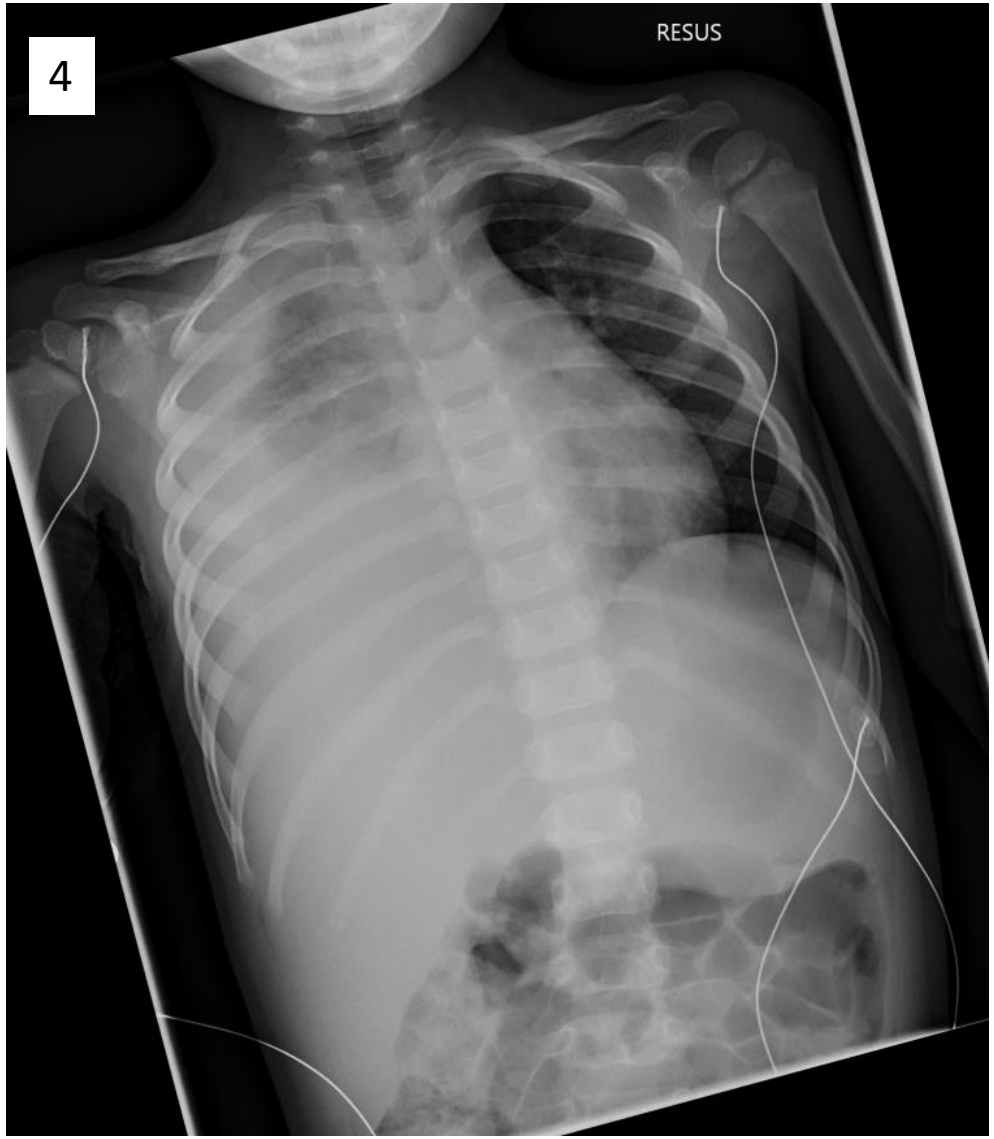
Administer back blows to clear airway obstruction in a choking child.

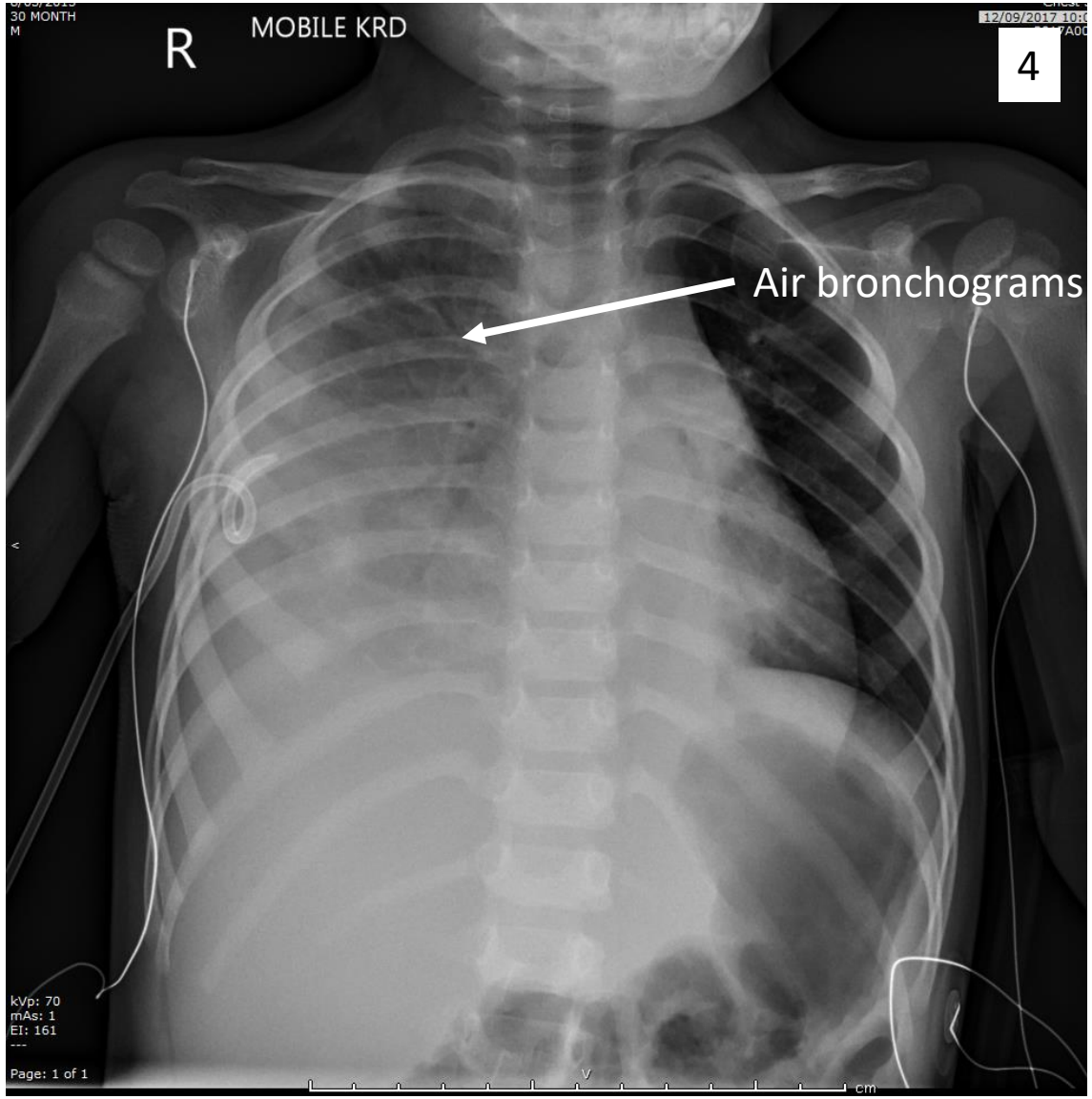
- Give five blows to the middle of the child's back with the heel of the hand, with the child sitting, kneeling or lying.
- If the obstruction persists, go behind the child and pass your arms around the child's body; form a fist with one hand immediately below the child's sternum; place the other hand over the fist and pull upwards into the abdomen (see diagram); repeat this Heimlich manoeuvre five times.
- If the obstruction persists, check the child's mouth for any obstruction that can be removed.
- If necessary, repeat this sequence with back blows.

Heimlich manoeuvre for a choking older child



- 3 year old boy, previously well
- 6 days of coryza, cough, high fever
- Seen in ED, primary care – just a virus
- Increased lethargy, 1 day of tachypnoea



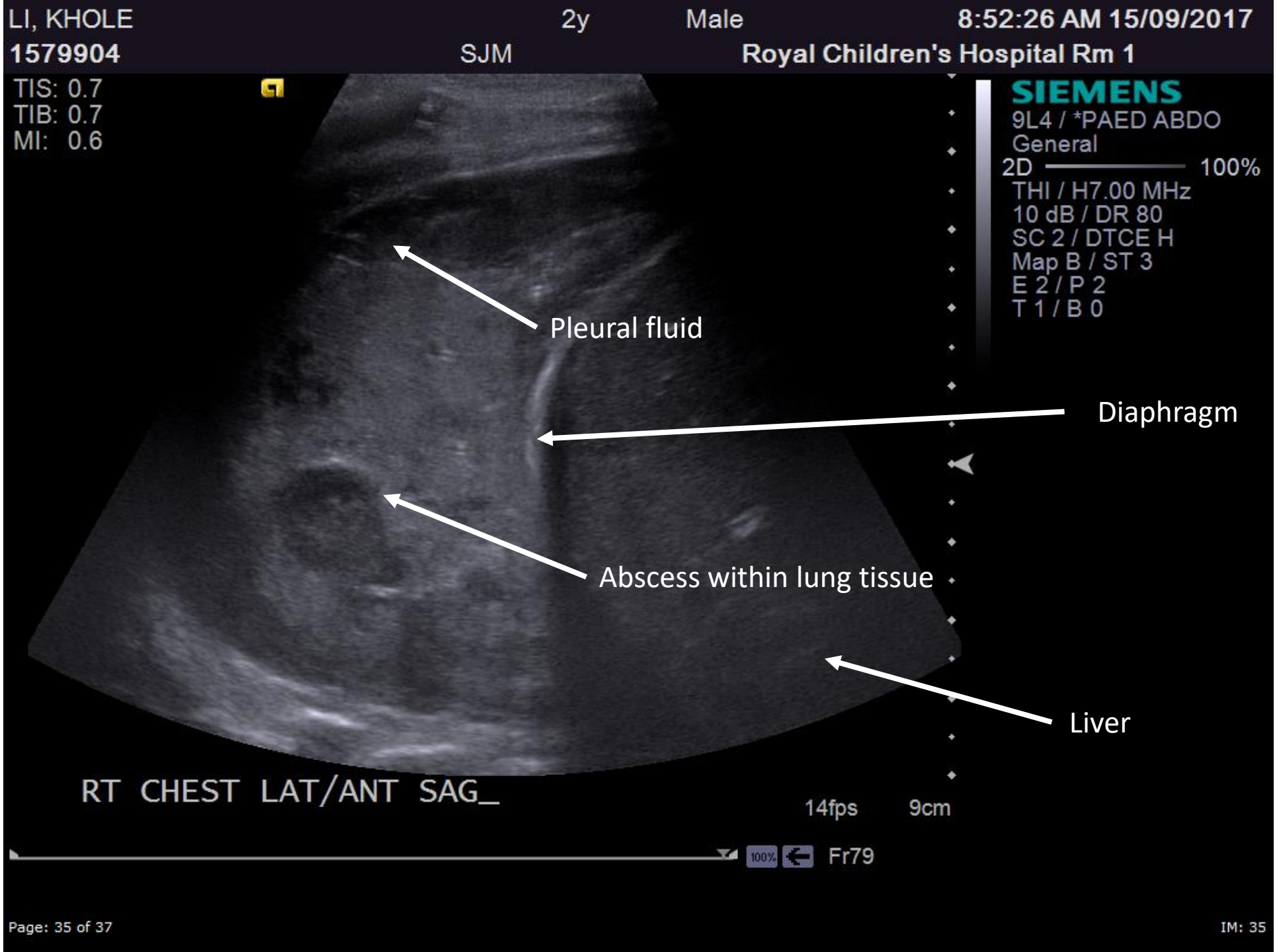


Pleural aspirate:
160ml thick serous pleural fluid

WCC 11000, 80% neutrophils

Gram stain – Gram positive cocci
GeneXpert negative
ZN stain negative

Antibiotics: flucloxacillin and gentamicin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10 dB / DR 80
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Map B / ST 3
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T 1 / B 0
Pleural fluid
Diaphragm
Abscess within lung tissue
Liver
RT CHEST LAT/ANT SAG_
14fps
9cm
100%
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Page: 35 of 37
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Necrotising pneumonia

- X-ray changes – pneumatoceles, cavitation, abscess formation
- US or CT may show earlier

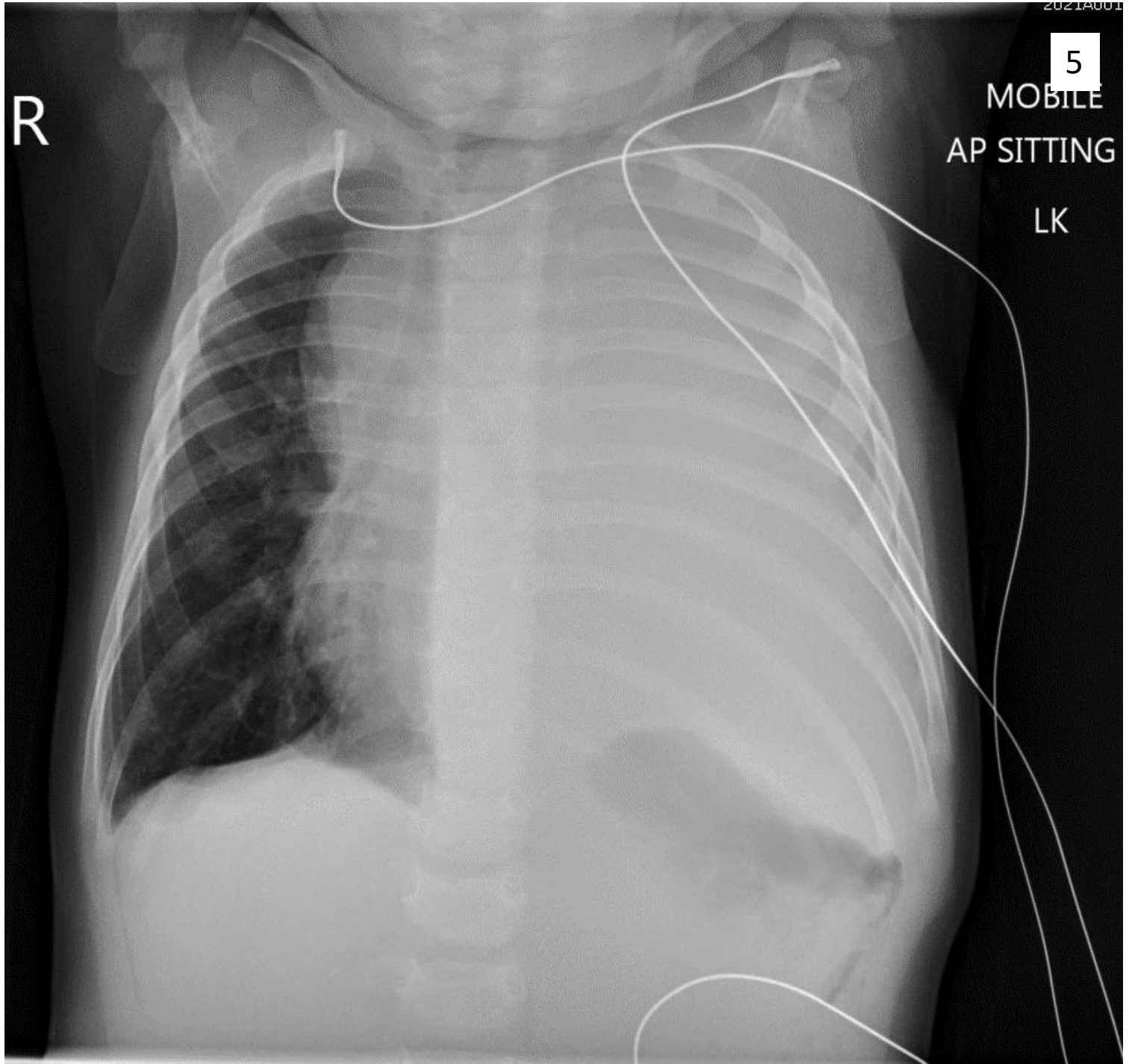
- **Streptococcus pneumoniae**
- **Staphylococcus aureus / MRSA**
- **Group A streptococcus**
- *M. Tuberculosis*
- Gram negatives (inc. Mellioidosis)
- Anaerobic

Choice of antibiotics for necrotising pneumonia

- Empirical
  - Cover Staph and Streptococcus
  - Cefotaxime and flucloxacillin OR Benzylpenicillin plus gentamicin +/- clindamycin
- Refine when cultures available
  - Sensitive pneumococci: high dose 4-hourly penicillin
  - Resistant pneumococci: ceftriaxone
  - MRSA: linezolid, rifampicin, clindamycin. Vancomycin poor penetrance into alveolar lining fluid

Duration of antibiotics

- 21 days - if necrotizing pneumonia
- Change to oral when:
  - Afebrile at least 48 hours
  - Respiratory distress settled
  - Enteral feeds tolerated
  - Inflammatory markers normalised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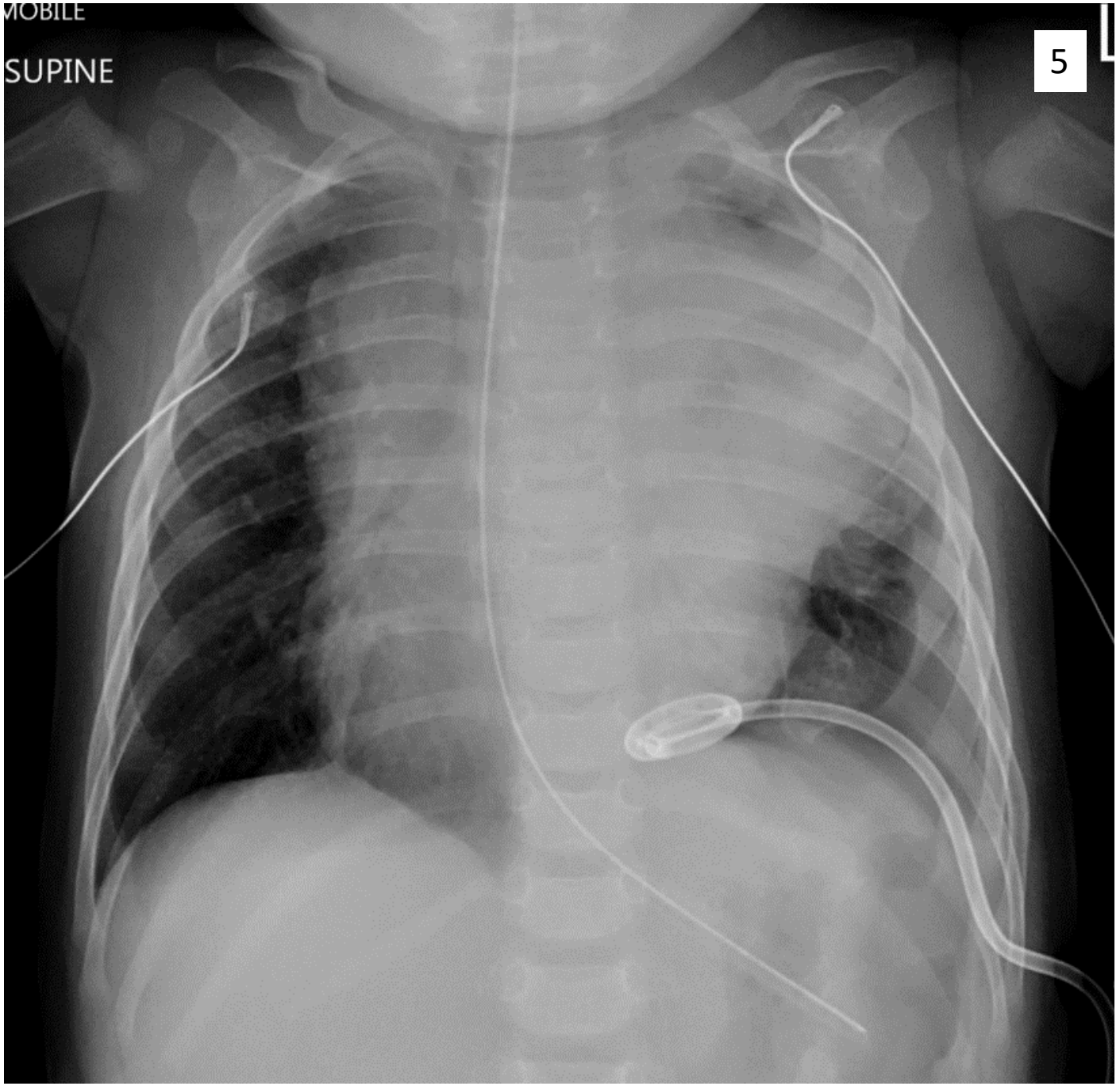
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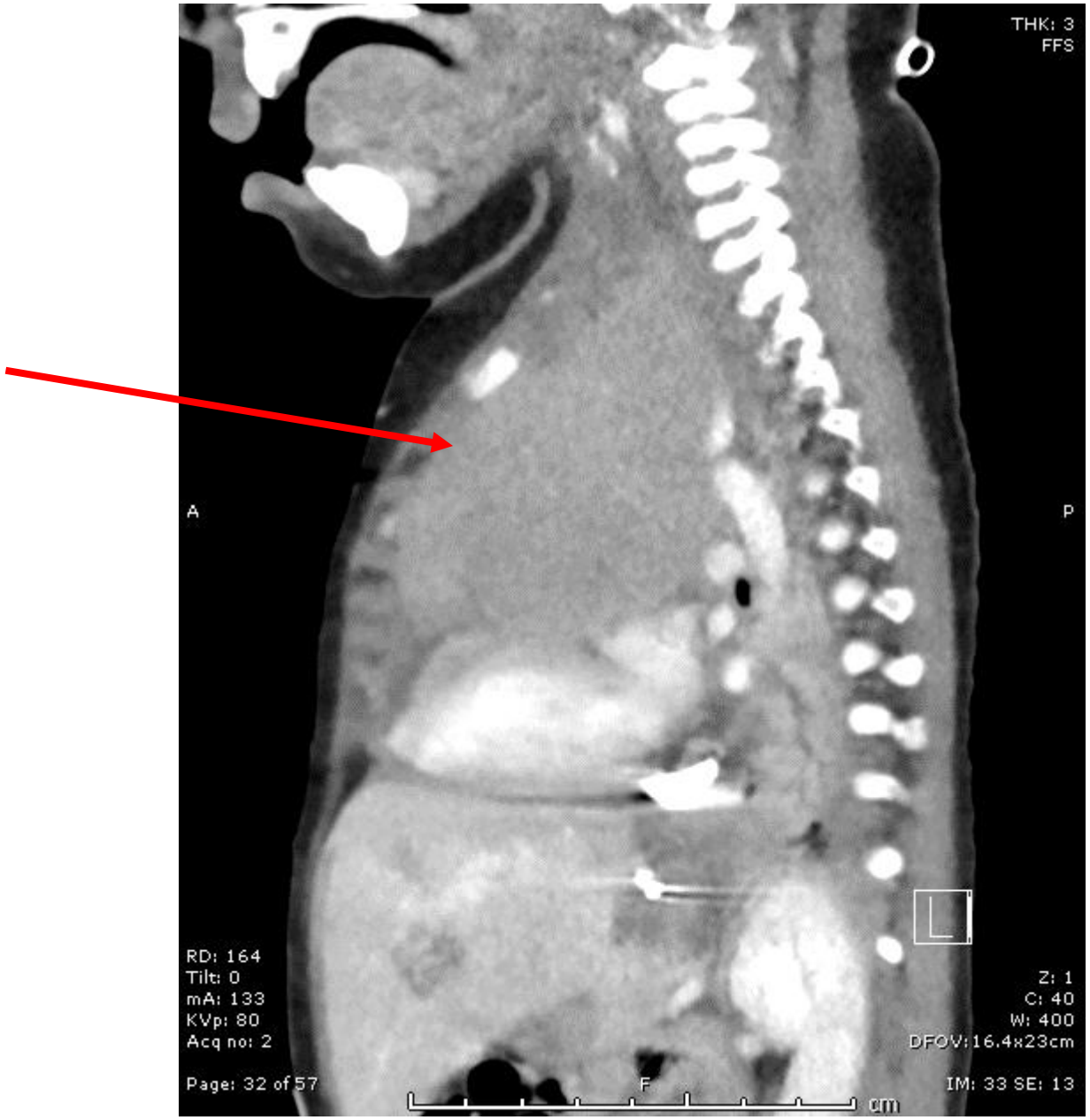
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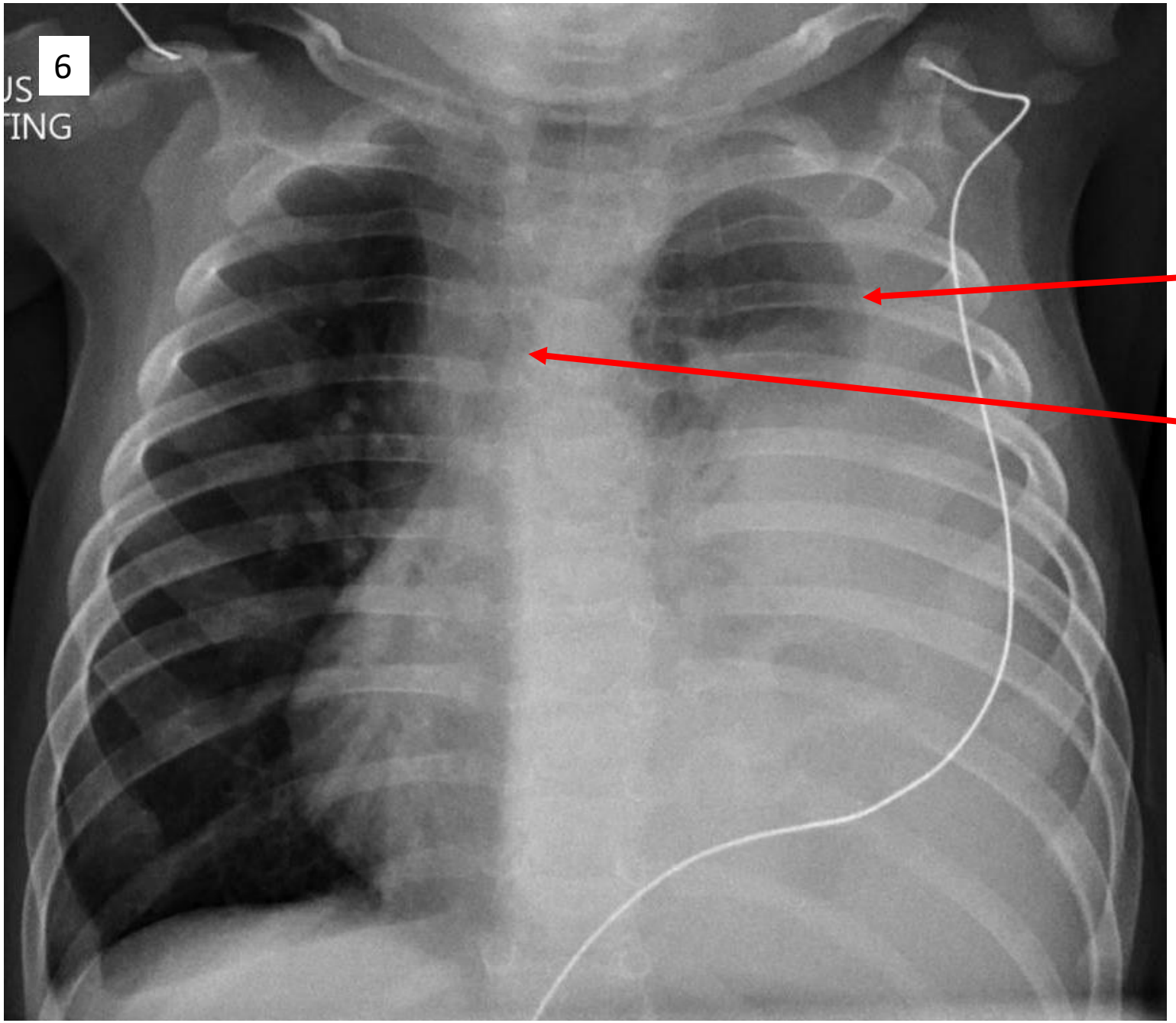
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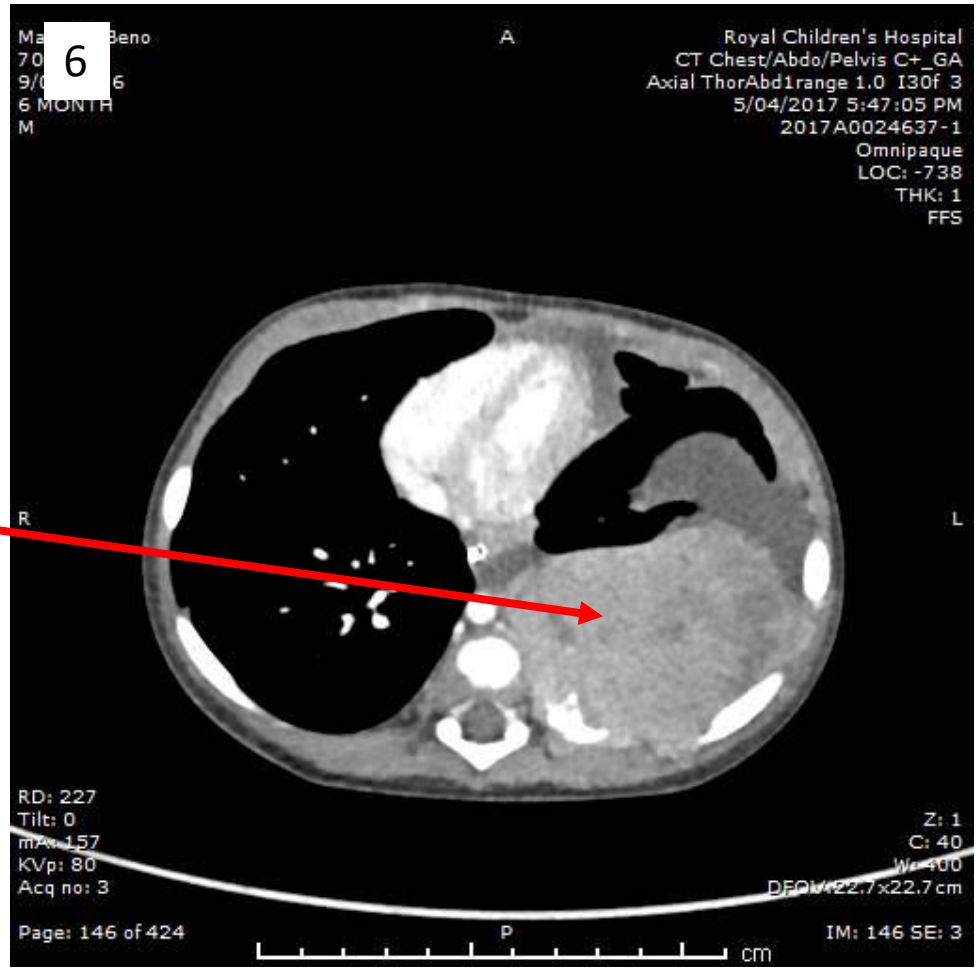
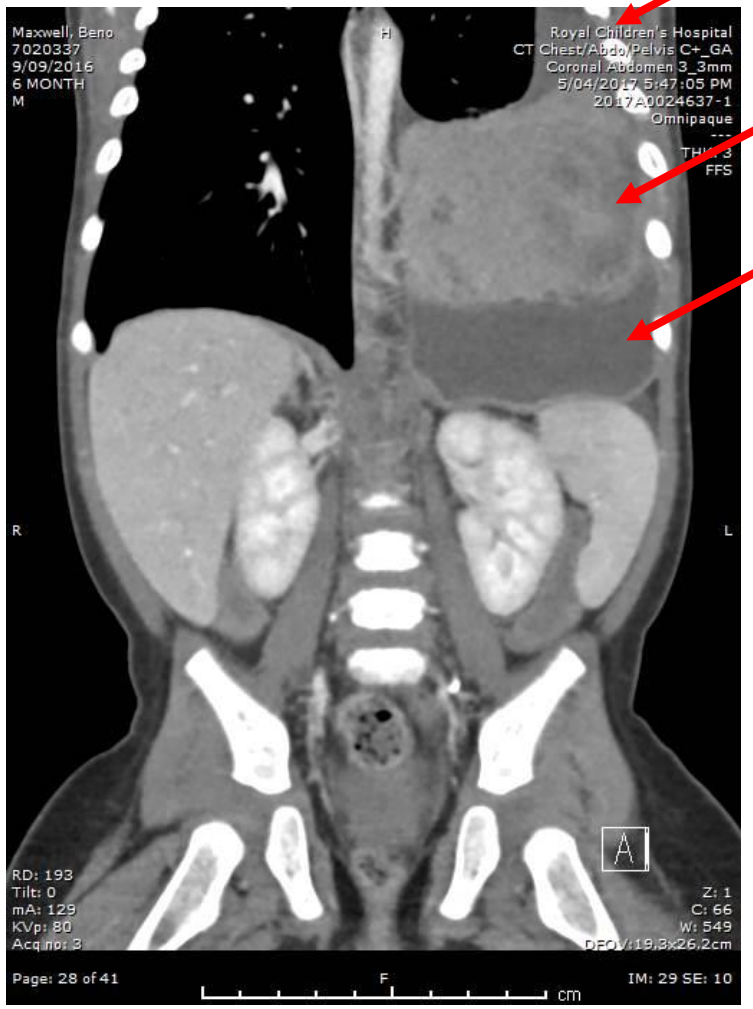
Meniscus sign
Tracheal deviation
away from the lesion



Mass



Effusion

Mass

Effusion

A white out of the chest can only be 4 things:

1. Consolidation
   - Pneumonia
2. Fluid
   - Effusion, pus (empyema), blood (haemothorax), lymph (chylothorax)
3. Collapse
   - Foreign body, mucous plug, extrinsic airway compression, fibrothorax
4. Mass
   - Thymic tumour (T-cell lymphoma), Germ cell tumour (Teratoma), lymph node mass, other

Cause	Clinical: inspection / palpation	Clinical: percussion	Clinical: auscultation	Radiographic: Mediastinal shift	Radiographic
Consolidation	Trachea mid-line	Dullness	Bronchial breath sounds	Midline	Air bronchograms
Fluid	Trachea deviated away from the lesion	Stony dullness	Absent breath sounds	Away from the lesion	Dense opacity / no aeration, fluid level, meniscus sign
Collapse	Trachea deviated towards the lesion	Dullness	Absent breath sounds	Towards the lesion	Dense opacity in a “sail shape” of a collapsed lobe or lung Contralateral hyperinflation
Mass	Trachea deviated away from the lesion	Dullness	Absent breath sounds	Enlarged mediastinum, shape of mass	Dense opacity / no aeration, circumscribed shape +/- Calcification