Case Based Learning Series

"Student Led Adult Learning"

Prehospital asessmet

- Received a call

ISBAR HANDOVER

- Identification: 32 male K.M referral from Kiryandongo hospital
- Situation: Boda rider involved in a RTA
- Background: Presented with chest injury and in severe respiratory distress
- Assessment: Spo2 on arrival was low, was put on oxygen, given iv fluids, antibiotics and analgesia
- Recommendation: Referred to MNRH for further mgt and to do imaging

Presenting Complaint

32/M referal from Kiryandongo Hospital, 12 hrs following a boda boda accident, presented with respiratory distress to the EM.

1. Was on supportive oxygen in Kiryandongo
2. Reason for referral : worsening respiratory distress

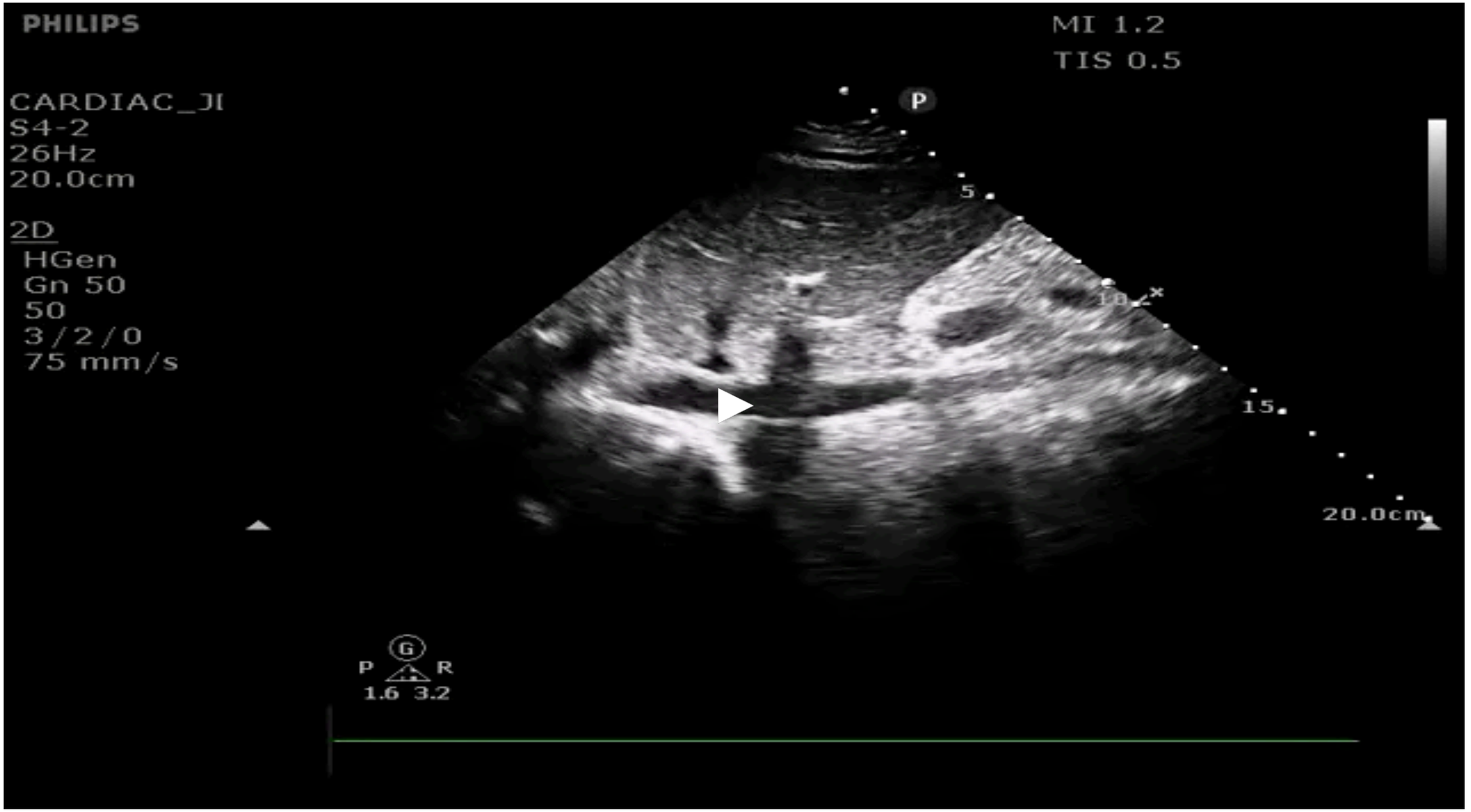
Primary Survey

- **Airway: Shouting and coughing.**
- **Breathing: in severe respiratory distress**
  - **Sats - spo2: 85- 88% on nasal prongs (5L of O2 per min); RR : 28-32 b/min. Paradoxical chest rise with bruising over the right inframammary area. Reduced air entry on the right, normal air entry on the left**
  - **EFAST - unclear findings due to subcutaneous emphysema, trachea : centrally located.**

- **Circulation: : BP- 80/60 mmhg, pr: 110 bpm. Small volume, thin and rhythmic pulse. Cold extremites and CRT > 5 sec.**
  - **EFAST: - difficult to visualise the right upper quadrant of the abdomen due to subcutaneous emphysema**
  - **REST (LUQ, PELVIC, SUBXIPHOID):NEGATIVE**
  - **See video of IVC**

- **Disability:**
  - **GCS of 14/15, (E4, V4, M6), PEARL, RBS - normal (4.8mmol/L)**

- **Exposure :**
  - **afebrile to touch, no injuries, all extremities are normal**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SAMPLE History

- **Signs & Symptoms: following the accident, reported sharp chest pain at the site of Chest injury.**
- **Allergies: No known history of allergies**
- **Medications: oxygen therapy, PCM, Steroids and antibiotics from Kiryandongo hospital.**
- **Past Medical History (PMH): Non significant**
- **Last Meal: 1 day prior to the accident.**
- **Events Leading to Presentation: Boda rider that was knocked by a trailer.**

Audience

- Any additional information?

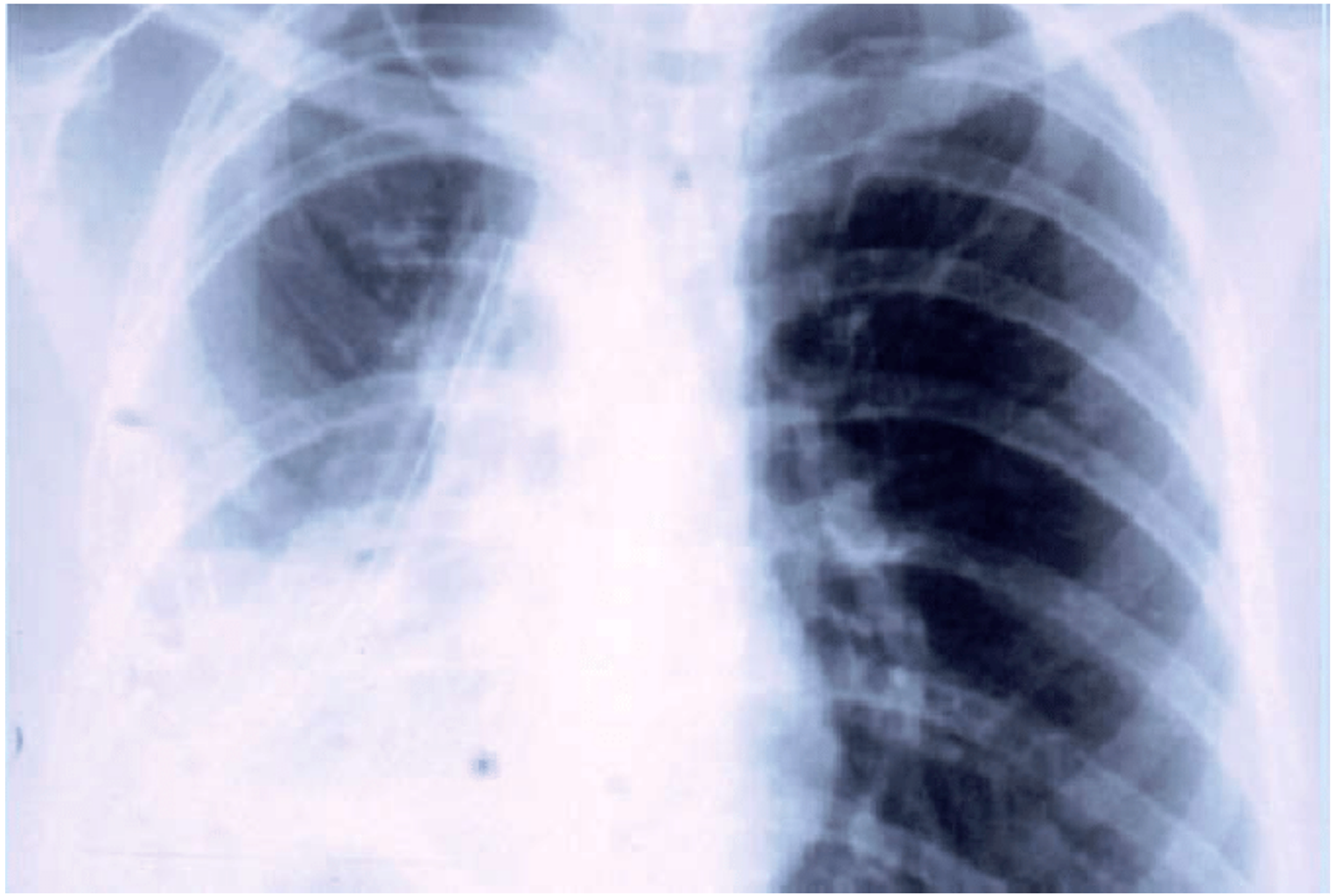
Expert

What are your initial thoughts?

What is you preparation and approach to this patient?

ED Intervention

- Placed a cervical collar
- oxygen on NRM (15L/ min)
- Chest tube insertion done on the Right, using an adult 32 French tube and drained 1L of frank blood over the next 30 mins. Note that the blood was continuously draining
- Did a regional chest block with LA
- Placed 2 large bore cannulas, removed blood samples, analgesia was given(iv paracetamol 1Gram stat and iv fentanyl 100 mcg)
- Gave IV fluids – Bolus 20ml/kg of 0.9% NS.
- Check X ray for rib fractures and check position of chest tube
- Consult the CTS.



Secondary survey

- **MSK: No deformities or swelling of the limbs, upper and lower**
- **No bleeding from any other sites**
- **Skin was intact aside from the abrasion on the chest wall**
- **Log roll was done : No deformity, swelling or stepdown of the spine bones**

Reassessment

- 1 hour later:
  - RR: 22-24 breaths/min
  - BP: 110/90 mmhg
  - PR: 89 bpm
  - SpO2: 94-96% on NRM

- 2 hours since admission: The patient begins coughing, experiencing shortness of breath with chest pain.
  - RR: 32 breaths/min
  - SpO2: 82% on NRM at 15L of O2/min
  - BP: 80/60 mmhg
  - PR: 120bpm
  - On ausculatation: Coarse crepitations on the right side

ED course

- Repeated EFAST for visulaising the pleural space but couldnt see anything clearly or conclusively.
- The chest tube was draining off blood. Had collected 1.8L of blood

- Intervention:
  - Supported breathing with a BVM
  - repeated IVC evaluation. It was full. no collapsibiliy
  - IV noradrenaline infusion administered
  - Requested for whole blood 3 units for urgent transfusion
  - Intubated the patient(RSI and placed on a MV)

- Shortly after intubating, the patient arrests.
- CPR was initiated and resuscitation done for 20 minutes without ROSC.

Expert opinion

What are your differentials at this point

What is your management plan?

PEARLS AND PITFALLS

RE EXPANSION PULMONARY EDEMA

- **Definition**: A rare, potentially fatal complication following rapid re-expansion of a collapsed lung (usually >3 days of collapse)
- Can occur after treatment of pneumothorax, hemothorax, or large pleural effusion
- More common in young, healthy individuals

Incidence and Significance

- **Incidence**: ~0.9% to 1% in pneumothorax/hemo thorax cases; rare but life-threatening
- **Mortality**: Up to 20%
- Especially concerning in **trauma patients** who may have:
  - Multiple injuries
  - Large-volume hemothorax or pneumothorax
  - Delay in definitive treatment

Pathophysiology

- **Main Mechanisms**:
  - Reperfusion injury
  - Increased capillary permeability
  - Mechanical stress to alveolar-capillary barrier

- **Contributors**:
  - Rapid re-expansion
  - Prolonged lung collapse
  - Hypoxia-induced inflammation

- **Risk Factors**
- Lung collapse >72 hours
- Rapid re-expansion with large-volume chest tube drainage
- Young age
- Preexisting lung disease or hypoxia
- Traumatic lung injury or contusions

Clinical Presentation

Symptoms usually develop within **1–24 hours** post-drainage

- **Unilateral pulmonary edema** (usually ipsilateral to drained lung)
- Signs/symptoms:
  - Sudden dyspnea
  - Hypoxia
  - Cough (may be frothy, pink sputum)
  - Tachypnea, tachycardia
  - Hypotension

Management

- **Supportive Care** is the mainstay:
  - Oxygen therapy
  - Mechanical ventilation if needed (low tidal volume)
  - Hemodynamic support (fluids cautiously)
  - Diuretics (controversial, used selectively)

- **Prevention Strategies**
- Drain slowly (<1.5 L at a time)
- Monitor closely after drainage
- Use smaller chest tubes when appropriate
- Delay full re-expansion if lung has been collapsed for days

- QUESTIONS?