

# **Pediatric Cardiopulmonary Case Presentations**

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**This Presentation is Approved  
for 1 CRCE Credit Hour**



# Learning Objectives

- **Presented with patient scenarios, including relevant data, identify important diagnostic findings and explain their implications.**

# Acknowledgment

- **Information in these cases are based on Pediatric Cases in Emergency Medicine and are used with permission. The cases have been modified and updated.**

- **Editors:**

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# Case 1

# Past Medical History

- **RAD**
- **Congenital Heart Block w/ pacemaker**
- **Oxygen**

# Current Physical Exam

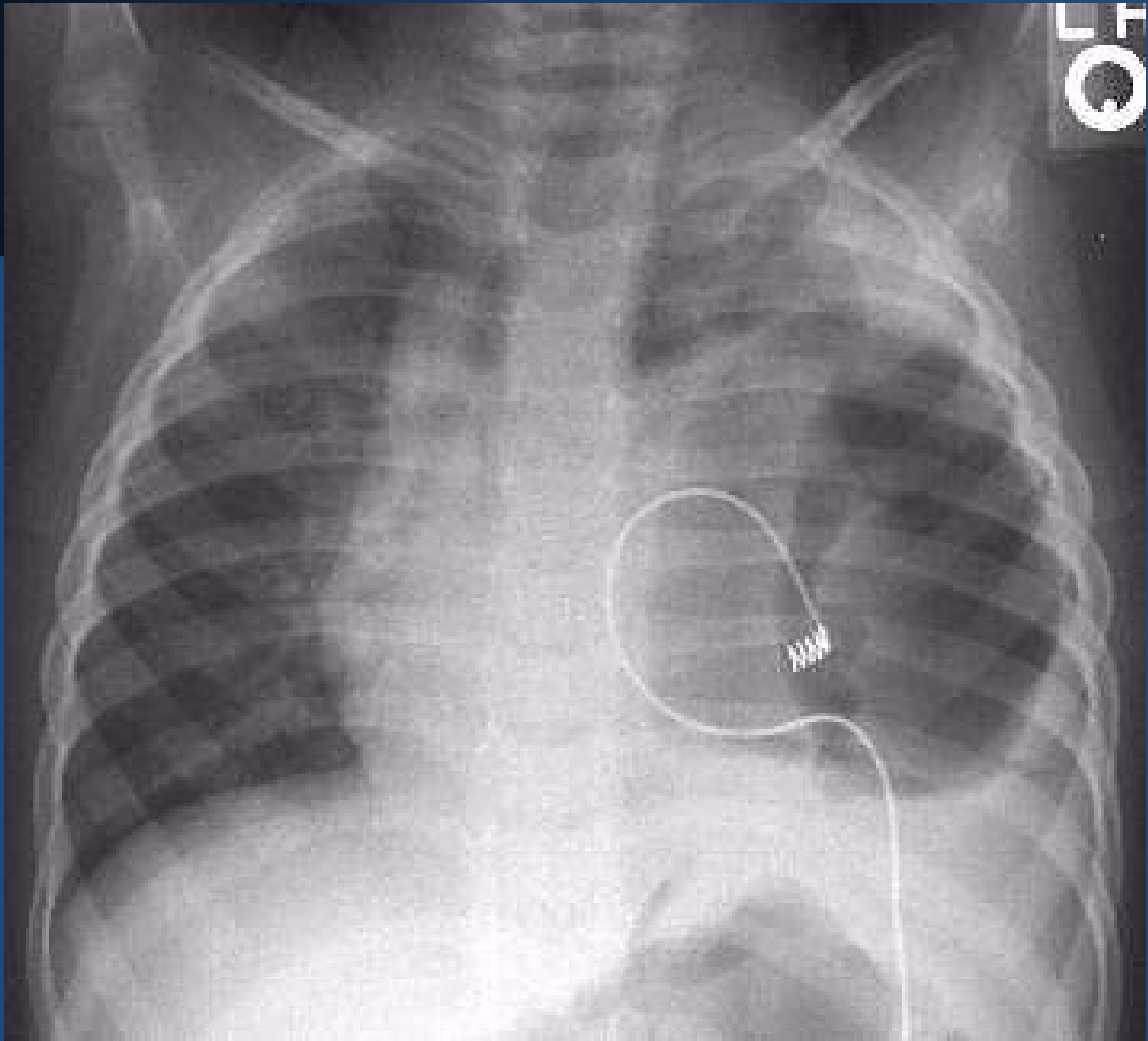
- **HEENT (Head, Eyes, Ears, Nose, and Throat)**
- **Temp 36.6 Ax**
- **Pulse 110**
- **RR 32**
- **BP 112/70**
- **Weight 10.12 kg**
- **SAT 98**

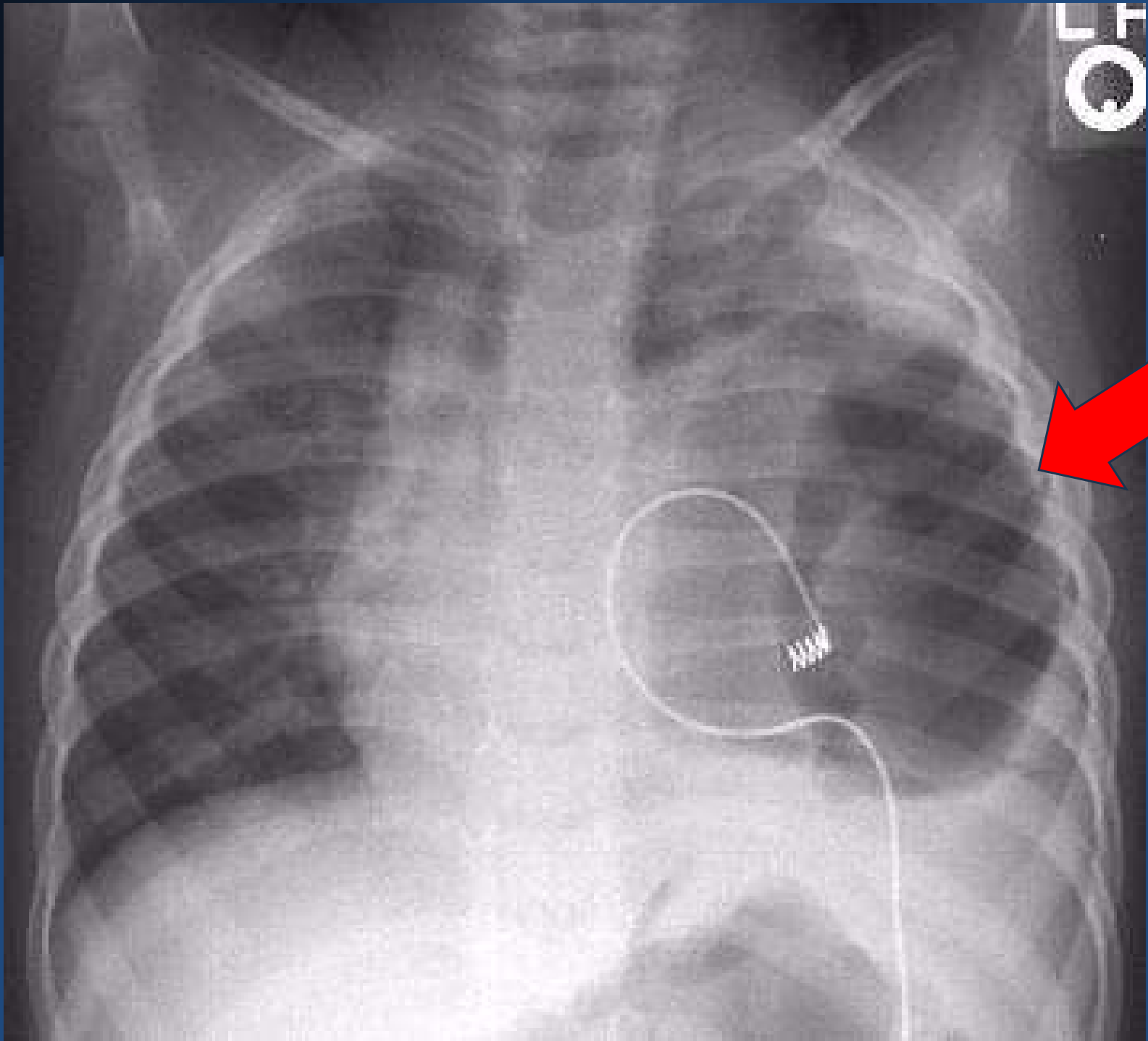
# Current Physical Exam

- **Capillary refill = 2 sec**
- **Skin turgor = good**

## ➤ **Labs**

- |                             |                             |
|-----------------------------|-----------------------------|
| ➤ <b>WBC 8.9</b>            | ➤ <b>Na 132</b>             |
| ➤ <b>Segs 56</b>            | ➤ <b>K 4.2</b>              |
| ➤ <b>WBC 32</b>             | ➤ <b>Cl 100</b>             |
| ➤ <b>Mono 12</b>            | ➤ <b>HCO<sub>3</sub> 21</b> |
| ➤ <b>Hgb 12</b>             | ➤ <b>BUN 14</b>             |
| ➤ <b>Hct 38</b>             | ➤ <b>Cr 0.7</b>             |
| ➤ <b>platelets adequate</b> | ➤ <b>Glucose 94</b>         |





# Key Takeaways

- **Avoid BVM**
- **ET with gentle ventilation**
- **NG or OG**

# Additional Clinical Pearls

- **POCUS (point of care ultrasound)**
- **ECMO**
- **Surgery**

# Case 2

# Current Physical Exam

- **Temp 36.8**
- **Pulse 200 (crying)**
- **RR 28 (crying)**
- **SAT 99 RA**
- **BS Mild wheeze w/ possible mild stridor**

# Treatment

➤ **Albuterol**



# Outcome

➤ **Bronch**

# Key Takeaways

- **CXR - Particles may not be visible**
- **Wheezing and stridor**
- **Indicates bronch**
- **Can cause PNA**

# Additional Clinical Pearls

- **Silent aspiration common**
- **Right Lung most often**
- **Upper lobe or posterior**
- **Risk factors**
- **Chemical vs bacterial**
- **Bronchoscopy**
- **Prevention**
- **Antibiotics**

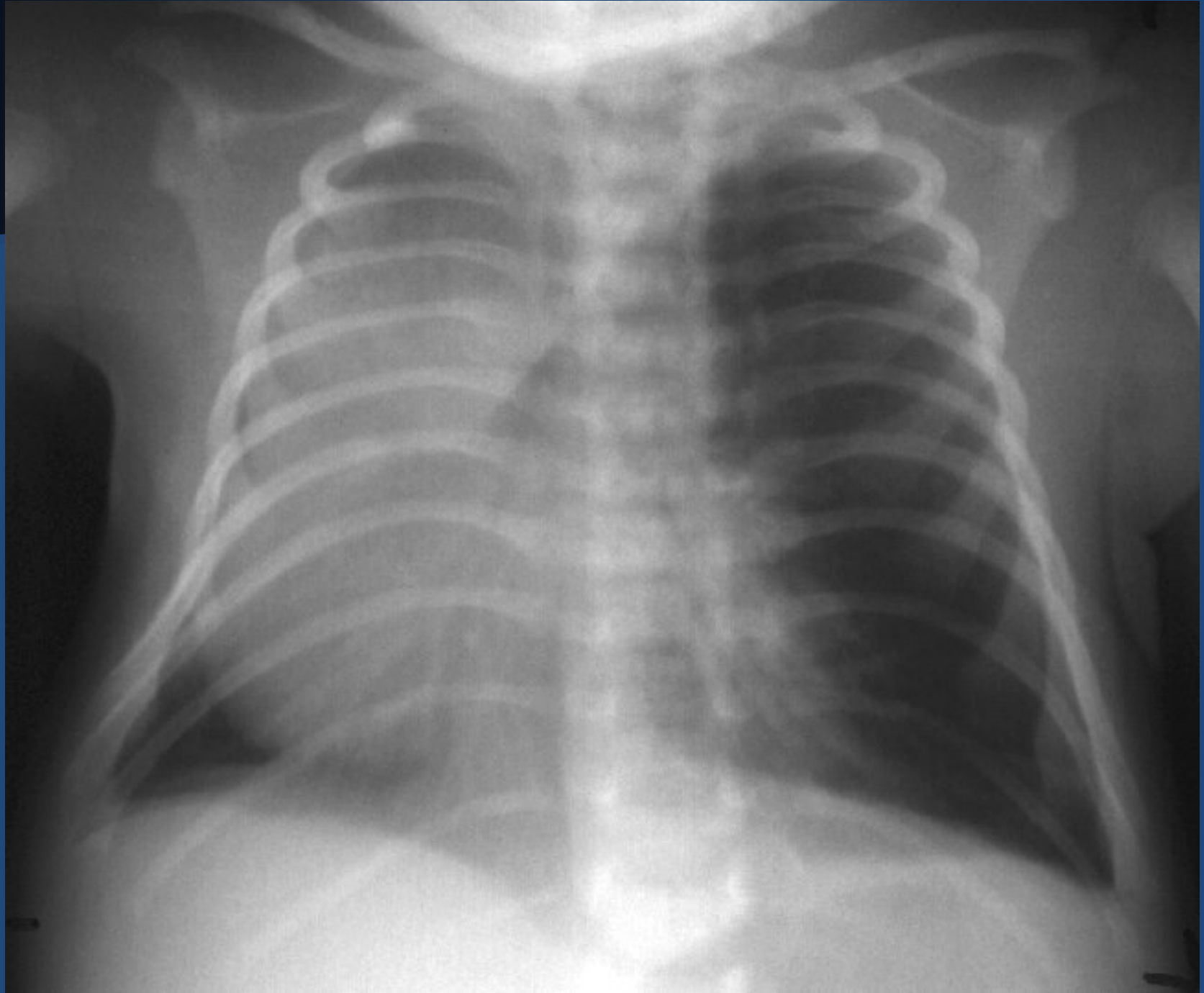
# Case 3

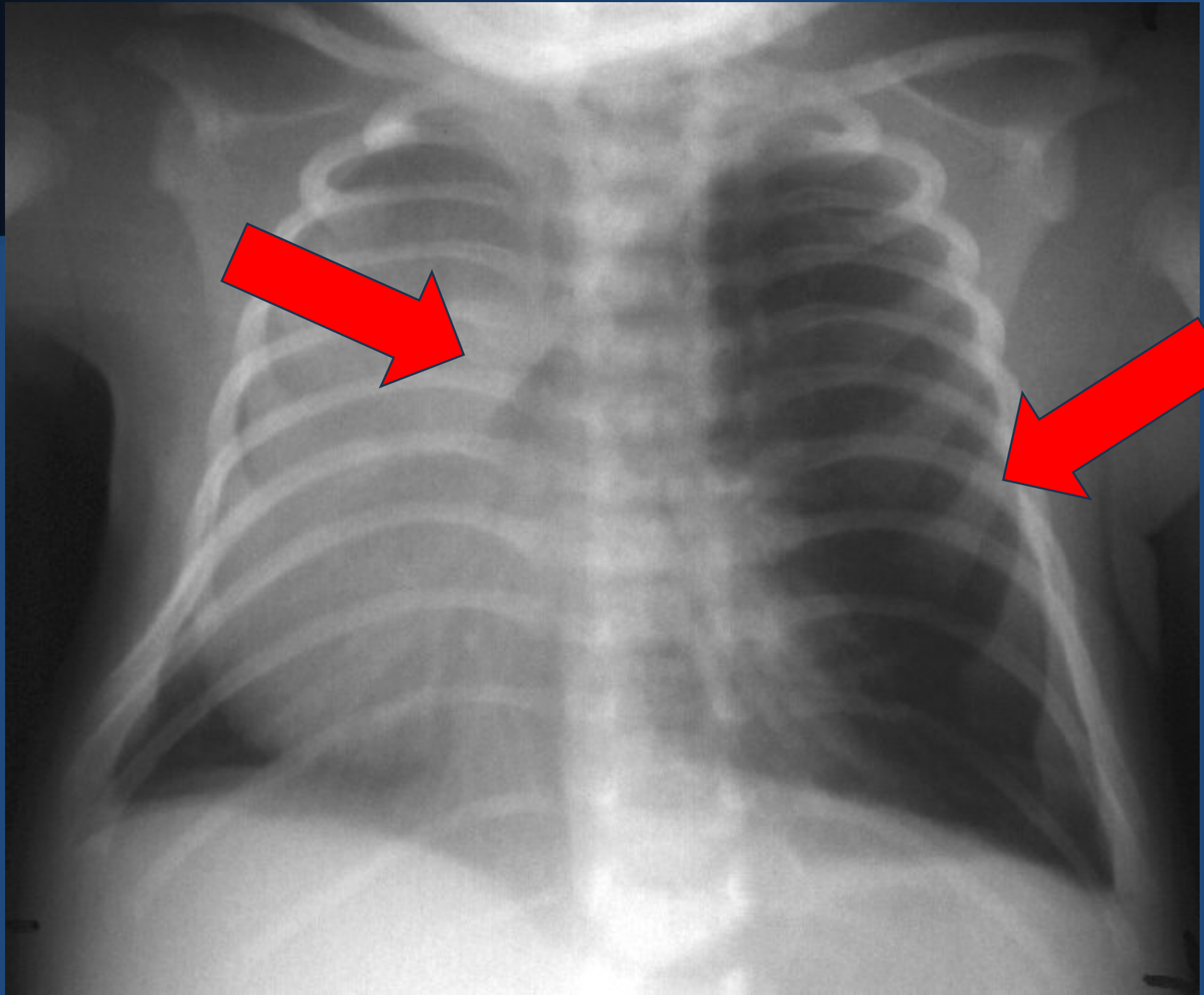
# Past Medical History

- **NSVD**
- **Weight 7 lbs 8 oz**
- **Mother 23 y/o G3P2**
- **Funny breathing**

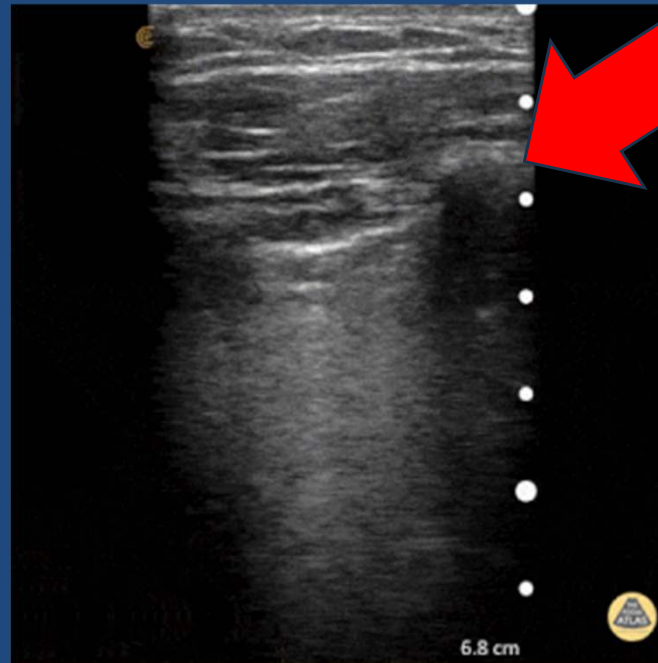
# Current Physical Exam

- **Temp 36.7**
- **Pulse 160**
- **RR 60**
- **BP 100/70**
- **SAT 86 RA** —————> **96-100 w/ O2**
- **Retractions**
- **BS faint**





# POCUS



# Diagnosis

- **Congenital lobar emphysema**

# Additional Clinical Pearls

- **Not AAT deficiency**

# Case 4

# Past Medical History

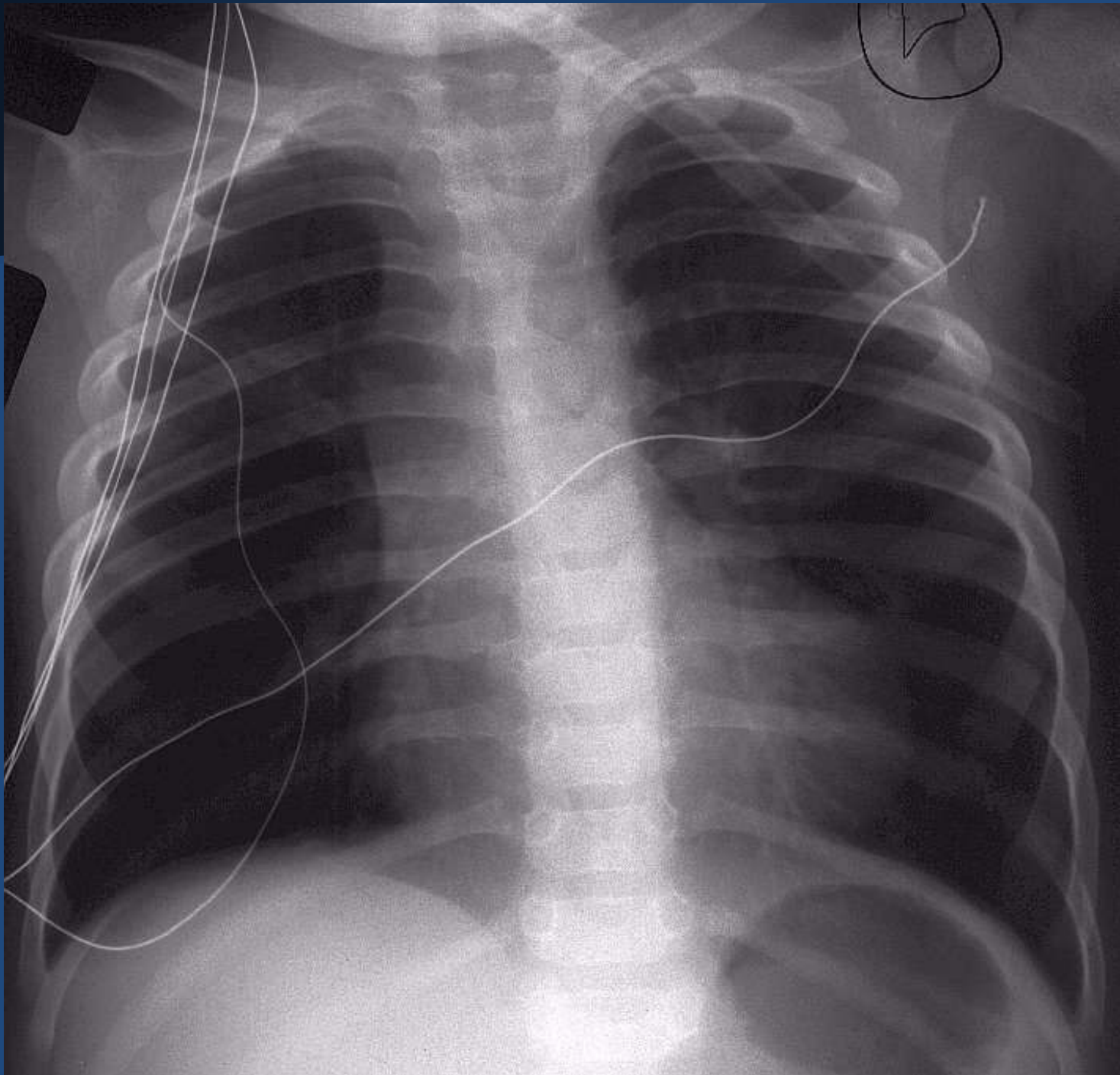
- **Acetaminophen**
- **cough syrup**
- **VSD**

# Current Physical Exam

- **Temp 37.1 rectal**
- **Pulse 170**
- **RR 48**
- **BP 112/74**
- **SAT 78 RA** —————> **100% O2**
- **BS Diffuse wheezes**

# Treatment

- **SAT 50-70**
- **Knee-Chest**
- **Morphine**



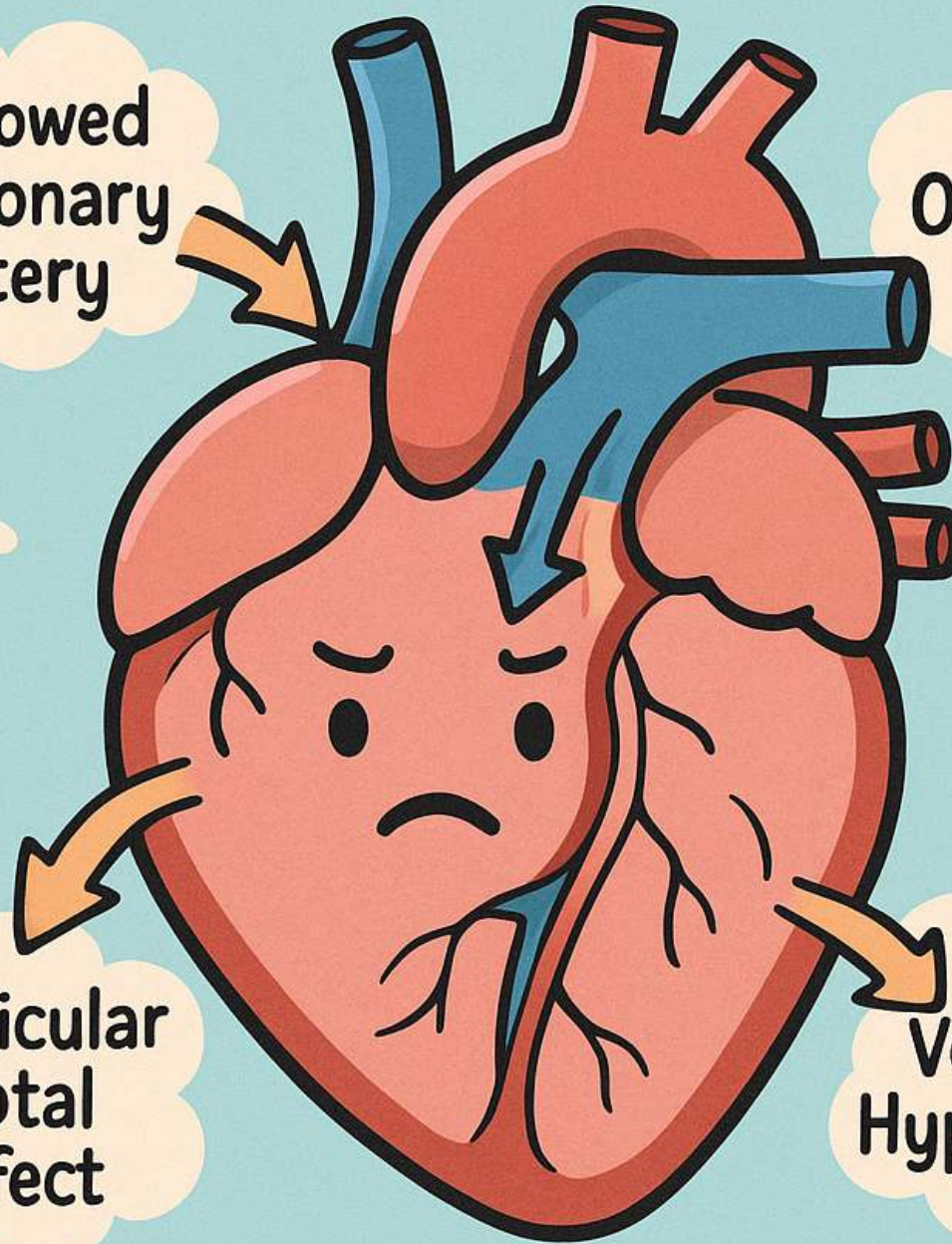
# TETRALOGY OF FALLOT

Narrowed  
Pulmonary  
Artery

Overriding  
Aorta

Ventricular  
Septal  
Defect

Right  
Ventricular  
Hypertrophy



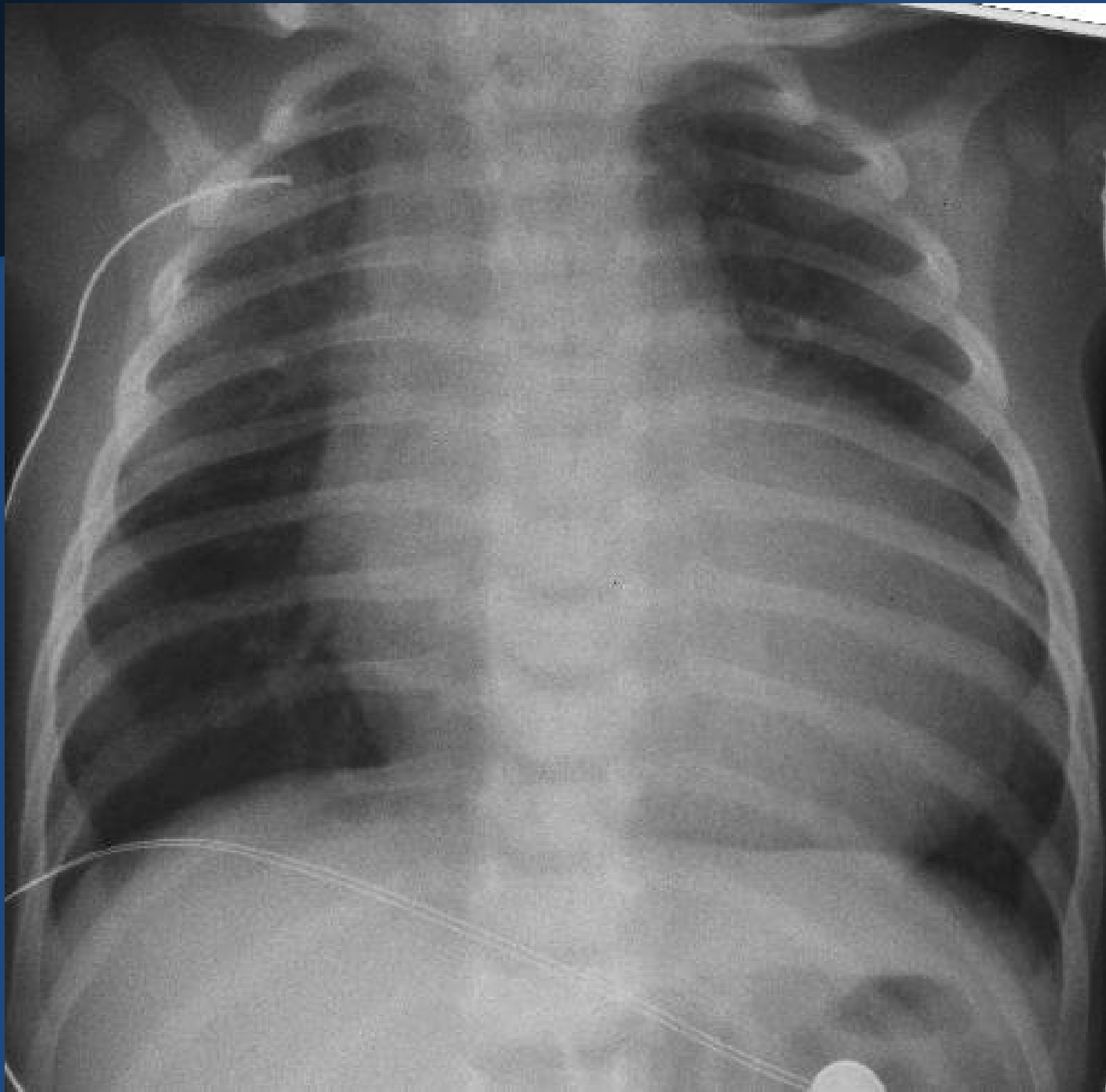
# Key Takeaways

- **Clinical presentation**
  - Cyanosis
  - Tet spells
  - Murmur
  - Clubbing in older children with chronic hypoxemia
- **Diagnosis**
  - Echo – Definitive diagnosis
  - CXR – May show boot shaped heart
  - EKG – Right axis deviation & RV hypertrophy
- **Management**
  - Oxygen
  - Beta blockers
  - Surgical repair, usually in infancy

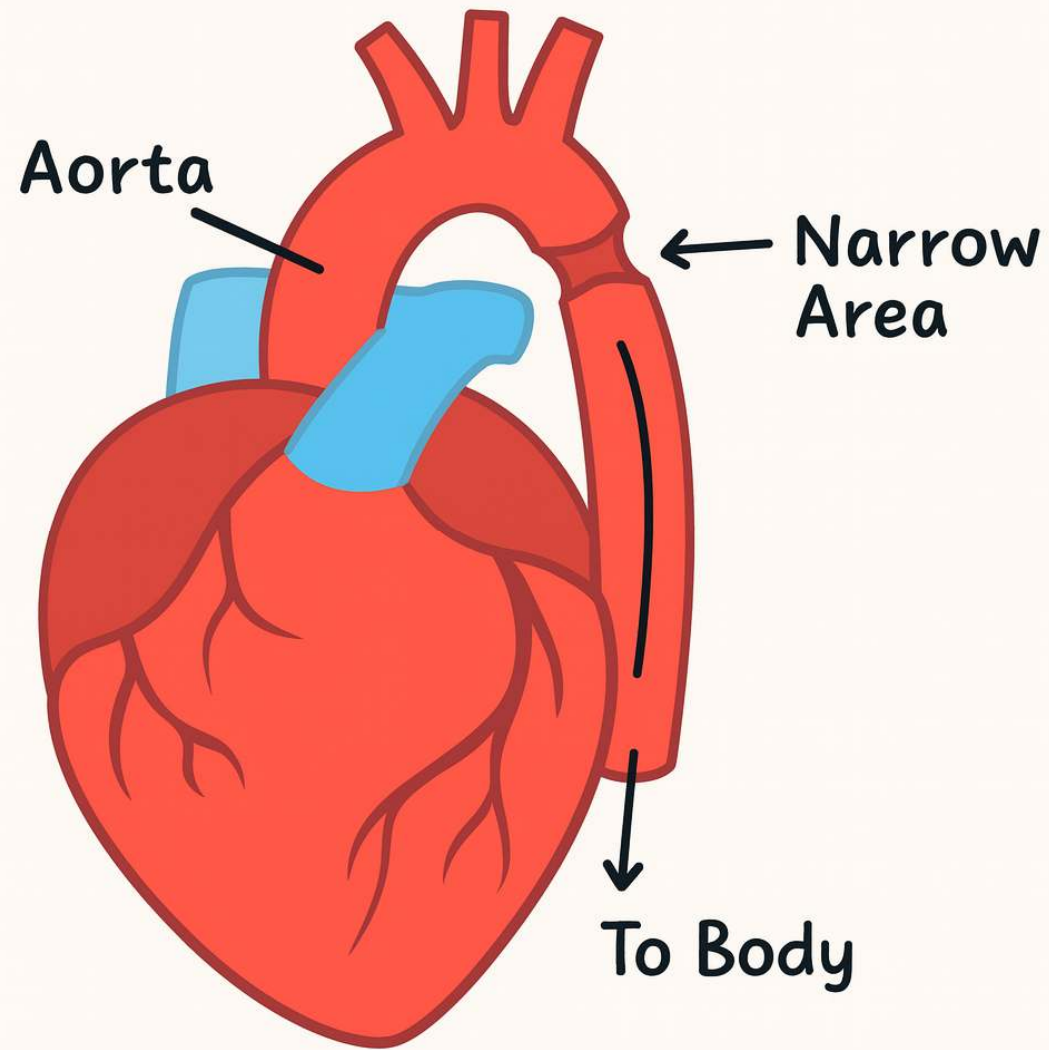
# Case 5

# Current Physical Exam

- **Temp 37**
- **Pulse 168**
- **RR 70**
- **BP 126/86 right arm**
- **BP 69/41 right leg**
- **SAT 96 right arm / 84 right foot**
- **BS Diffuse wheezes & crackles – retractions noted**
- **Cap refill 3 seconds**



# Diagnosis



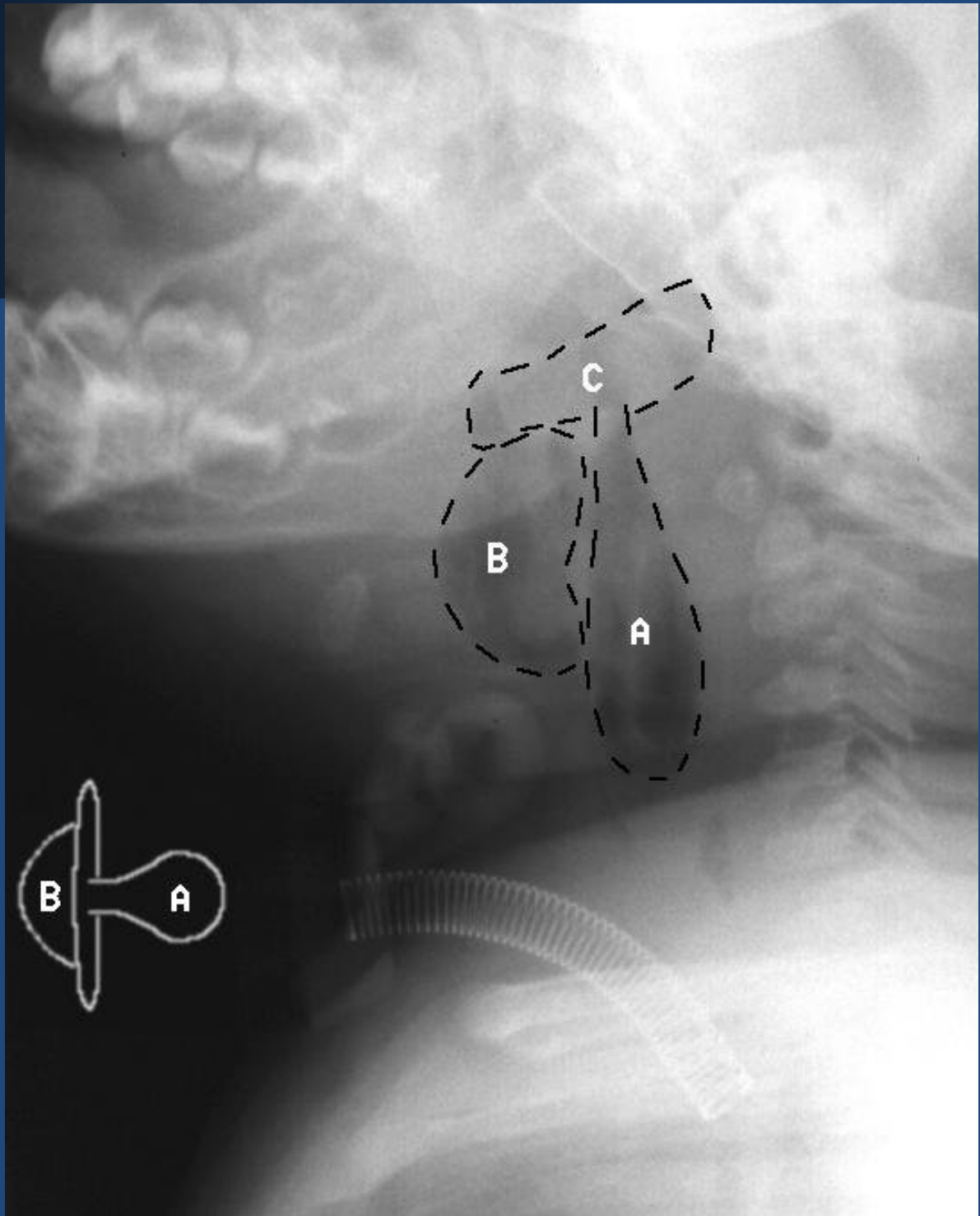
# Key Takeaways

- **Clinical presentation**
  - **BP upper vs Lower extremities**
  - **SAT difference**
- **Diagnosis**
  - **Clues – BP, pulse, SAT**
  - **4 limb BP**
  - **Echo**
  - **CXR**
  - **CT/MRI**
  - **EKG**
- **Management**
  - **Prostaglandin E1 infusion**
  - **Stabilizes – possible inotropes**
  - **Surgical repair / balloon angioplasty**
  - **Follow-up**

# Case 6

# Scene

- **Blind Finger sweep**
- **Tracheostomy**
- **BVM and transport**



# Outcome

- **Bronch**
- **Removal**

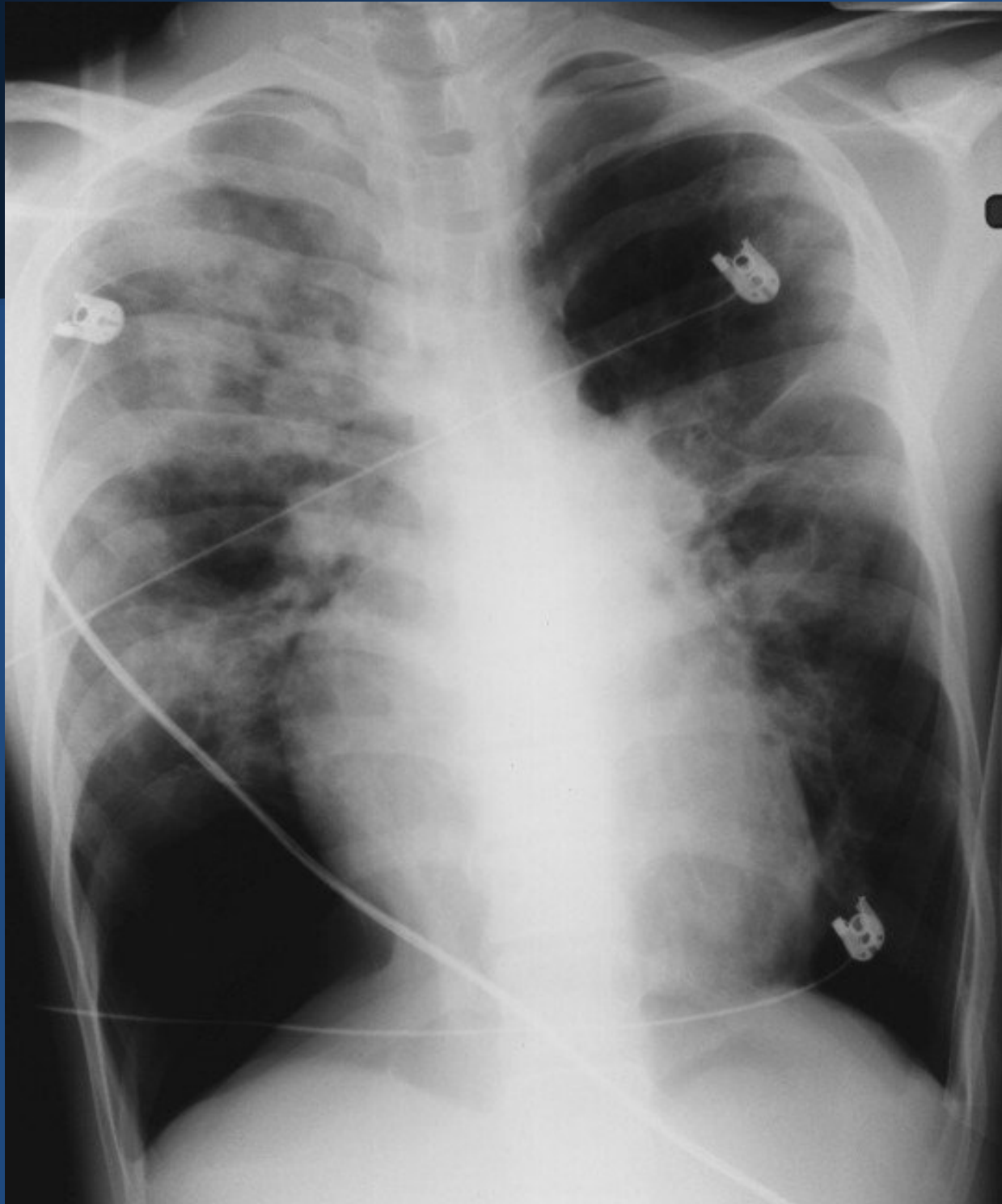
# Key Takeaway

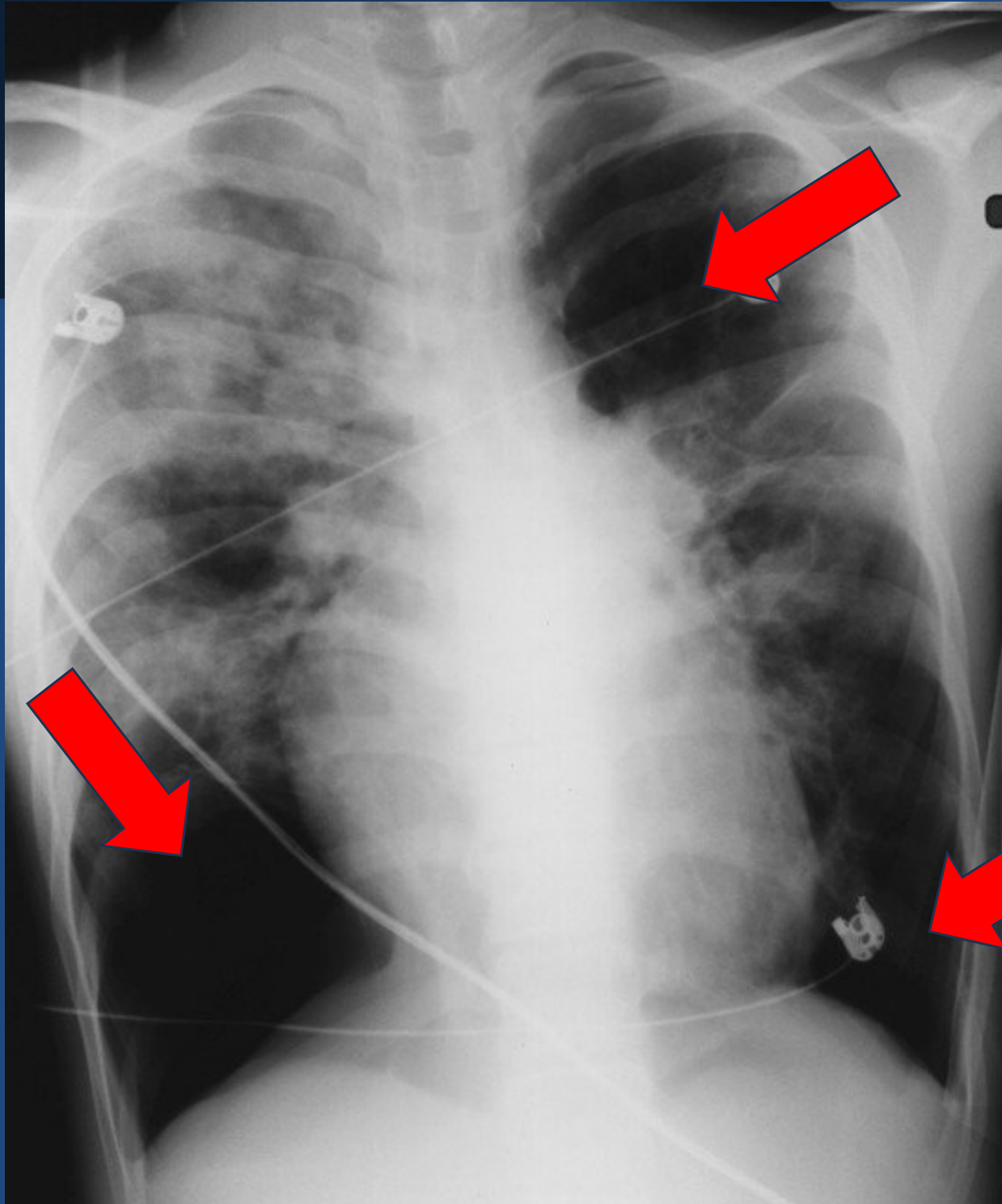
- **No blind finger sweeps**

# Case 7

# Current Physical Exam

- **Temp 38.4**
- **Pulse 110**
- **RR 40**
- **BP 120/70**
- **SAT 75 RA**      —————>      **O2 mask 90%**
- **BS Diminished with diffuse wheezes**
- **Moderate severe retractions**
- **Cap refill 2 seconds**





# Key Takeaway

- **Bronchopulmonary dysplasia (BPD)**

# Additional Clinical Pearls

- **Classic BPD 1960s-1980s**

- **mech vent + high O<sub>2</sub>**
- **Pathology**
- **Premies**

- **Modern 1990s-present**

- **Multifactorial**
- **Pathology**

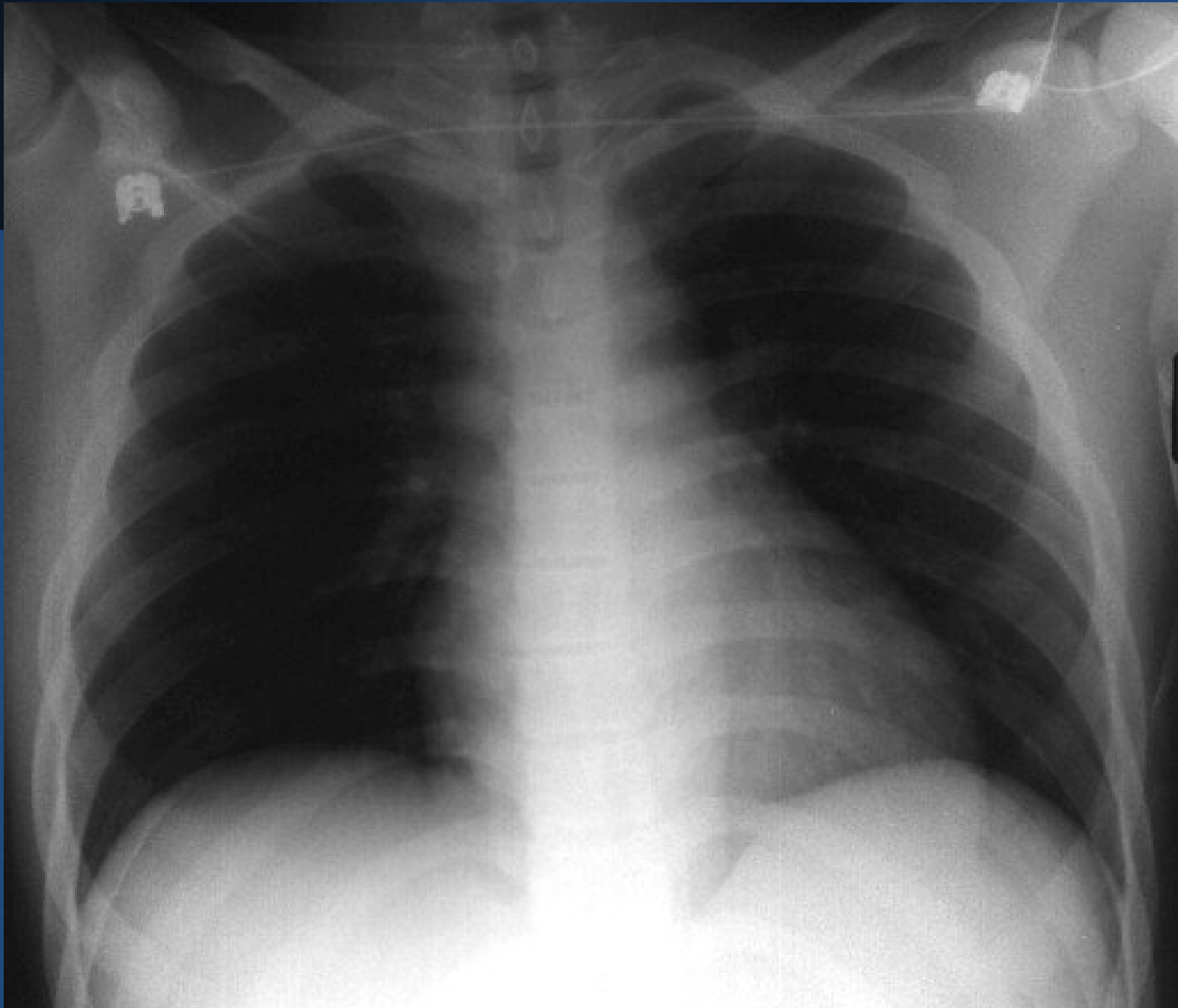
# Case 8

# Current Physical Exam

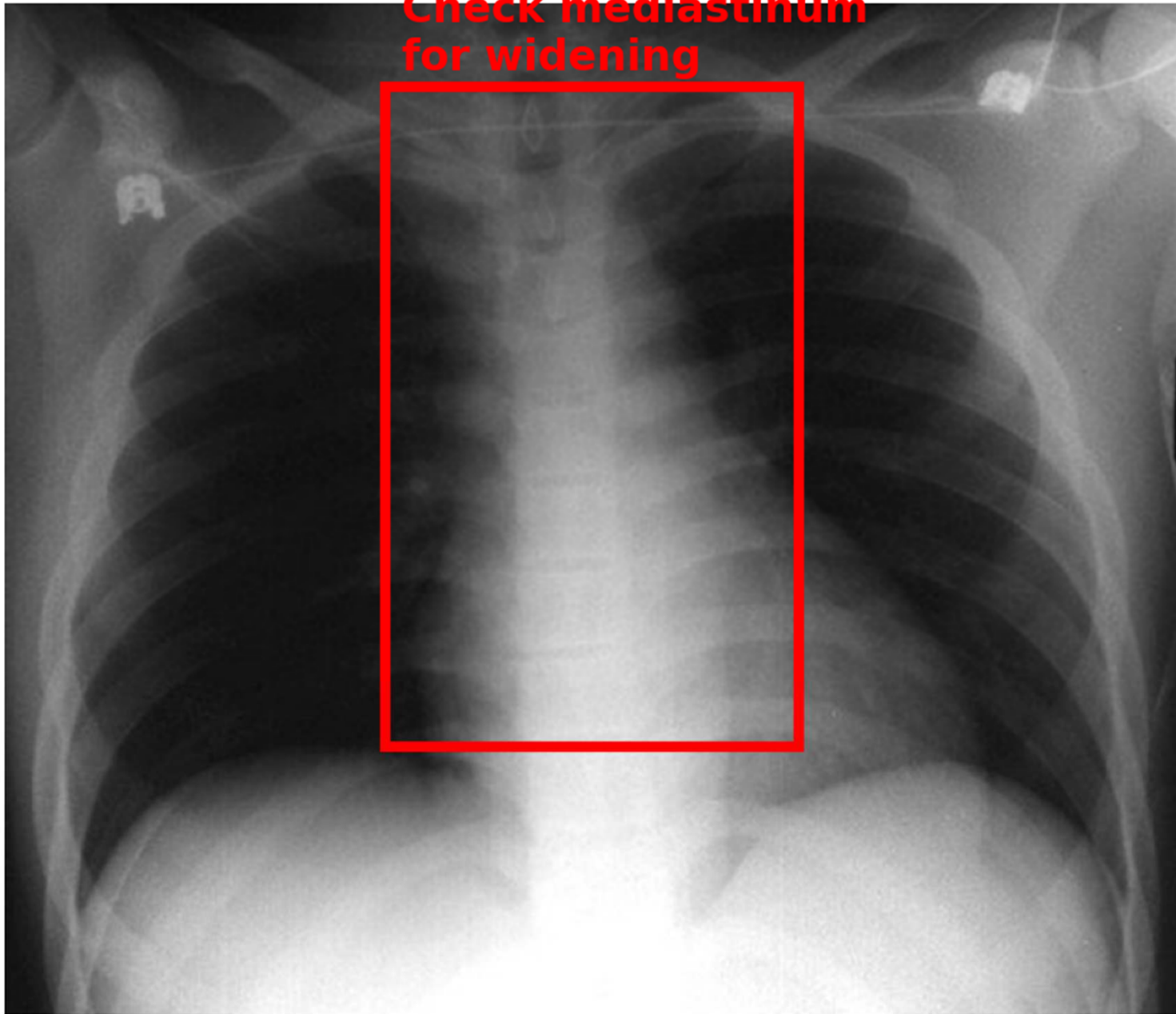
- **Temp 35.8**
- **Pulse 86**
- **RR 32**
- **BP 110/74**
- **SAT 100 RA**
- **Weight 70 kg**
- **BS Clear bilaterally**
- **Abdominal exam unremarkable**

# Past Medical History

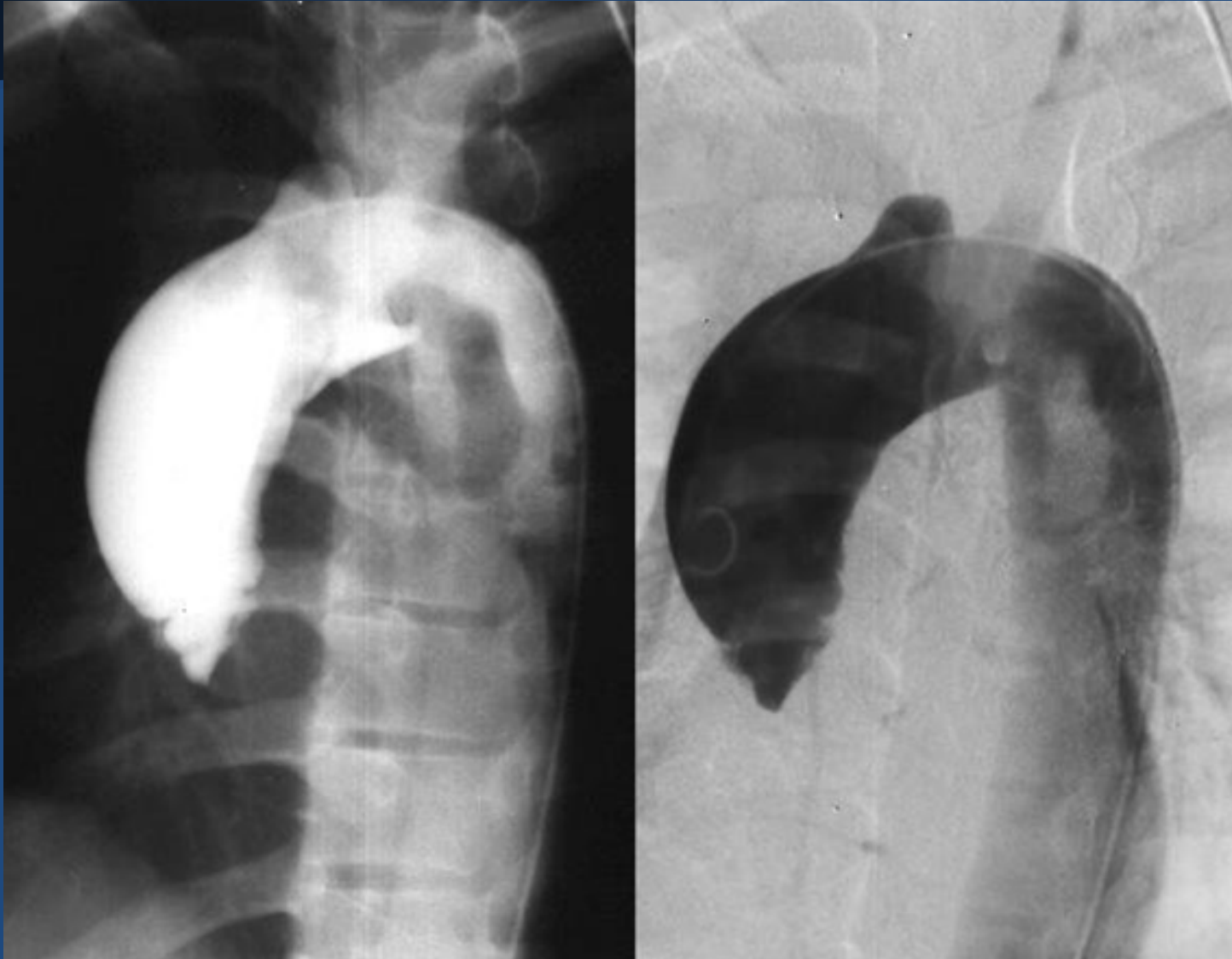
- **Brother died from aortic dissection**



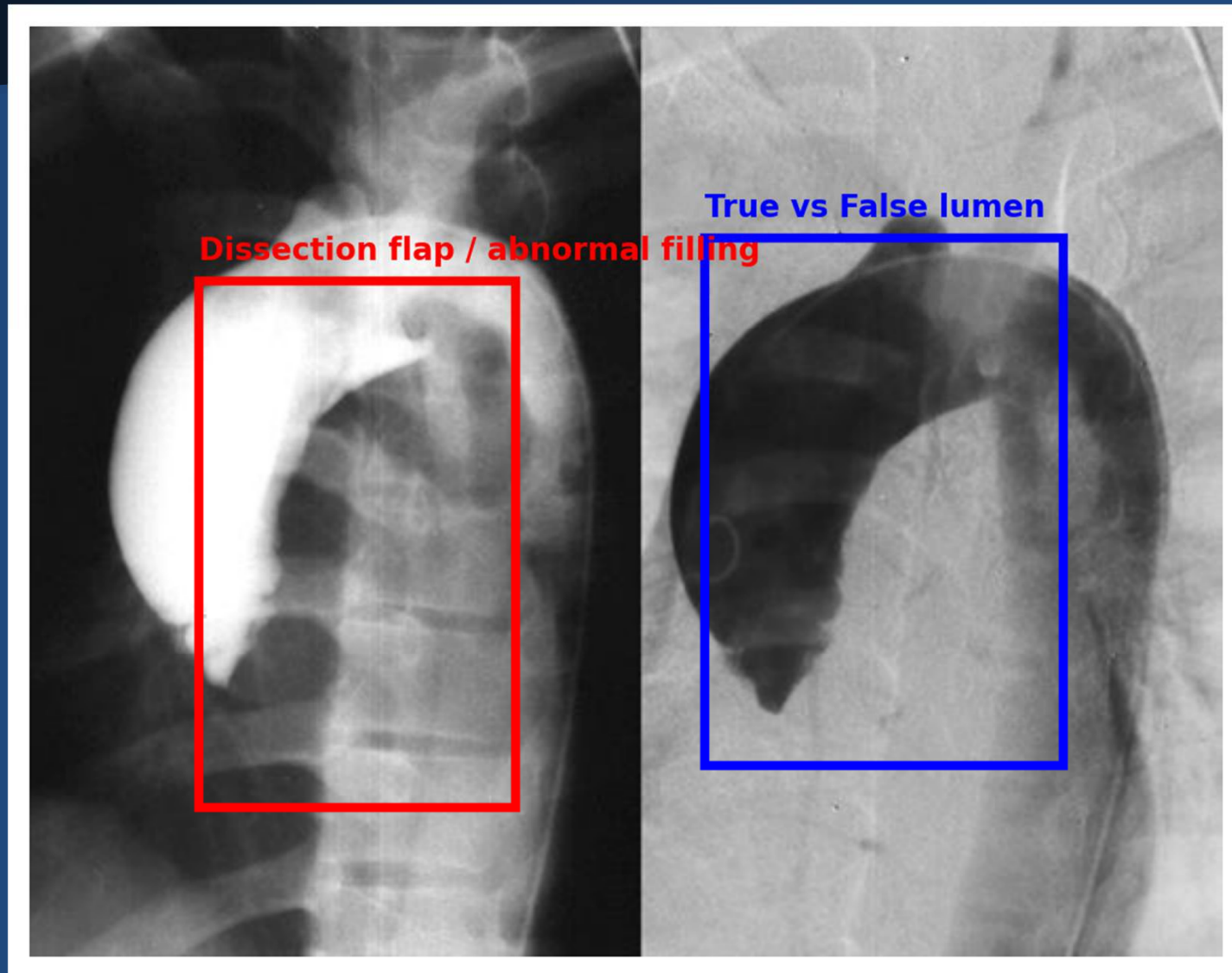
**Check mediastinum  
for widening**



# Aortogram



# Diagnosis



# Management

- **Initial priorities**
  - **Stabilize hemodynamics**
  - **Pain control**
  - **Monitoring**
  
- **Management by type**
  - **Stanford Type A**
  - **Stanford Type B**
  
- **Long Term**

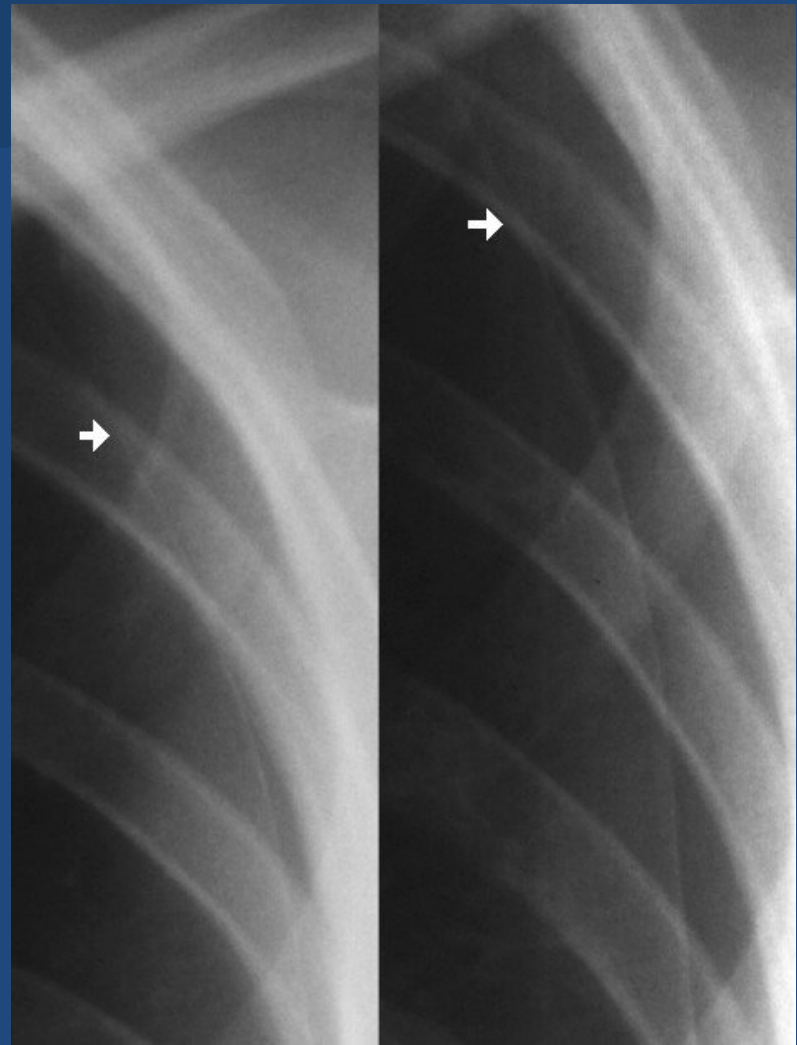
# Key Takeaways

- **Clinical suspicion**
- **Initial workup**
- **Imaging**
- **Diagnostic pathway**
- **May be genetic**

# Case 9

# Current Physical Exam

- **Tall**
- **Thin**
- **Lungs – clear & diminished**
- **Color – good**
- **Knife like pain**



# Key Takeaways

- **Associated with tall, thin, young males**
- **Resembles aortic aneurysm**
- **<20% self resolving**
- **100% O2**

# Additional Clinical Pearls

- **Mech Vent – Chest tube**
- **Avoid air travel**
- **Avoid Scuba diving permanently**
  
- **Types**
  - **Spontaneous**
  - **Traumatic**
  - **Iatrogenic**
  - **Tension**
  
- **Treatments**
  - **O<sub>2</sub>**
  - **Needle decompression**
  - **Chest tube**
  - **VAT**

# Case 10

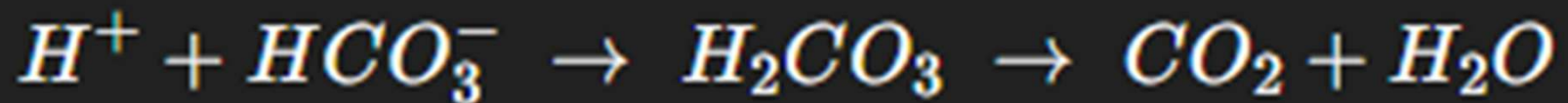
# Current Physical Exam

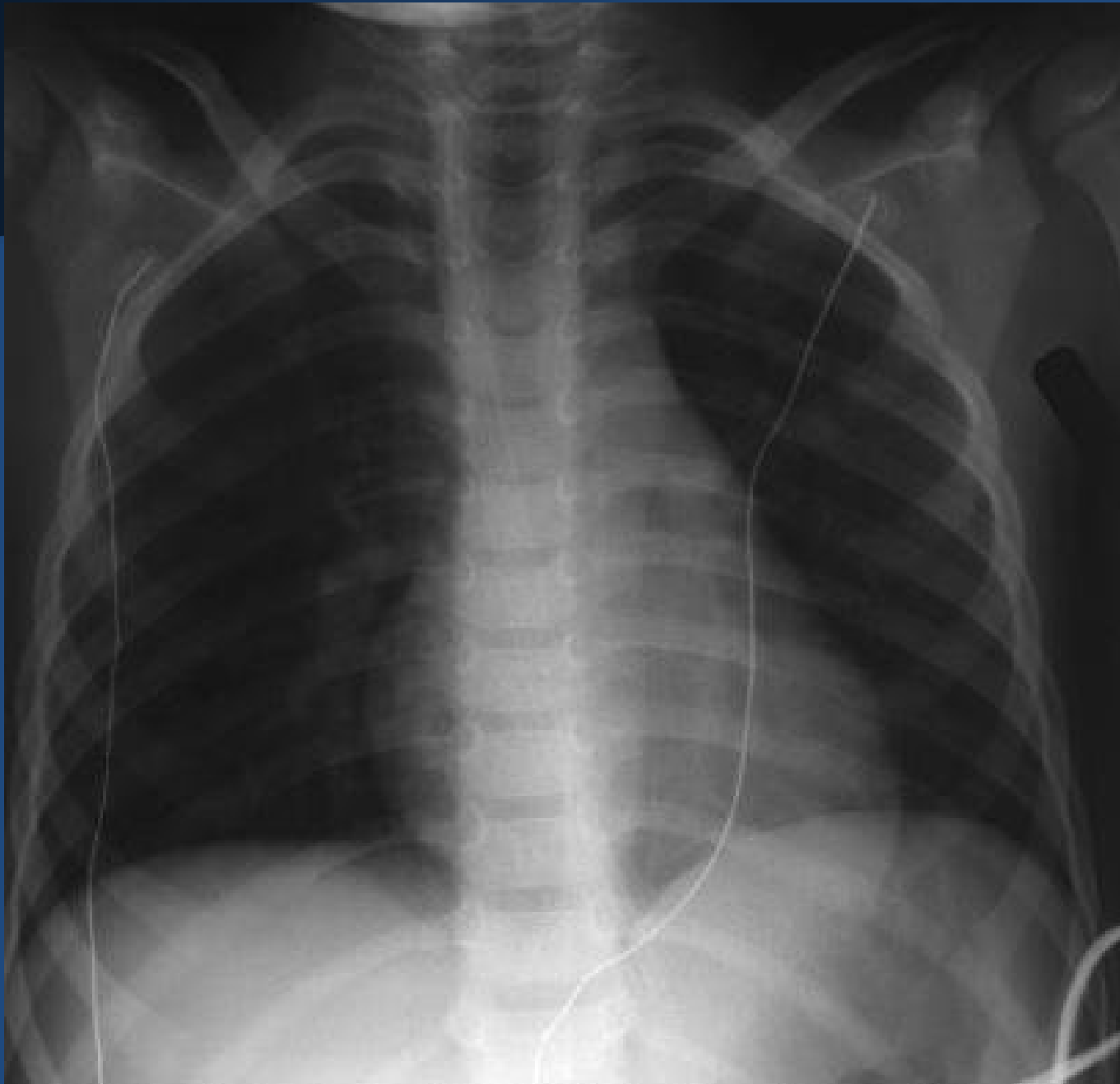
- **T 36.5**
- **P 120**
- **RR 45**
- **BP 130/50**
- **SAT 98% - CPAP 5 & 40% O2**
- **Lungs – crackles & wheezes**
  
- **ABG: pH 7.11, pCO2 27, pO2 140, bicarb 9**



# Treatment

- **Airway**
- **Ventilation**
- **Oxygenation**
- **Circulation**





# Additional Clinical Pearls

- **Hospitalization required**
- **Encephalopathy**
  
- **Primary**
  - **Airway**
  - **Ventilation**
  - **Oxygenation**
  - **Circulation**
  
- **Bicarb – Only for severe acidosis after treating ventilation & perfusion**

# Case 11

# Past Medical History

## ➤ **10 days ago**

- **Cough**
- **Rhinorrhea**
- **Sore throat**
- **Fever**

## ➤ **3 days ago**

- **PCP**
- **PPD**
- **Cefuroxime**
- **Possible TB exposure**
- **Weight loss**

# Current Medical History

- **T 39.2**
- **P 148**
- **RR 68**
- **BP 104/69**
- **SAT 90% RA**      **—————→ 100% on 5 LPM**
- **HEENT – Normal**
- **Retractions noted**
- **BS decreased on right**
- **Positive PPD**

# Current Medical History

- **WBC 9.2**
  - **41% lymph**
  - **43% segs**
  - **14% monos**
  - **1% eos**
  - **1% basos**
  - **Hgb 12.6**
  - **hct 37.2**



# Diagnosis

- **TB**
- **Plural effusion**

# Key Takeaways

- **Masks in ED?**

# Additional Clinical Pearls

- **Suspicion**
- **Testing**
- **Initial**
- **Latent**
- **Drug resistant**
- **Monitoring**

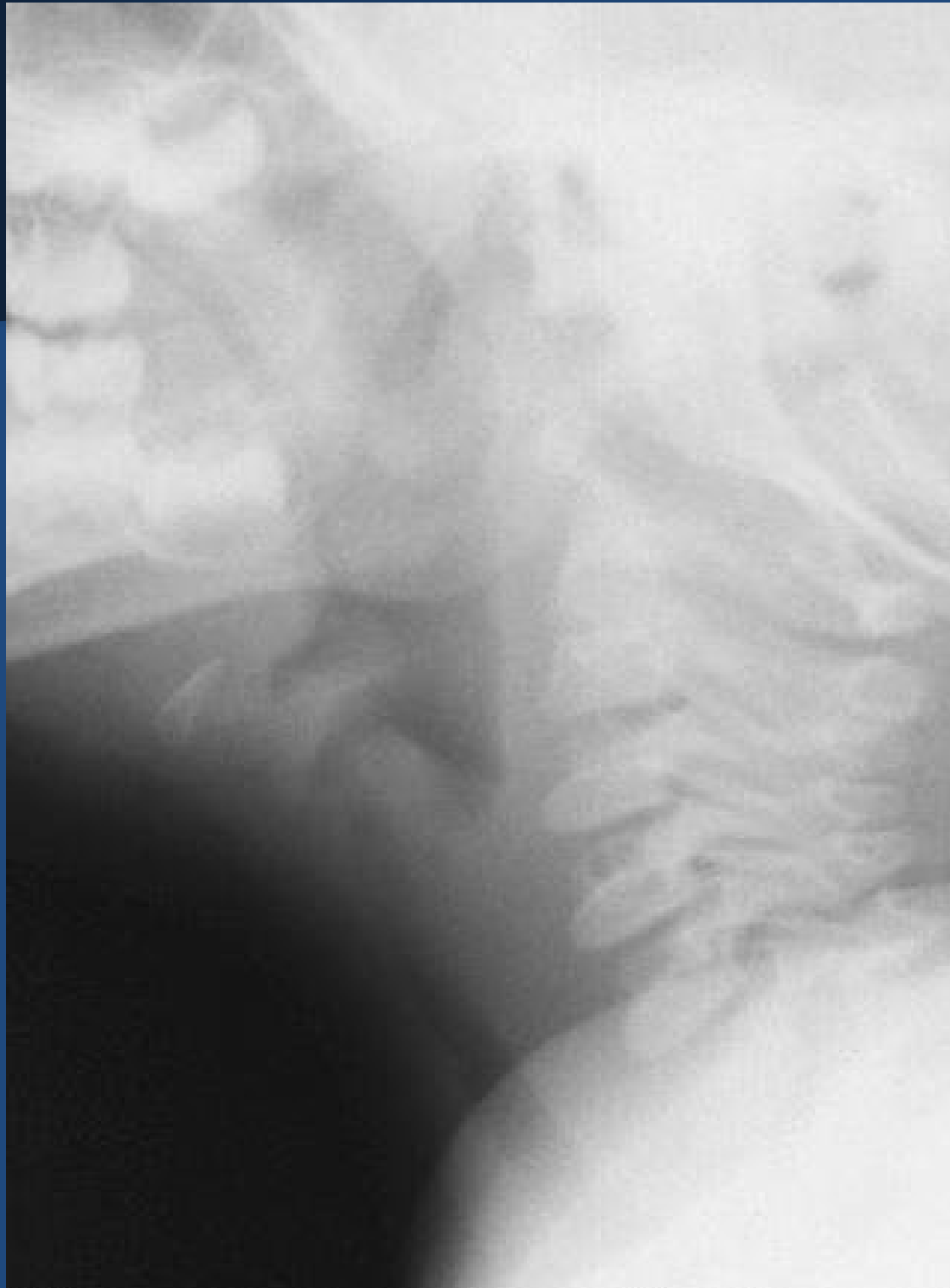
# Case 12

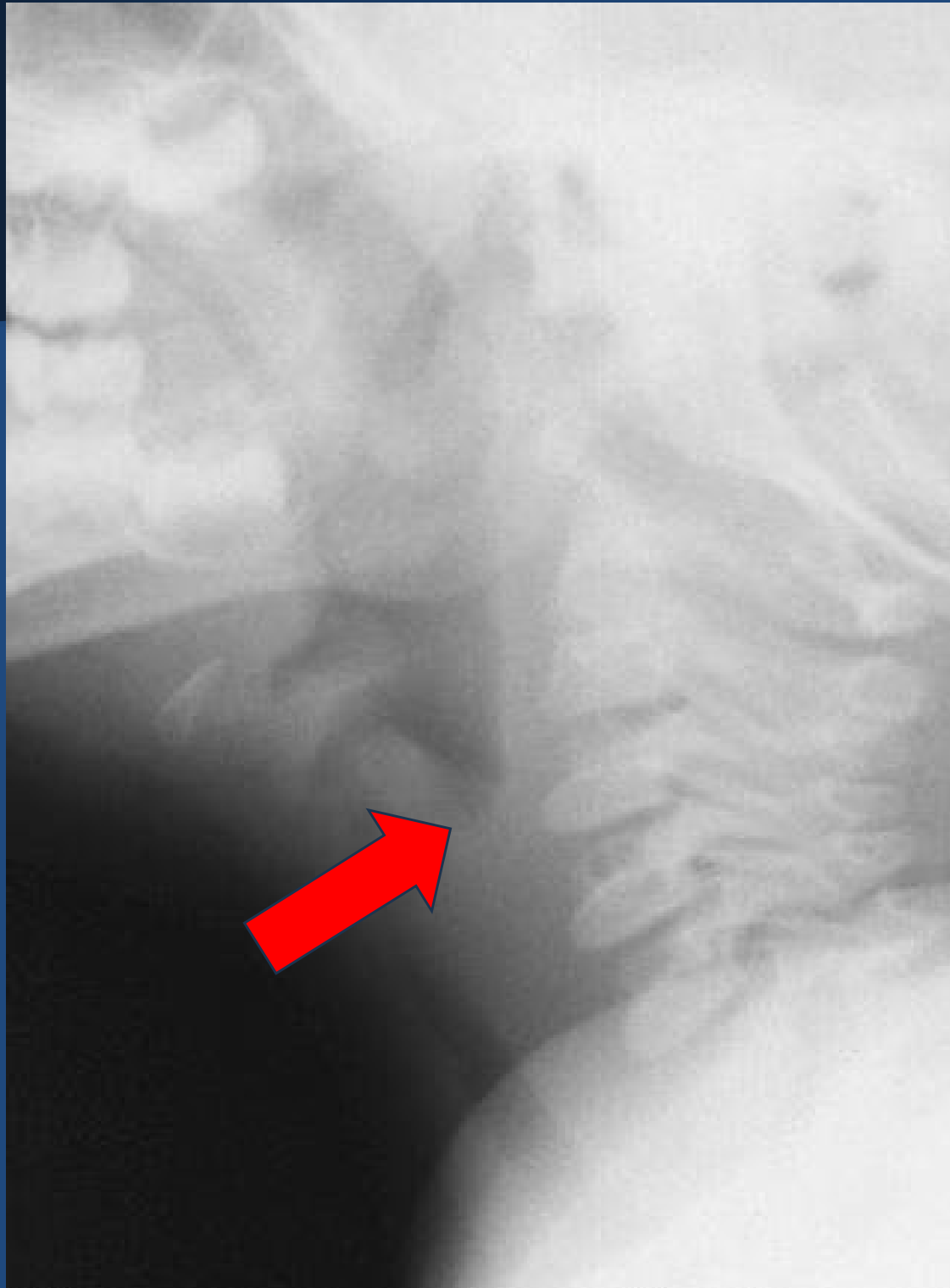
# Past Medical History

- **Recent immigrant**
- **Partial immunizations**
- **Neg PPD at 12 months**
  
- **Cough x 3 days**
- **Possible temp**

# Current Medical History

- **T 38.3 (rectal)**
- **P 100**
- **RR 24**
- **BP 109/73**
- **SAT 95-99% RA**
- **BS Stridor**
- **Retractions**
- **Yellow & white exudates**





# Diagnosis & Treatment

- **Anti-toxin**
- **Antibiotics**

# Key Takeaways

- **Anti-VAX**
- **Immigration**
- **Religion**
- **Other objections – fear**
  
- **Clinical features**
- **Diagnosis**
- **Treatment**
- **Prevention**

# Additional Clinical Pearls

- **Brush up on vaccine preventable diseases**
- **Consider vaccination**

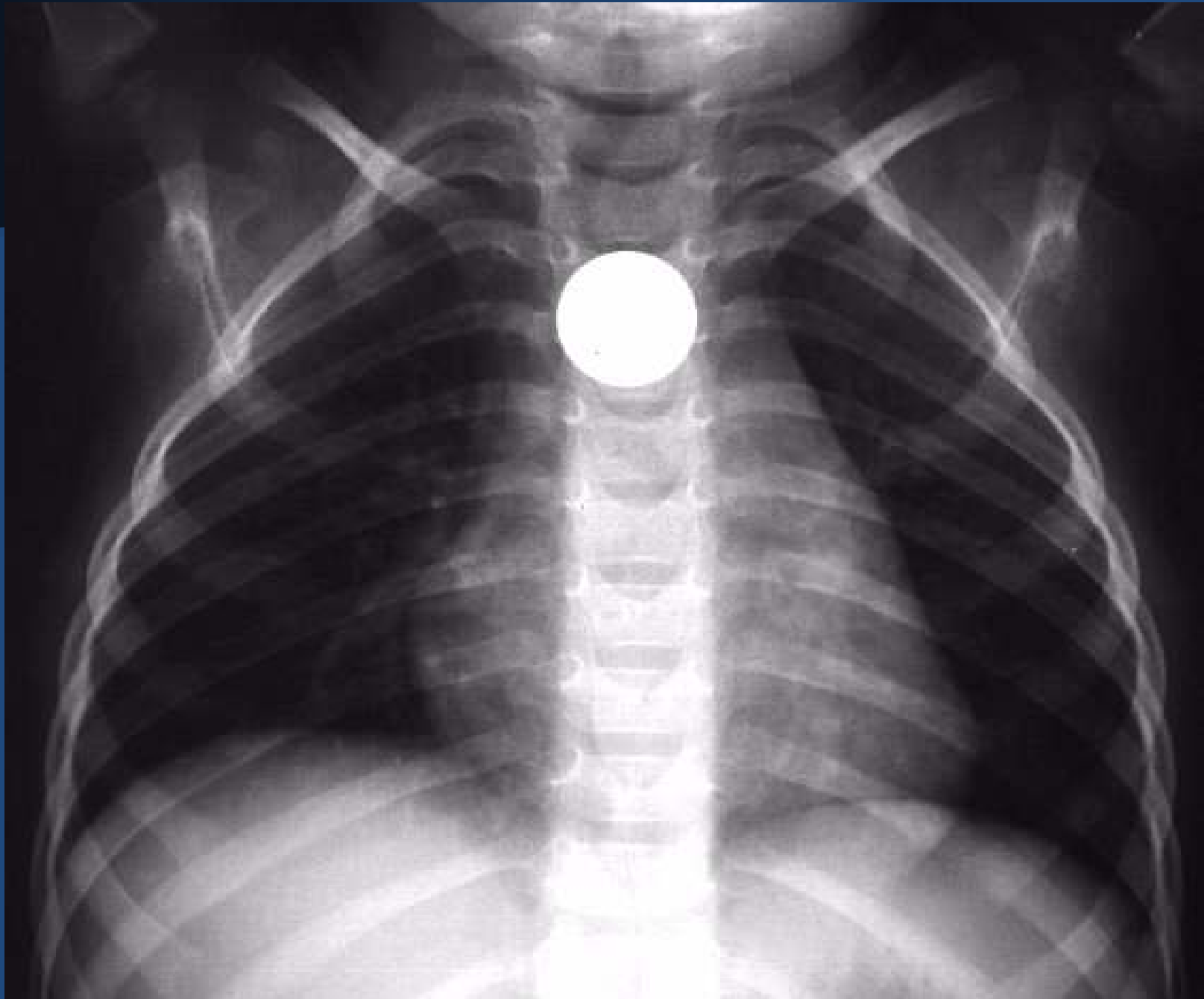
# Case 13

# Past Medical History

- **1 month coughing & wheezing**
- **Albuterol syrup**
- **Amoxicillin x 10 days**
- **Amoxicillin-clavulinic acid**
- **Coughed up some blood**

# Current Medical History

- **T 37.7 (rectal)**
- **P 130**
- **RR 44**
- **BP 95/60**
- **SAT 99% RA**
- **BS mild wheezing**
- **Occasional cough**



# Treatment

➤ **Surgery**

# Key Takeaways

- **Esophageal objects can obstruct the trachea**

**The End**

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