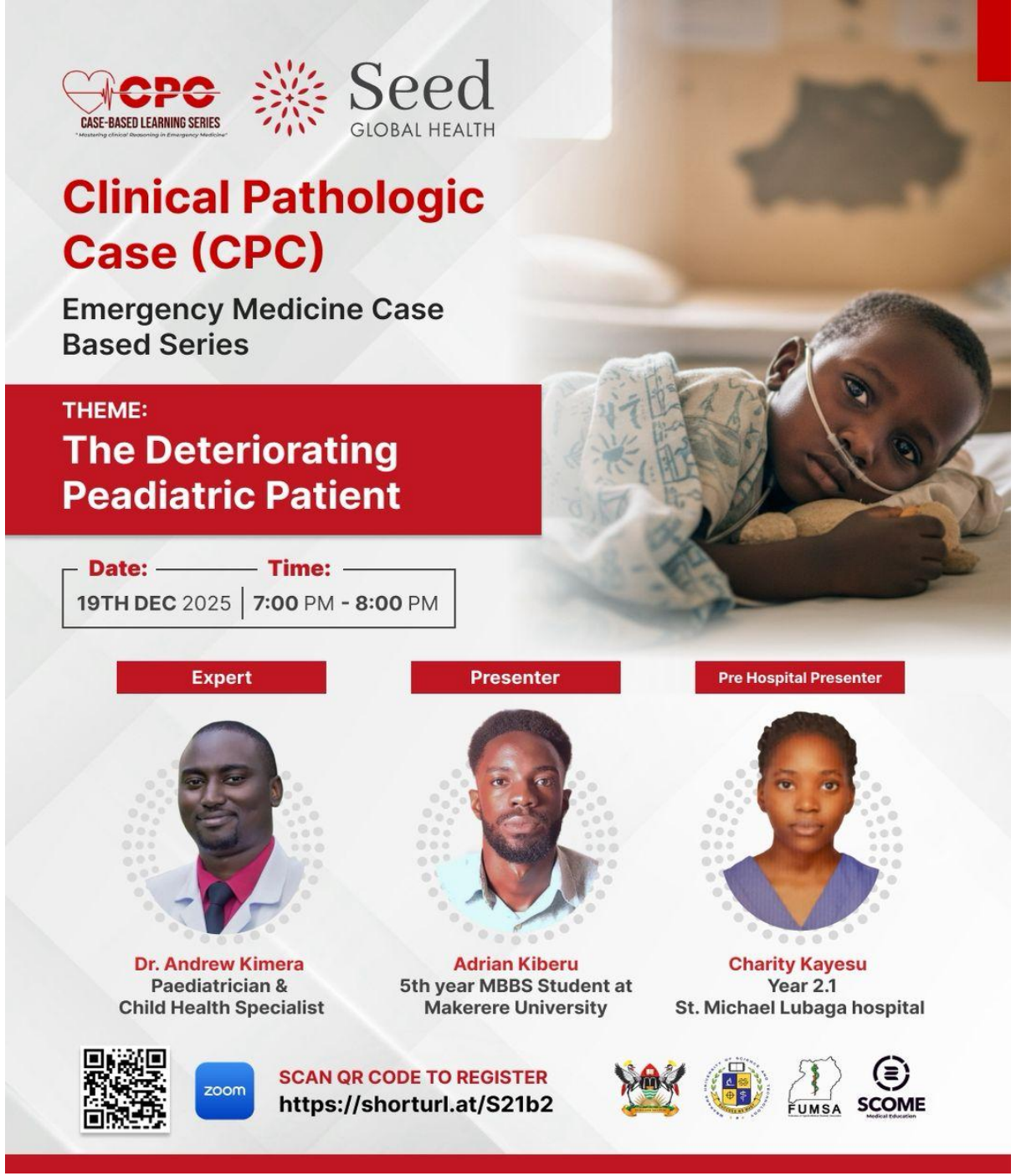
Case Based Learning Series

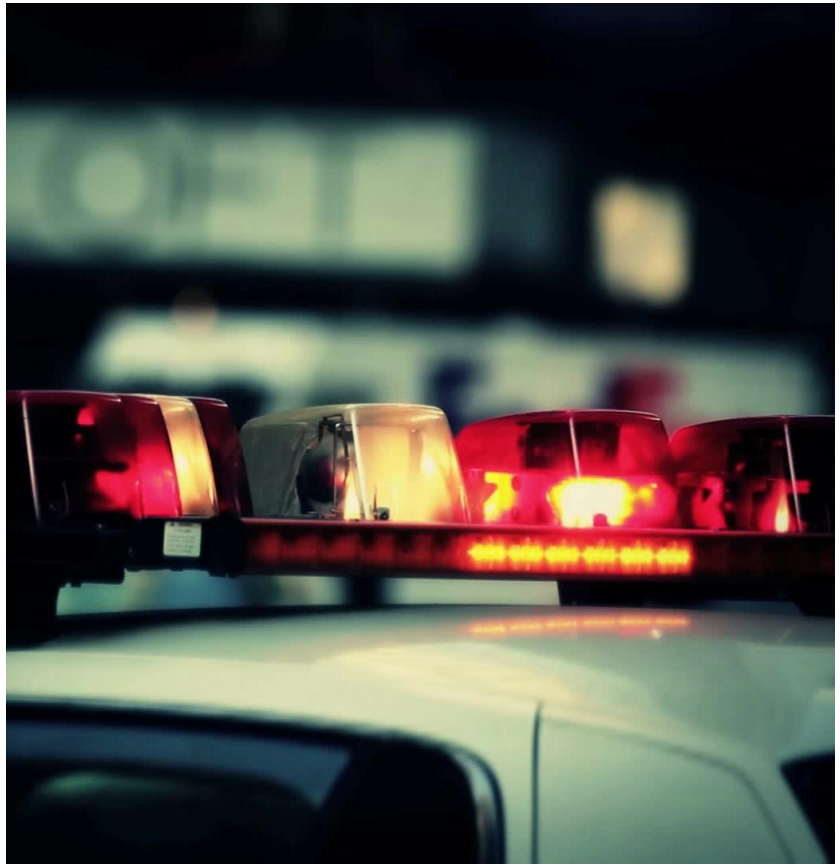
"Student Led Adult Learning"



Presenting Complaint

14/M who presented at MNRH ACU with;

- Fever (4 days)
- Vomiting (3 days)
- Chest pain (2 days)



Pre-hospital Management

- Requirements
  - Oxygen delivery devices(Nasal prongs, facemask, NRM)
  - 16G IV cannulas(2 and more)
  - IV Paracetamol
  - Blanket
  - Ambulance type - type C (advanced life support)
  - Number of staff - 2 EMTs + 1 driver

ISBAR Report

- **Identification**; My name is Charity Kayesu, an EMT handing over a 14/M old male .
- **Situation**; A 14/M old male with fever, vomiting and chest pain.
- **Background**; He has had the fever for 4 days, he started vomiting 3 days back and the chest pain began 2 days back.
- **Assessment**; On assessment, his airway was patent. His RR was 32bpm with SPO2 88% on room air, we administered oxygen via nasal prongs. He had a weak thready pulse at a rate of 130bpm, BP- 107/72mmHg, CRT >3 sec and cold extremities, we established an IV access on both hands with 16G cannulas and administered IV PCM 1g and metoclopramide 10mg for the chest pain. We covered the patient with a warm blanket due to cold peripheries to keep the patient warm.
- **Recommendations**
  - ECG
  - Chest X-ray
  - RDT
  - LFTs
  - Review by cardiologist

Primary Survey

- **Airway:** Patent, not at risk of obstruction, no visible obstructions
- **Breathing:** Tachypnoeic at RR-32bpm, SPO2-88% on RA.
- **Circulation:** Had cold peripheries, weak thready pulse with rate-125bpm, CRT>3s, BP-107/72mmhg
- **Disability:** GCS-15/15, PEARL, RBS-4.6mmol/l, no abnormal movements
- **Exposure :** Axillary temp-37.8C, had mild conjunctival and lingual pallor, no jaundice, had bilateral grade II pitting oedema.

Poll 1

From the history and Primary Survey, what are the imminent emergencies?

What are the emergency Conditions?

THREATS	*Priority Questions*	*Findings*	*Associated Risk*	*Immediate Action Required*
B	• Is the patient breathing? • What is the rate? • What are the O2 stats?	• Tachypnea(32bpm) • Hypoxia(88%)	• Hypoxic respiratory failure • Organ damage • Cardiac arrest • Acid base imbalance • Respiratory muscle fatigue	• Gave 5l of O2 via nasal prongs which saw the saturation move up to 97% and the RR down to 25bpm after 10 minutes
C	• Is the patient in shock? • What is the pulse rate? • What are the other pulse parameters?	• Tachycardia • Cold peripheries • Weak and thread pulse • Bilateral grade II pitting edema*	• Cardiogenic shock • SCD • Fluid overload	• Obtained iv access, gave IV furosemide 36mg 6hrly, tabs captopril 12.5mg OD, tabs spironolactone 25mg OD • Took off samples for CBC, LFTs, RFTs, Culture, and MRDT

And always reassess to monitor response to treatments

Expert

What are your initial thoughts?

What is you preparation and approach to this patient?

SAMPLE History

- **Signs & Symptoms:** Central chest pain(2 days) stabbing in nature, not associated with respiratory movement or change in posture, associated with; palpitations, easy fatigability, lower limb swelling but no cough or DIB. Also had fevers(4 days), reduced appetite, post prandial non-bilious, non-bloody vomiting(3 days, 3 episodes per day) and weight loss, but no loose motions. No history of, headaches or vision changes, no joint pains or prior throat infection, no night sweats, reported normal micturition habits with pale yellow non-frothy urine.
- **Allergies:** No known allergies to food or drugs
- **Medications:** not on any medication at time of admission
- **Past Medical History (PMH):** 3rd admission, first was 5 yrs ago due to AWD. Had 2 blood transfusions due to severe anemia 2 weeks ago.
- **Last Meal;** Had porridge about 8 hours prior to admission
- **Events Leading to Presentation:** been unwell with fevers and body weakness for 4 days, later developed vomiting, reduced appetite and chest pain

Expert opinion?

Any additional thoughts at this point?

Any additional info you would want to get?

Audience

- Any additional information?

Secondary survey

- **Head and Neck:** soft neck, had mild conjunctival and lingual pallor, no jaundice, no distended neck veins, JVP normal
- **Chest:** Had intercostal recessions, trachea central, resonant percussion note in all regions, equal bilateral air entry in all regions, but with fine basal expiratory crackles bilaterally, hyperactive precordium, displaced apex beat 6th ICS AAL with apical heaving and an apical thrill, s1+s2 heard, grade 4 apical pan-systolic murmur radiating to the axilla, and louder on tilting the patient to their left side.
- **Abdomen:** scaphoid abdomen with normal respiratory movement, had tender RUQ and hepatomegaly of 4cm below the costal margin MCL no other palpable organomegalies
- **Skin:** no visible skin bruises or nodules, no stigmata of infective endocarditis.

Poll 2

The following are your possible Differential diagnoses for this patient except?

Expert opinion

What are your differentials at this point

What is your management plan?

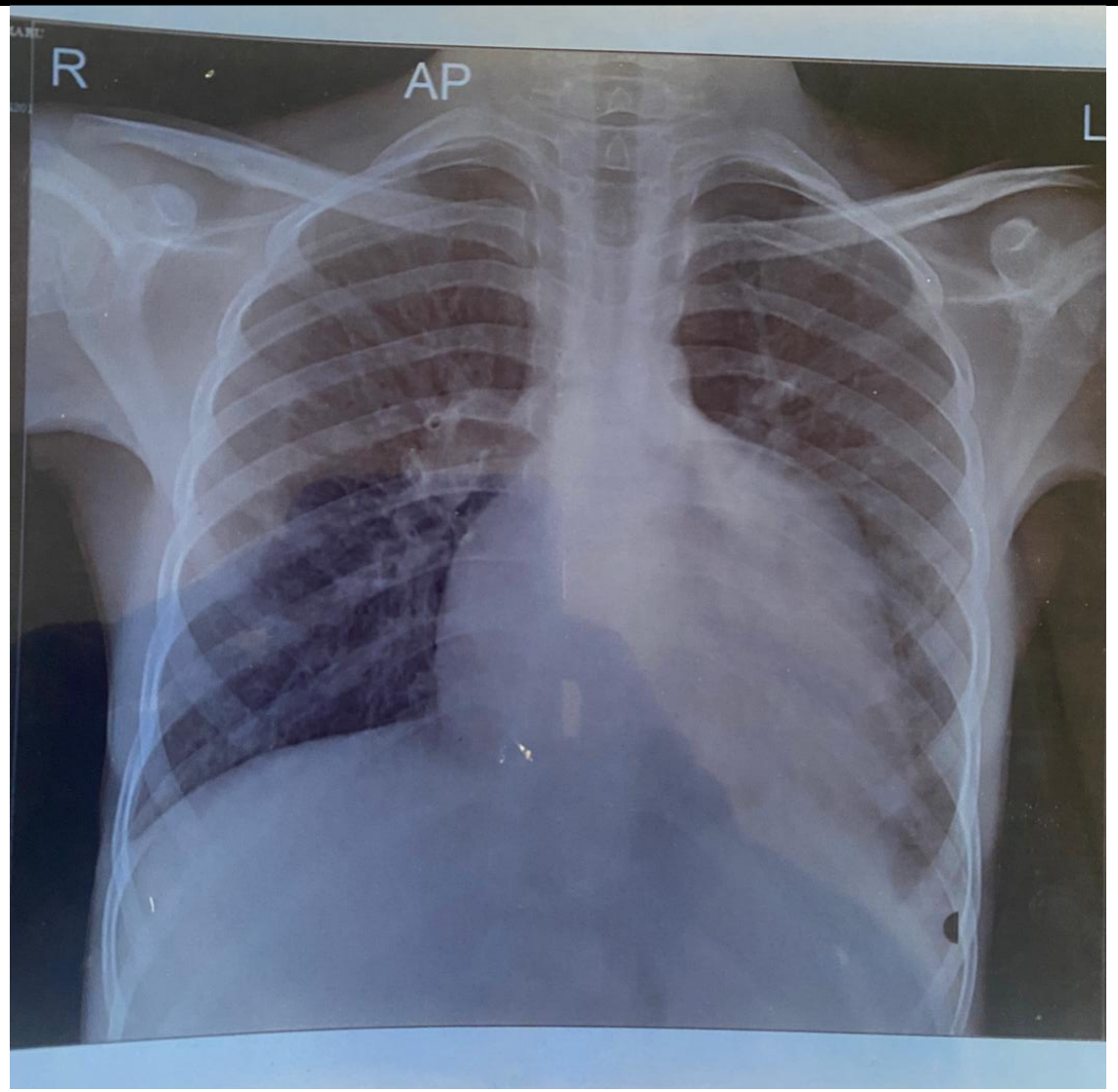
Diagnosis			For	Against
1	14/M with an acute heart failure exacerbation secondary to;	•Acute rheumatic fever with features of Rheumatic heart disease •Dilated cardiomyopathy •Chronic anemia	• 14/M, chest pain, fever, features of mitral regurgitation • Hyperactive precordium, displaced apex, mitral regurgitation • Prior history of blood transfusion	• No history of prior throat infection, unsatisfied criteria • No history of cancer treatment, no neurological features suggestive of B1 def. • Nature of heart failure not typical of high output HF
Differential diagnosis				
1	Severe malaria		Fever, body weaknes, pulmonary oedema	
2	pneumonia		Tachypnoea, hypoxia, fevers	no cough
3	Tuberculosis		Fevers, weight loss, chest pain	No cough, no night sweats, no history of TB contact

Labs

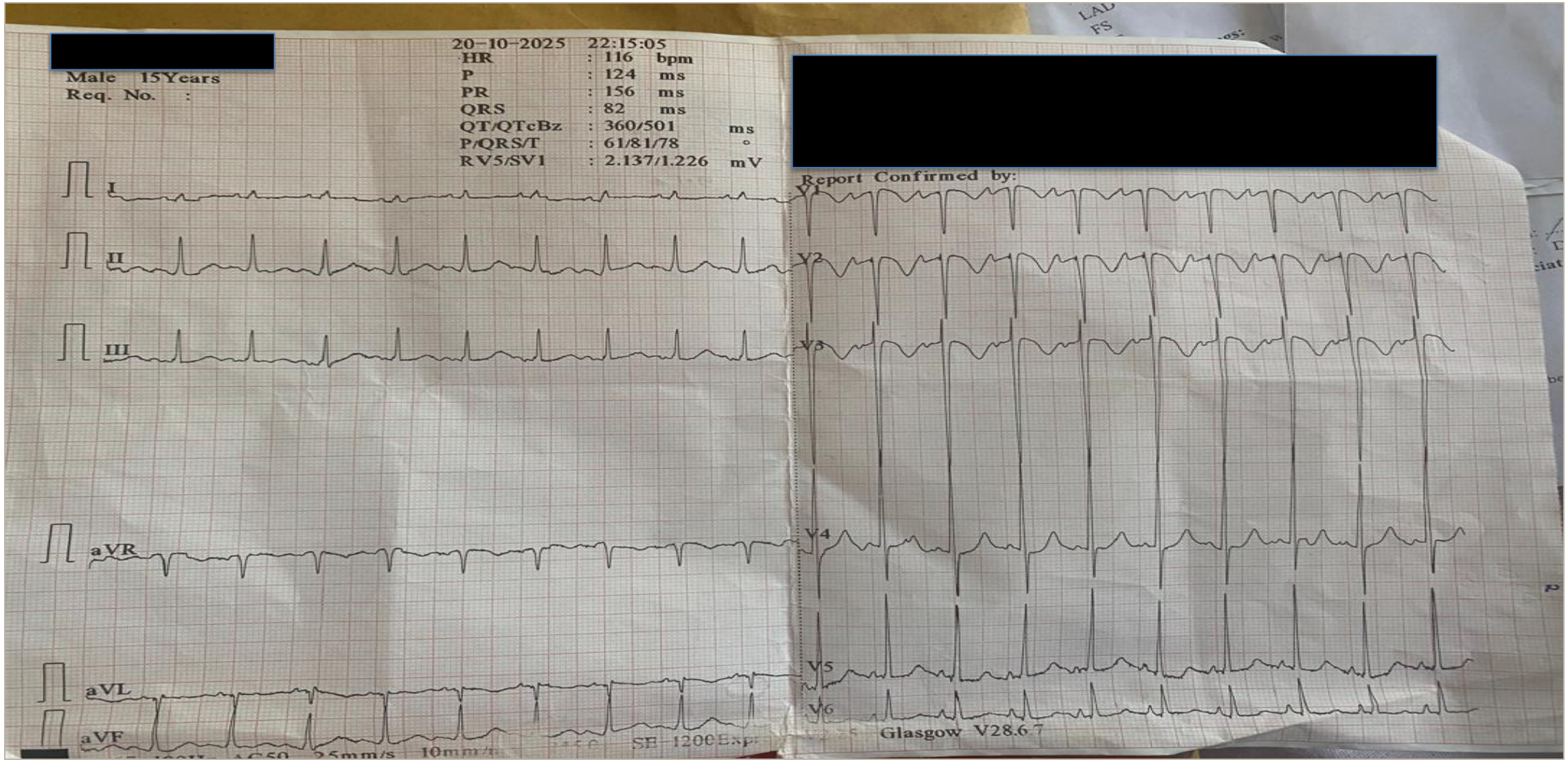
INVESTIGATION	RESULT		REFERENCE RANGES
CBC	RBCs	4.34	3.80-6.10
	Hb	9.1 g/dl	11.0-17.0
	MCV	79.4 fl	71.0-97.0
	MCH	25.5 pg	23.0-34.0
	WBC	5.69	2.80-8.20
	Neut	2.0427	1.7-7.7
	Lymph	2.6458	0.4-4.4
	Eos	0.2447	Upto 0.2
	Mono	0.444	Upto 0.800
Electrolytes	Na	128 mmol/l	135-150
	K	3.99 mmol/l	3.5-5.5
	Cl	93.4 mmol/l	95-110
RFTs	Urea	2.2 mmol/l	2.7-6.4
	Creatinine	74 umol/l	44-106
LFTs	ALL WITHIN RANGE		
MRDT	NEGATIVE		
Stool GENE-Xpert	NO MTB DETECTED		
Blood culture and sensitivity	PENDING		

Poll 3

What is the interpretation of this radiograph?



ECG


[redacted]
Male 15Years
Req. No. :
20-10-2025 22:15:05
HR : 116 bpm
P : 124 ms
PR : 156 ms
QRS : 82 ms
QT/QTcBz : 360/501 ms
P/QRS/T : 61/81/78 °
RV5/SV1 : 2.137/1.226 mV
[redacted]
Report Confirmed by:
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
Glasgow V28.6.7

Cardiac ECHO conclusion

- Rheumatic heart disease with perforation of the anterior mitral valve leaflet, severe mitral regurgitation and mild aortic insufficiency
- Mitral valve vegetations indicative of infective endocarditis

HOSPITAL COURSE

DAY	PATIENT CONDITION	TREATMENT
DAY 1 (ED)	• Patient drastically improved heart failure regimen, with near- normalization of respiratory parameters, appetite improved, vomiting ceased, fevers resolved and regained some energy. Still had mild chest pain, tachypnea, tachycardia and basal crackles.	
DAY 4 (CARDIO-RESPIRATORY WARD)	• Chest pain had resolved, no longer tachypneic at 18bpm, HR was 88Bpm, chest was clear, no new complaints	• Same as above, added PO diclofenac for chest pain, did repeat investigations, and were all in range, PO NaCl stopped.
DAY 11 (DISCHARGE)	• Patient had no new complaints, was in fair general condition.	• Results for the blood culture returned on the 7th day of admission but unfortunately didn't yield any organisms after 7 days of growth • discharged on Oral Penicillin V twice daily, as well as heart failure medication as earlier given, scheduled for review after 1 week in the cardiac clinic. • Caretakers cautioned on salt and fluid restriction, and encouraged to adhere to the medication

Expert

Pearls and pitfalls

Highlights/ learning points

- Heart failure is a clinical syndrome where the heart is unable to maintain an adequate cardiac output, or does so at the expense of an elevated filling pressure.
- Recognition of the classic presentation of acute heart failure exacerbation and prompt delineation of compensated vs decompensated heart failure, and the associated sequelae
- Signs in compensated phase include mainly tachycardia, however in the decompensated state; cold extremities, increased CRT, weak thread pulses, oliguria, altered mental state, hypotension(late)
- Intervene early with intravenous loop diuretics to achieve euvolemia, and start the patient on a heart failure regimen according to GDMT. Caution to avoid fluid boluses in congestive states as these tend to worsen the clinical picture.

THANK YOU FOR YOUR AUDIENCE!