CHEST PAIN

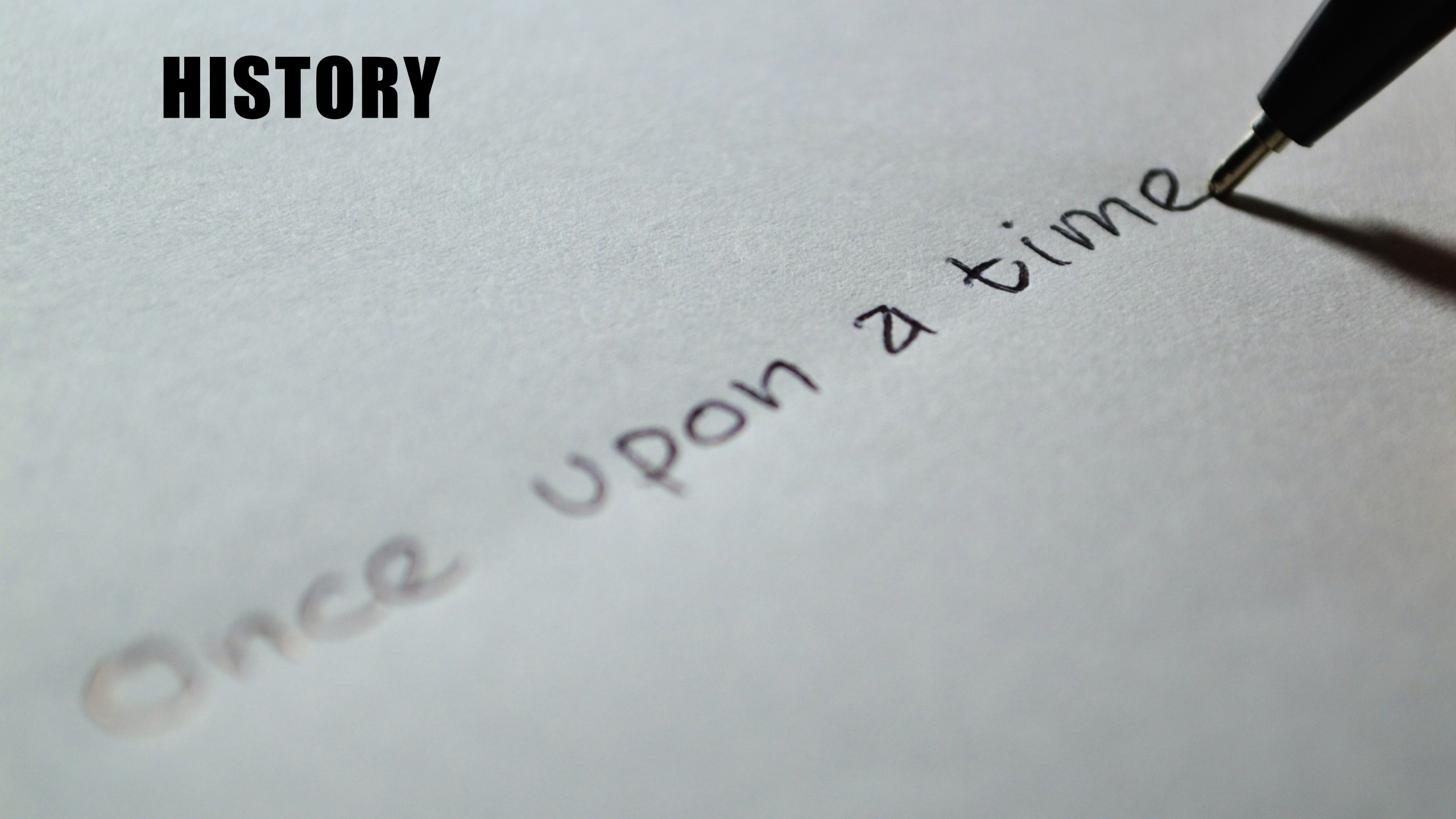
ANNEKA WICKS
ED SMO
TUESDAY 30 JUNE 2020


DANGER

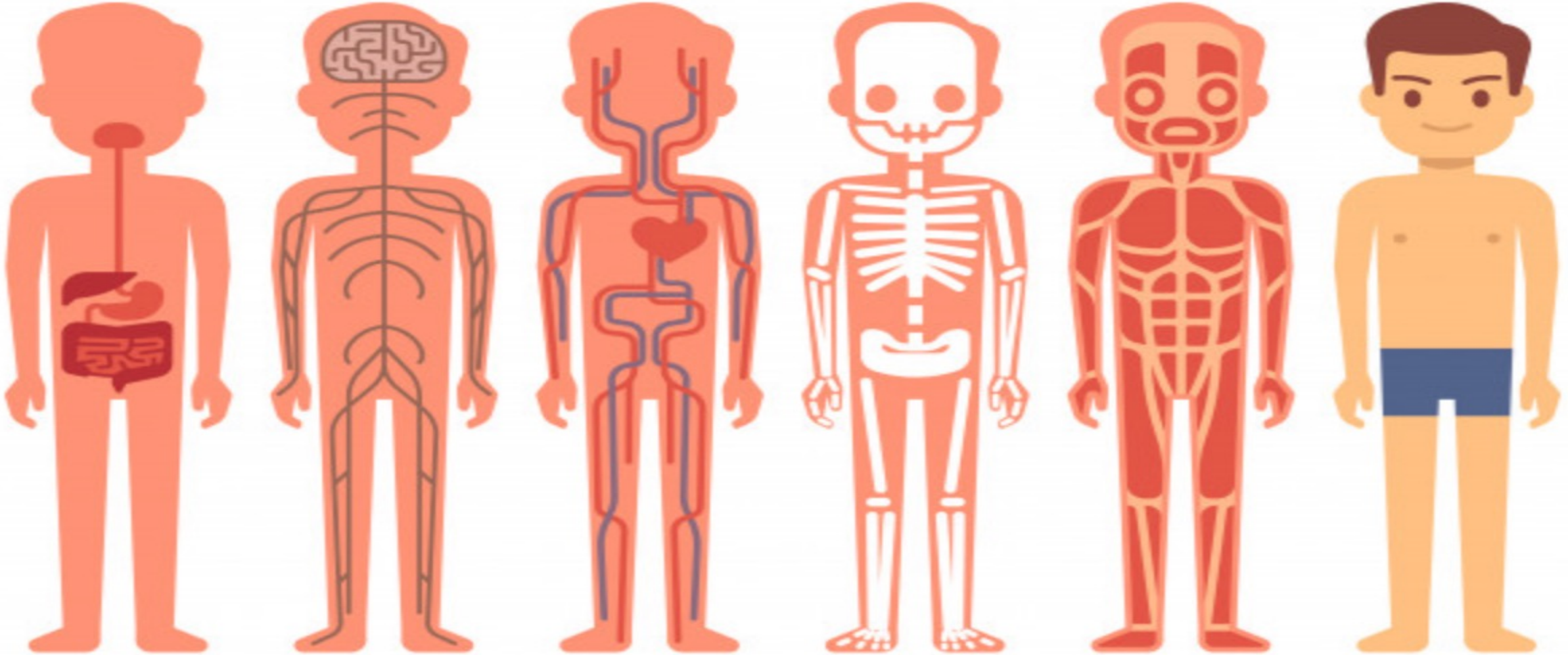

DISTRESS

DISPOSITION

HISTORY



EXAMINATION



INVESTIGATIONS

MR S

CASE ONE

BACKGROUND

- 43y Samoan male
- PMHx:
    - T2DM
    - HTN
    - Obesity
    - ESRF – pre-dialysis
    - Gout
- DHx:
    - Aspirin, metoprolol, cilazapril, allopurinol, simvastatin, omeprazole
    - NKDA
- Non-smoker

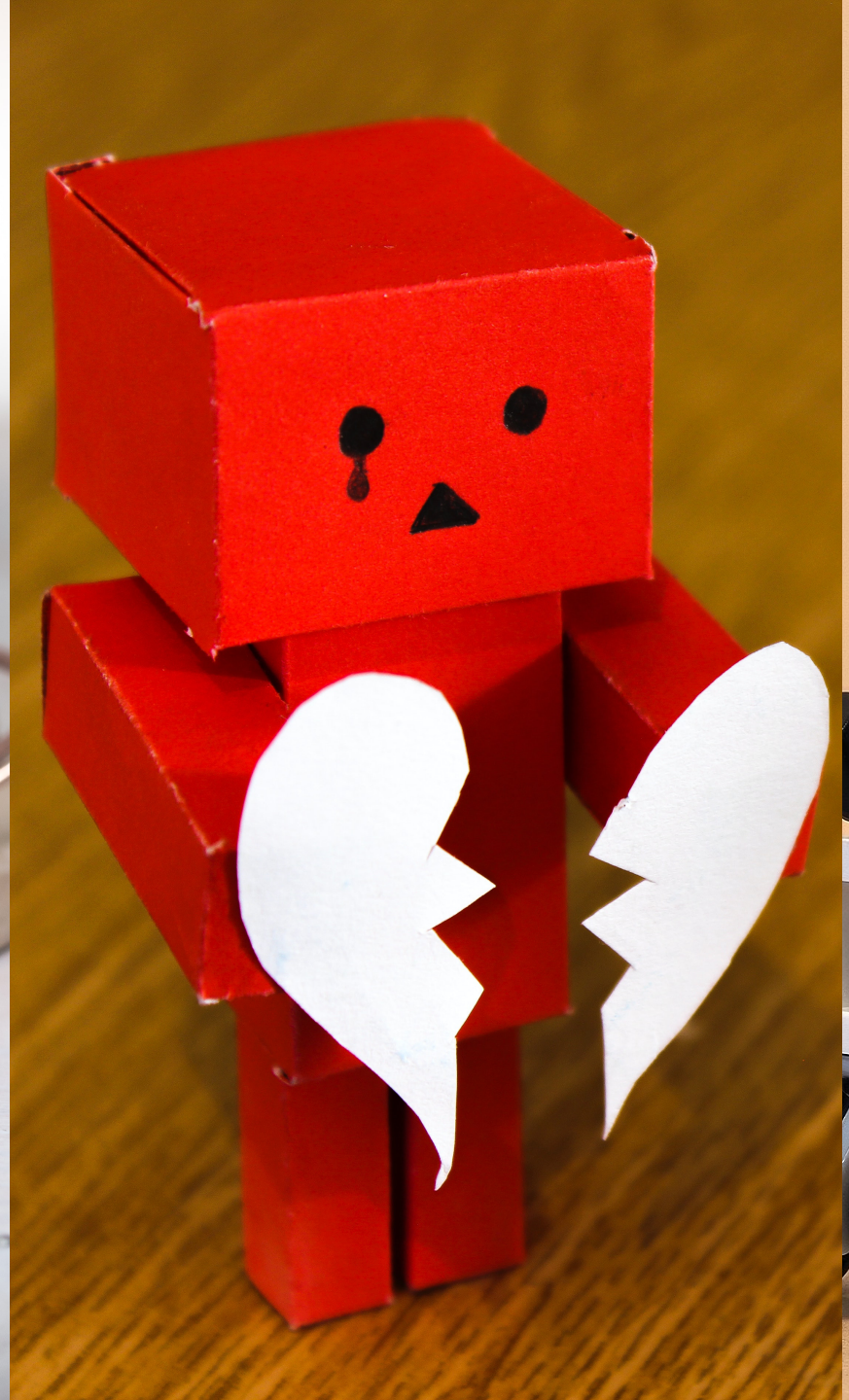
ASSESSMENT

HISTORY

- R side of chest
- Sudden onset this morning, took Panadol, no relief
- Sharp pain
- Radiates to R scapula
- No associated symptoms
- Constant background pain
- Worse with movement
- 5/10 severity

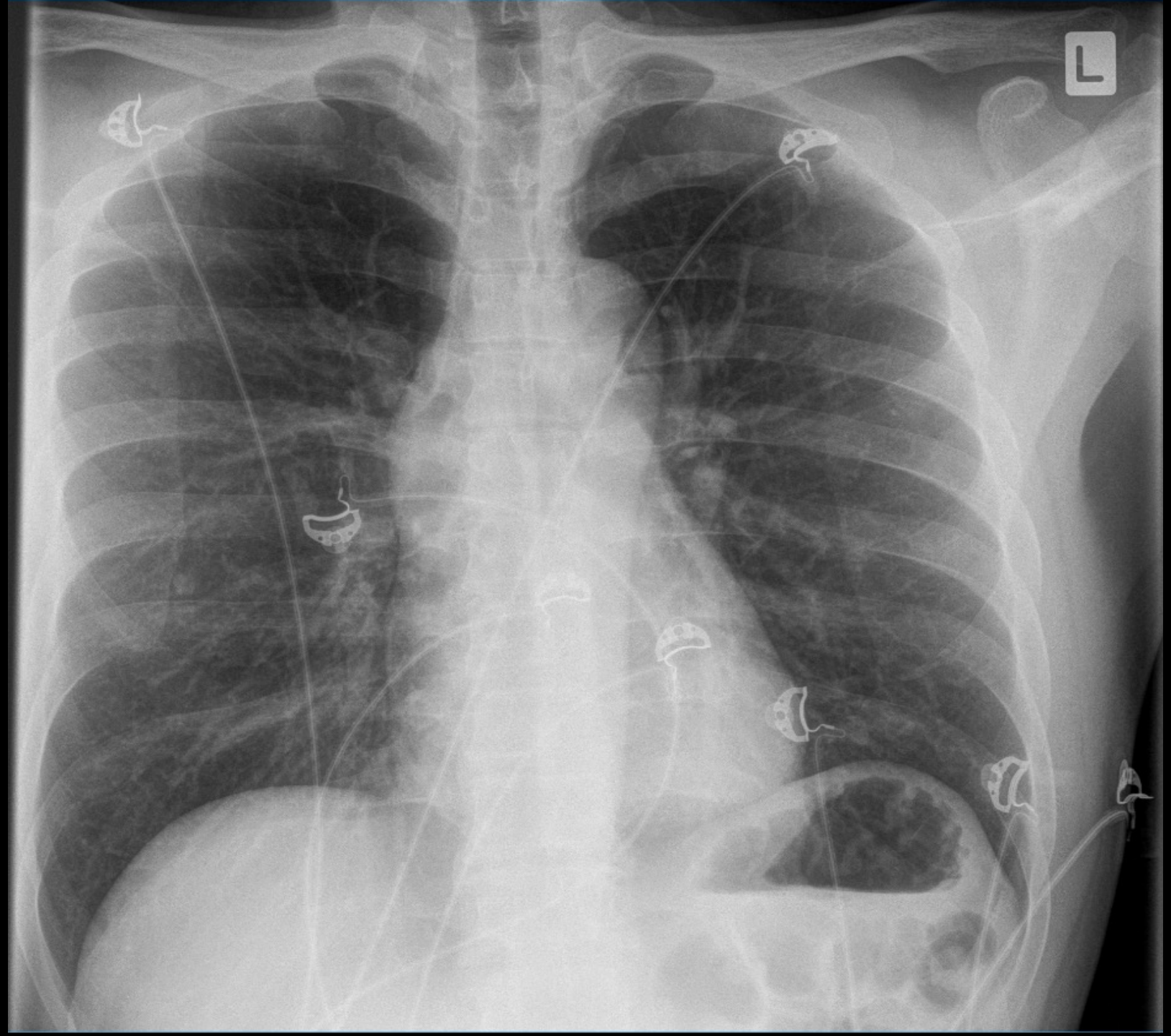
EXAMINATION

- Alert, chatty, occasional grimaces
- Afebrile, HR 63bpm, BP 155/91, RR 20, sats 96% on air
- Reg pulse, no R-R delay
- HS normal, no murmurs
- Chest – bibasal crackles
- Abdomen – obese, SNT
- Calves SNT, no oedema, bilateral DP pulses



INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC – Hb 110	CXR	ECG – TWI III, no STE
Biochemistry – Cr 580		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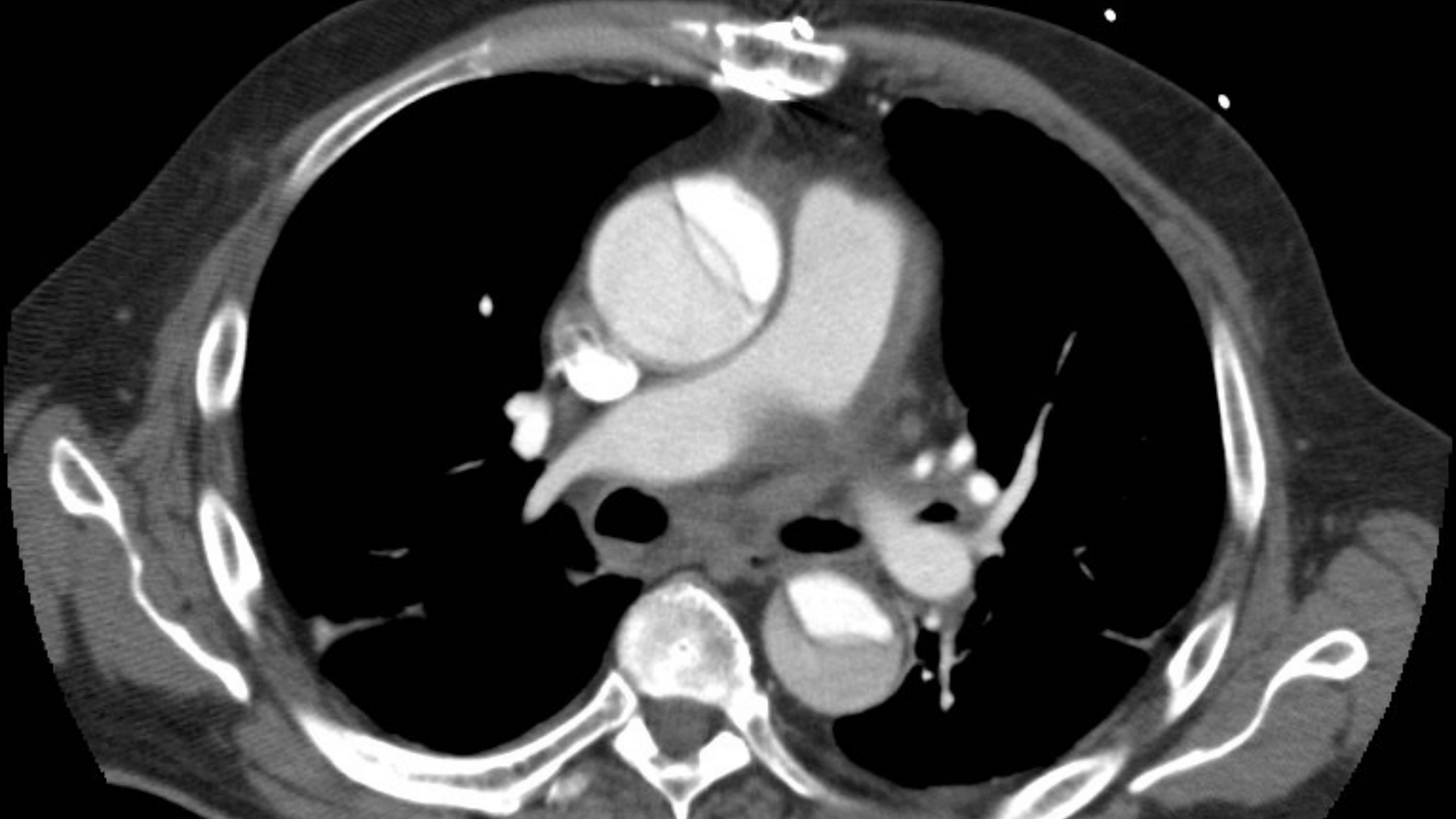
INVESTIGATIONS

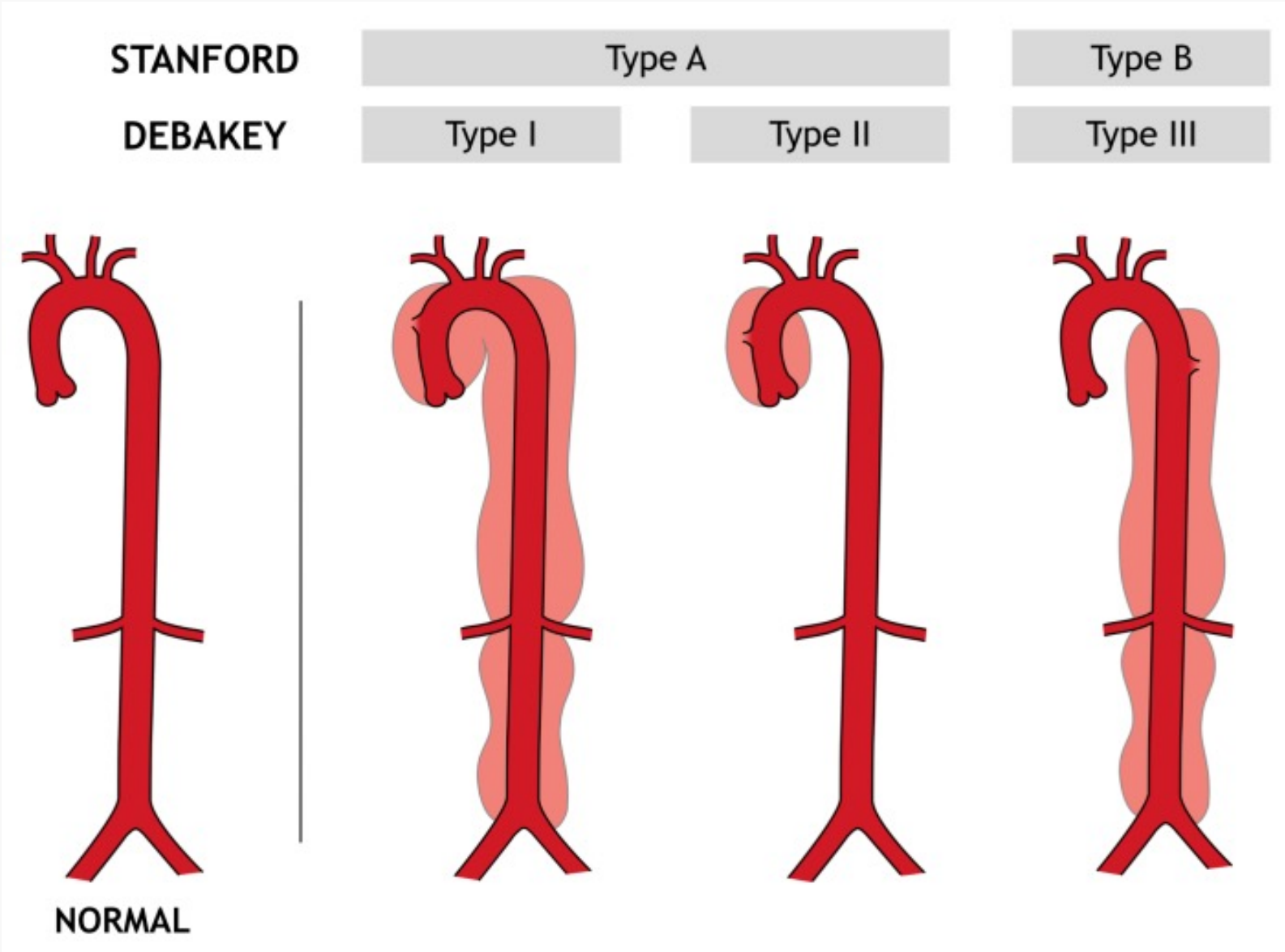
BLOODS	RADIOLOGY	OTHER
FBC – Hb 110	CXR	ECG – TWI III, no STE
Biochemistry – Cr 580		L&R BP: L 142/72, R 155/84
Troponin – 127		

INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC – Hb 110	CXR – NAD	ECG – TWI III, no STE
Biochemistry – Cr 480	CTA?	L&R BP: L 142/72, R 155/84
Troponin – 127		Bedside Echo?
VBG – lactate 3.8		



THORACIC AORTIC DISSECTION



MANAGEMENT

- Call for help
- Move to Resus
- Control BP – analgesia, labetolol, GTN

- Type A – cardiothoracics
  - Urgent surgical intervention
  - Do they have any complications? STEMI / tamponade
- Type B – cardiology / CCU
  - Urgent BP control
  - Watch for rebound HR

MRS C

CASE TWO

BACKGROUND

- 64y NZ European female
- PMHx:
  - HTN
  - Breast cancer – in remission
  - Significant post-op bleeding with negative screen for von Willebrands
- DHx:
  - Cilazapril
  - NKDA
- Non-smoker

ASSESSMENT

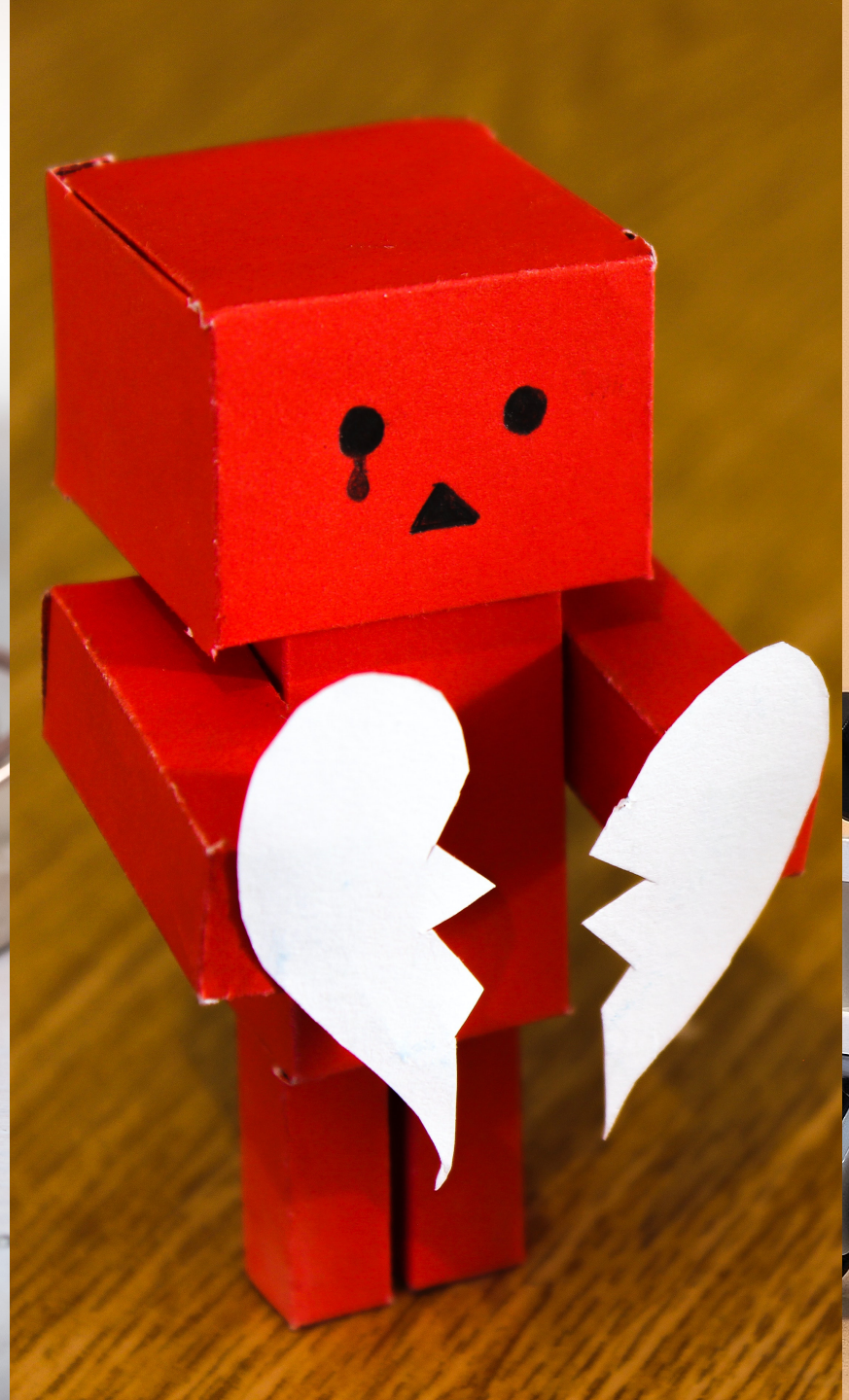
HISTORY

- Central chest pain
- Onset 11am, whilst meditating
- Tight pain
- Non-radiating
- Associated diaphoresis and SOB
- Pain reduced in intensity since onset
- No relieving / exacerbating factors
- Was 8/10, now 4/10 severity

EXAMINATION

- Alert, appears well, comfortable
- Afebrile, HR 76, BP 165/80, RR18, sats 100% on air

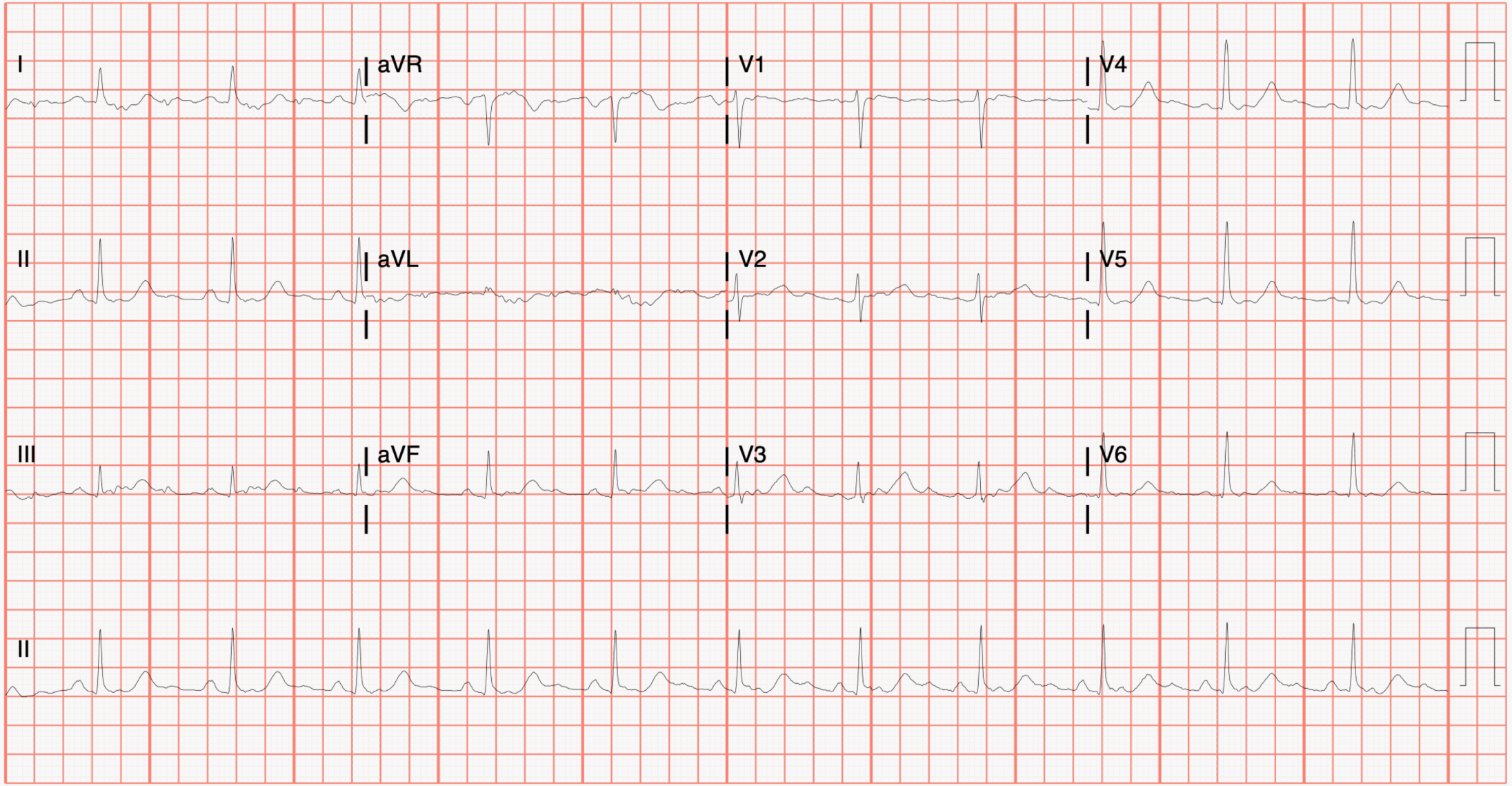
- Reg pulse, no R-R delay
- HS normal, no murmurs
- Chest – clear, equal air entry
- Abdomen – SNT
- Calves SNT, no oedema, bilateral DP pulses



INVESTIGATIONS

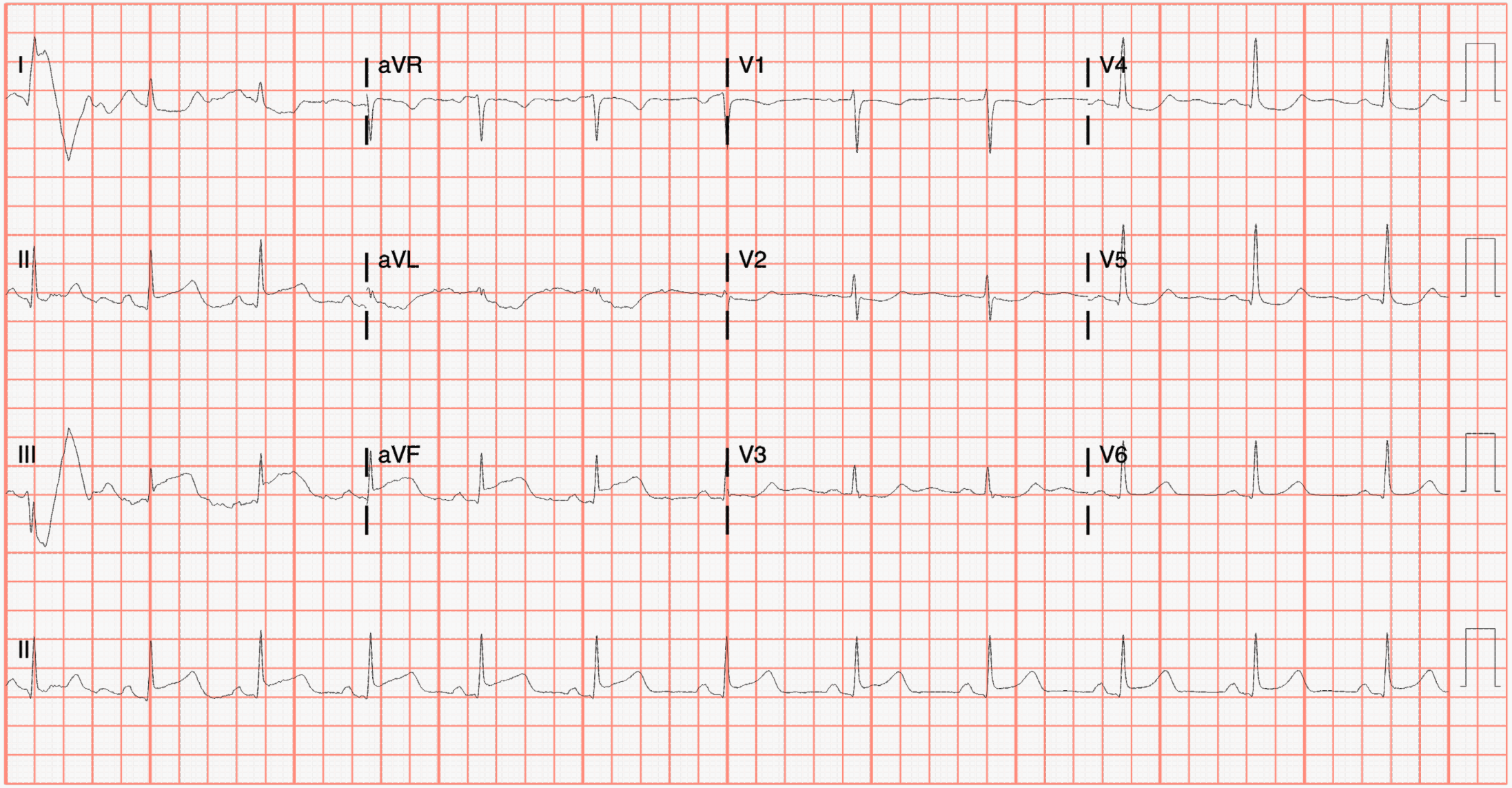
BLOODS	RADIOLOGY	OTHER
FBC	CXR	ECG
Biochemistry		
Troponin		

ECG



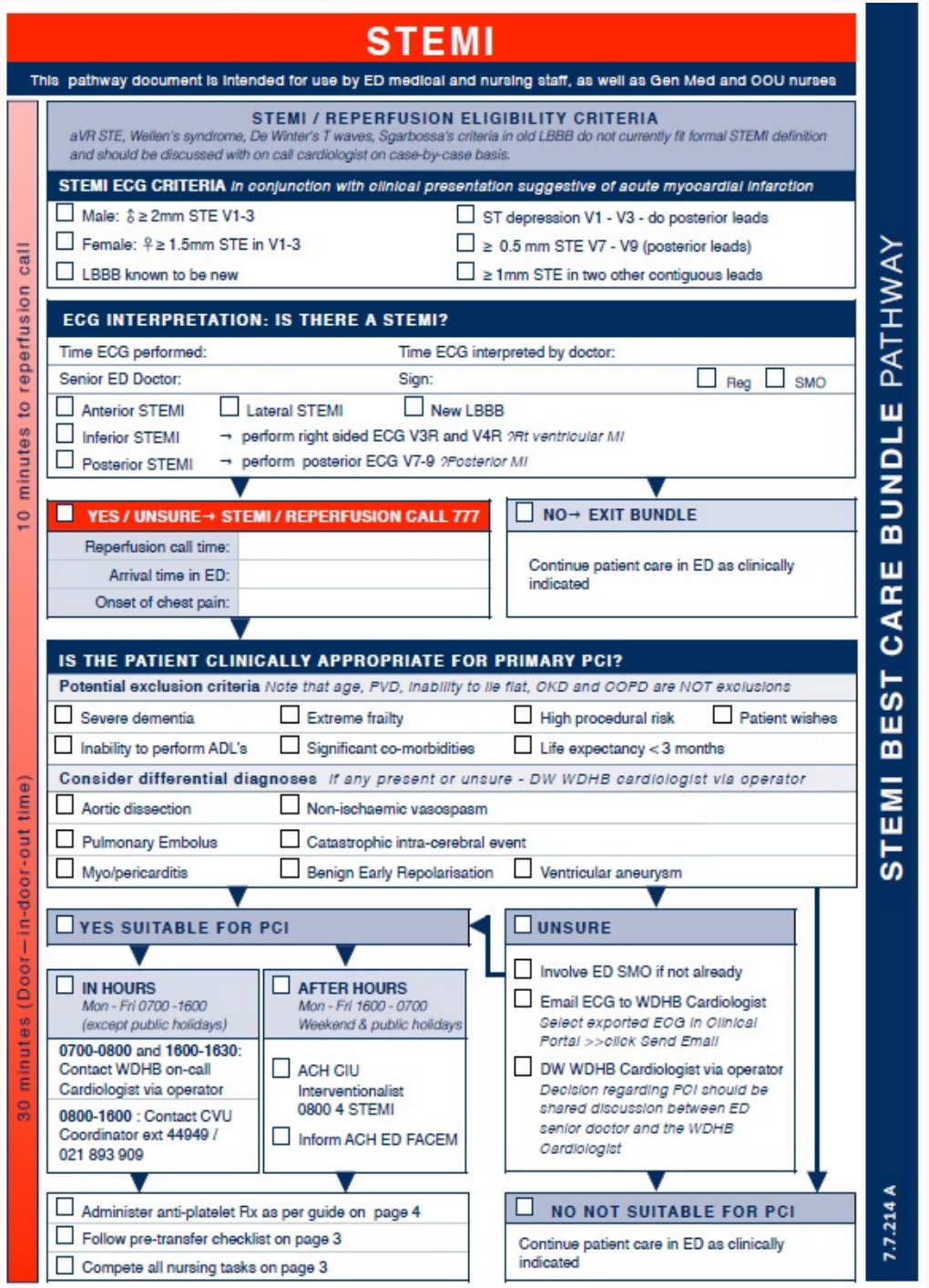
NOW WHAT?

REPEAT ECG



MANAGEMENT

- STEMI pathway in ED
- 777 STEMI call out
- After hours – 0800 4 STEMI to ACH
- Aspirin, ticagrelor, heparin
  - D/W Cardiology Reg/SMO



STEMI

This pathway document is intended for use by ED medical and nursing staff, as well as Gen Med and OOU nurses

10 minutes to reperfusion call

30 minutes (Door—in-door-out time)

STEMI / REPERFUSION ELIGIBILITY CRITERIA

aVR STE, Wellen's syndrome, De Winter's T waves, Sgarbossa's criteria in old LBBB do not currently fit formal STEMI definition and should be discussed with on call cardiologist on case-by-case basis.

STEMI ECG CRITERIA *in conjunction with clinical presentation suggestive of acute myocardial infarction*

- ☐ Male: ♂ ≥ 2mm STE V1-3
- ☐ Female: ♀ ≥ 1.5mm STE in V1-3
- ☐ LBBB known to be new
- ☐ ST depression V1 - V3 - do posterior leads
- ☐ ≥ 0.5 mm STE V7 - V9 (posterior leads)
- ☐ ≥ 1mm STE in two other contiguous leads

ECG INTERPRETATION: IS THERE A STEMI?

Time ECG performed: Time ECG interpreted by doctor:

Senior ED Doctor: Sign: ☐ Reg ☐ SMO

- ☐ Anterior STEMI ☐ Lateral STEMI ☐ New LBBB
- ☐ Inferior STEMI → perform right sided ECG V3R and V4R *?Rt ventricular MI*
- ☐ Posterior STEMI → perform posterior ECG V7-9 *?Posterior MI*

☐ **YES / UNSURE→ STEMI / REPERFUSION CALL 777**

Reperfusion call time:

Arrival time in ED:

Onset of chest pain:

☐ **NO→ EXIT BUNDLE**

Continue patient care in ED as clinically indicated

IS THE PATIENT CLINICALLY APPROPRIATE FOR PRIMARY PCI?

Potential exclusion criteria *Note that age, PVD, inability to lie flat, OKD and OOPD are NOT exclusions*

- ☐ Severe dementia ☐ Extreme frailty ☐ High procedural risk ☐ Patient wishes
- ☐ Inability to perform ADL's ☐ Significant co-morbidities ☐ Life expectancy < 3 months

Consider differential diagnoses *If any present or unsure - DW WDHB cardiologist via operator*

- ☐ Aortic dissection ☐ Non-ischaemic vasospasm
- ☐ Pulmonary Embolus ☐ Catastrophic intra-cerebral event
- ☐ Myo/pericarditis ☐ Benign Early Repolarisation ☐ Ventricular aneurysm

☐ **YES SUITABLE FOR PCI**

☐ **IN HOURS**
Mon - Fri 0700 -1600 (except public holidays)

0700-0800 and 1600-1630: Contact WDHB on-call Cardiologist via operator

0800-1600 : Contact CVU Coordinator ext 44949 / 021 893 909

☐ **AFTER HOURS**
Mon - Fri 1600 - 0700 Weekend & public holidays

- ☐ ACH CIU Interventionalist 0800 4 STEMI
- ☐ Inform ACH ED FACEM

☐ **UNSURE**

- ☐ Involve ED SMO if not already
- ☐ Email ECG to WDHB Cardiologist *Select exported ECG in Clinical Portal >>click Send Email*
- ☐ DW WDHB Cardiologist via operator *Decision regarding PCI should be shared discussion between ED senior doctor and the WDHB Cardiologist*

- ☐ Administer anti-platelet Rx as per guide on page 4
- ☐ Follow pre-transfer checklist on page 3
- ☐ Compete all nursing tasks on page 3

☐ **NO NOT SUITABLE FOR PCI**

Continue patient care in ED as clinically indicated

STEMI BEST CARE BUNDLE PATHWAY

7.7.214 A

MR V

CASE THREE

BACKGROUND

- 54y Russian male
- PMHx:
  - HTN
  - Schizophrenia
- DHx:
  - Cilazapril
  - Olanzapine
  - NKDA
- Non-smoker, occasional alcohol

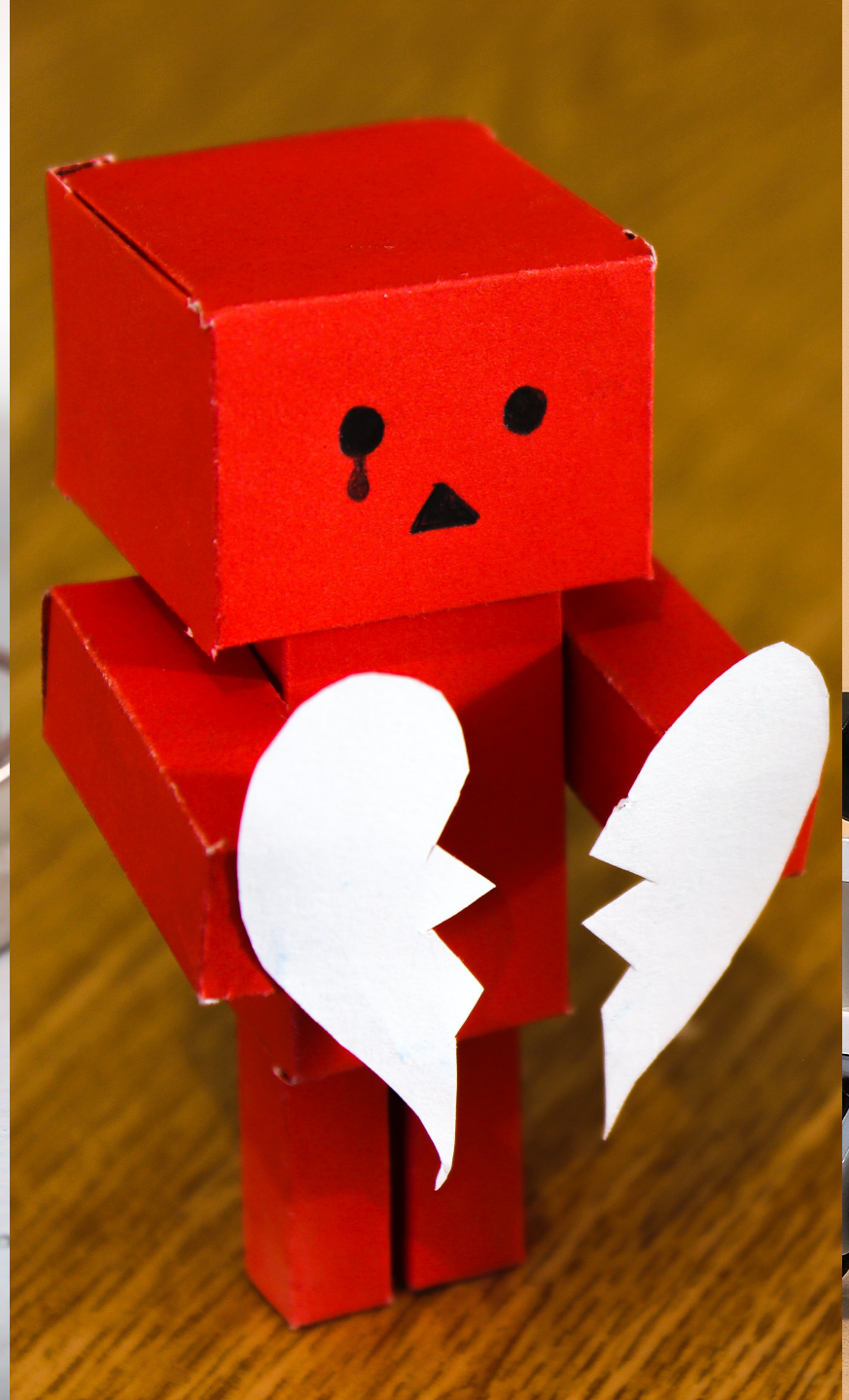
ASSESSMENT

HISTORY

- L side of chest
- Gradual onset today, comes and goes
- "Not a pain, just discomfort"
- No radiation, but sometimes tingling in hands when pain comes
- Associated SOB
- Lasts up to 1 hour then subsides
- Worse with inspiration
- 8/10 severity

EXAMINATION

- Chatty, alert, comfortable and pain free
- Afebrile, HR, 71bpm, BP 148/83, RR 14, sats 97% on air
- Reg pulse, no R-R delay
- HS normal, no murmurs
- Chest – clear, equal air entry
- Abdomen SNT
- Calves SNT, no oedema, bilateral pulses



INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC	CXR	ECG
Biochemistry		

INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC	CXR	ECG
Biochemistry		PERC Rule?
Troponin?		
D-dimer?		

- Cardiac
  - Low risk on chest pain pathway
  - Normal ECG, Troponin <15
  - No red flags – exertional sx, HF, murmurs
- Respiratory
  - Normal CXR – no pneumothorax, normal mediastinum
  - PE – can't be PERC'd, Wells = 0
  - D-dimer 370
- Vascular
  - No back pain, not typical of dissection
  - Negative d-dimer
- Abdomen
  - Soft, non-tender

DANGER

DISTRESS

DISPOSITION?

MR R

CASE FOUR

BACKGROUND

- 89y NZ European male
- PMHx:
    - CHF
    - AAA – under vascular surveillance
    - Carotid artery disease
    - HTN
    - Alzheimer's dementia
- DHx:
    - Aspirin, dipyridamole, donepezil, felodipine, metoprolol, omeprazole
    - Allergies – penicillin, Sulphur drugs, cotrimoxazole
- Ex-smoker

ASSESSMENT

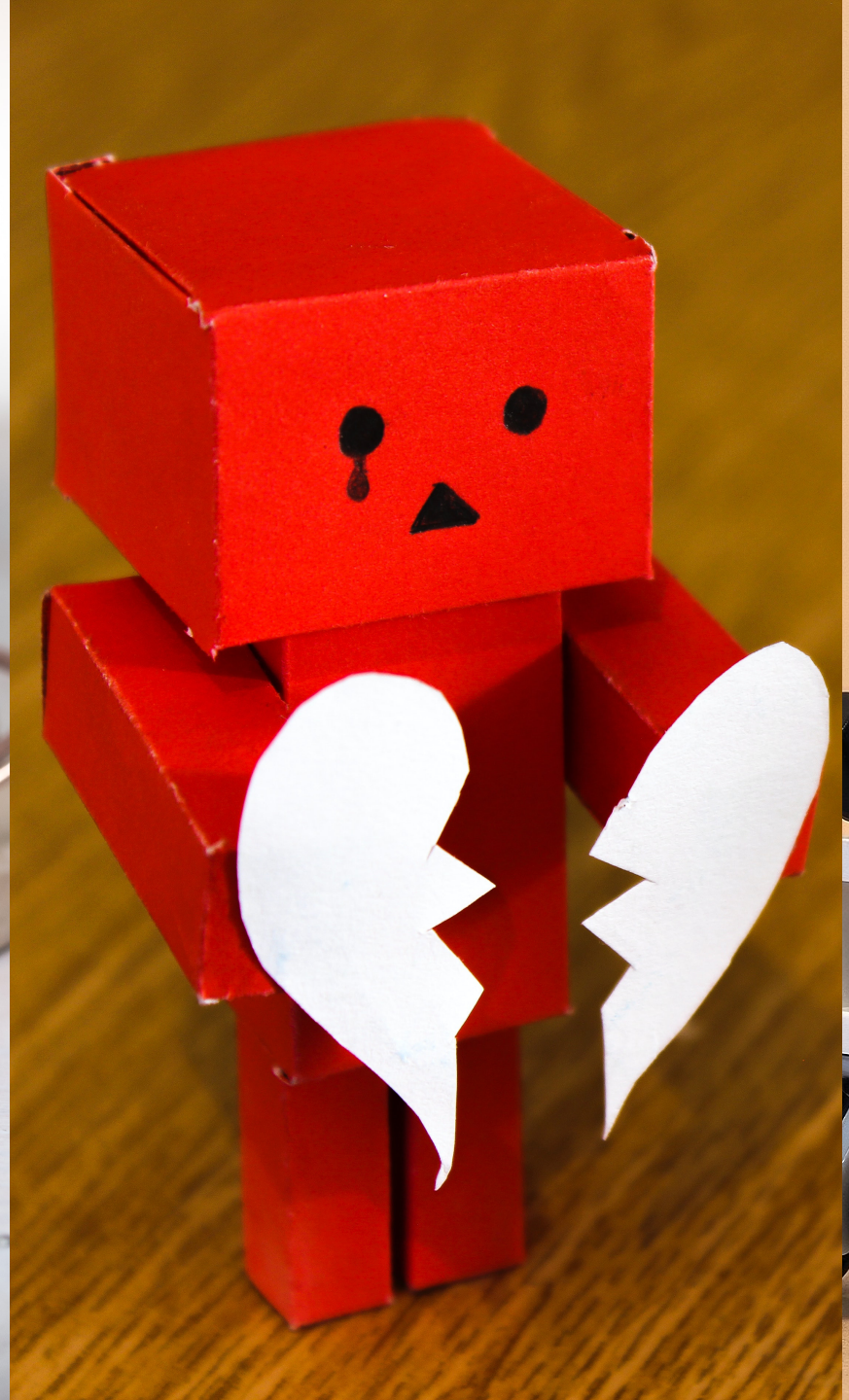
HISTORY

- Generalised chest discomfort
- Gradual onset over the past 2 days
- Feels like he can't catch his breath
- Non-radiating
- Cough, white phlegm, mild leg swelling
- Constant and gradually increasing
- No relieving or exacerbating factors
- 6/10 severity

EXAMINATION

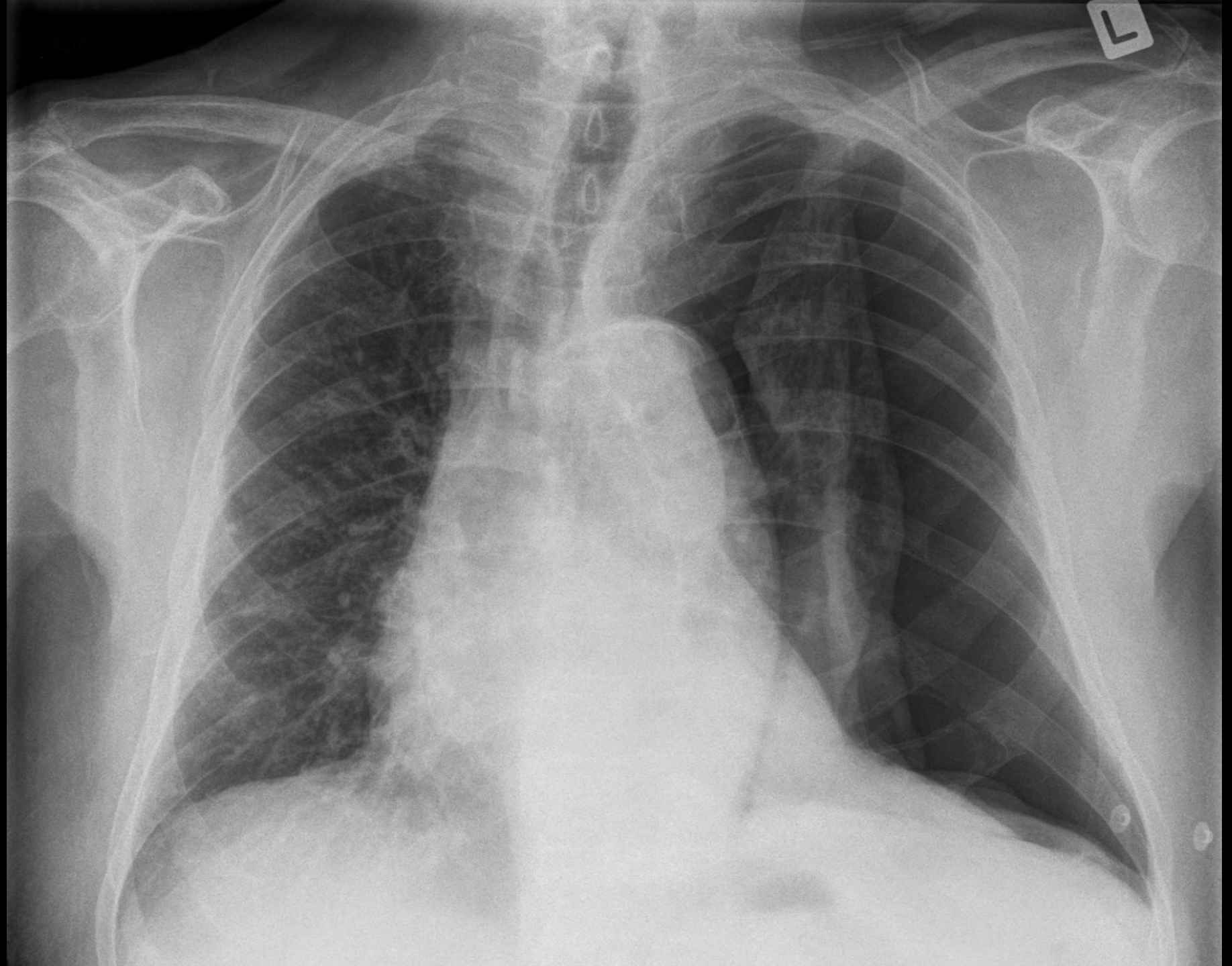
- Chatty, alert, mild tachypnoea
- T 35.9, HR 84bpm, BP 132/87, RR 25, sats 93% on 2L nasal cannula

- Reg pulse, no R-R delay
- HS normal, no murmurs
- Chest – slight reduced air entry L side, clear R side of chest
- Abdomen SNT
- Calves SNT, trace oedema, bilateral DP pulses



INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC – normal	CXR	ECG – NSR, no ST Δ
Biochemistry – Na 127, CRP 14		


L

MANAGEMENT

- Move to Resus
- Analgesia / sedation
- Chest drain
  - Which size? What type?
- Admission
- Plan?

MRS J

CASE FIVE

BACKGROUND

- 48y Maori female
- PMHx:
    - Fit and well
    - FHx: Dad MI in 40s
- DHx:
    - No regular meds
    - NKDA
- Current smoker, 10cpd

ASSESSMENT

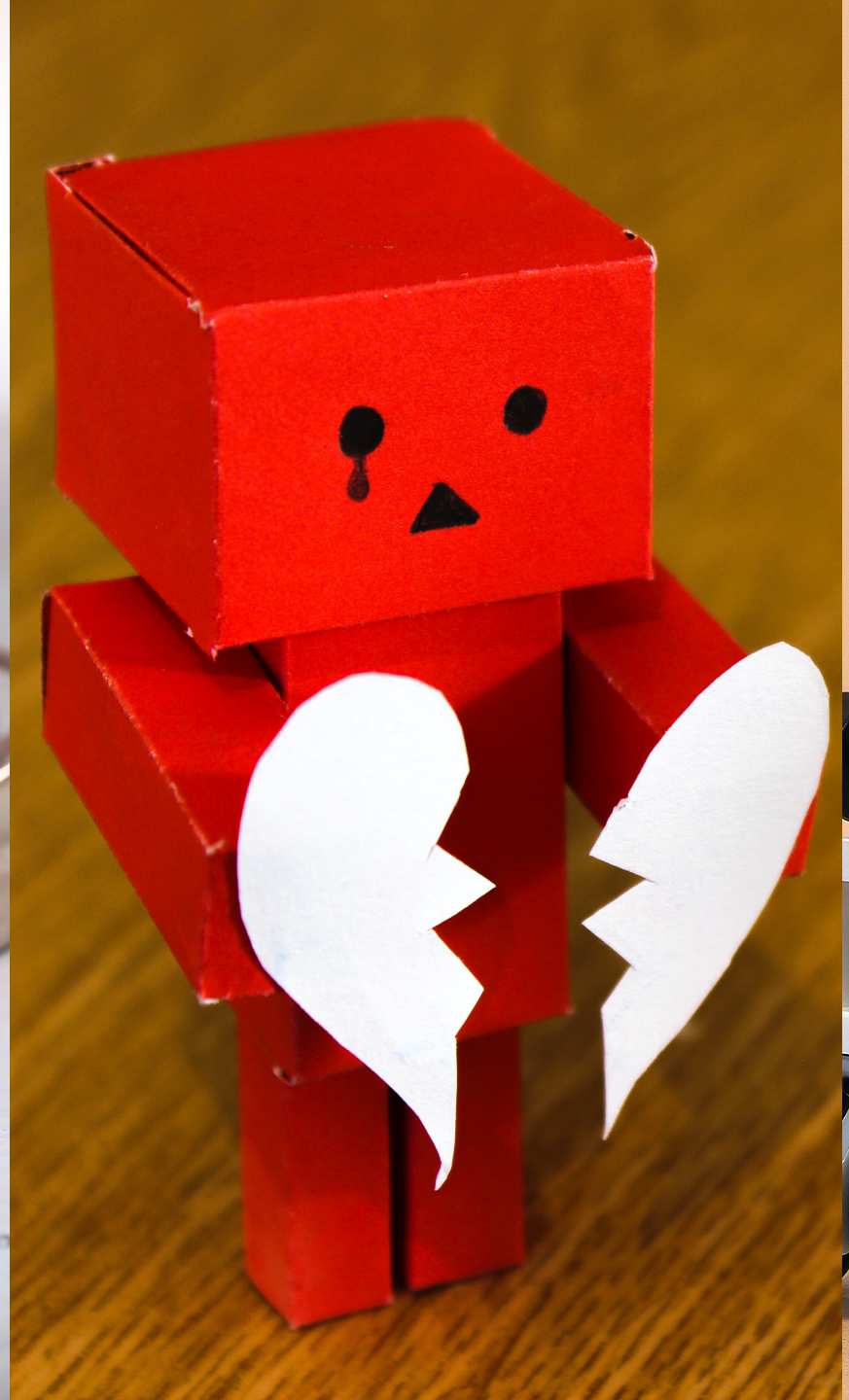
HISTORY

- Central chest
- Gradual onset, increasing last 2 weeks
- Heaviness across chest
- Radiation to R shoulder
- Associated SOB and diaphoresis
- Lasts 5-10 minutes and gradually resolves
- Onset whilst swimming, since then comes and goes. More SOB when walking today.
- 5/10 severity

EXAMINATION

- Alert, comfortable and pain free
- Afebrile, HR 65bpm, BP 148/91, RR 13, sats 99% on air

- Reg pulse, no R-R delay
- HS normal, no murmurs
- Chest – clear, equal air entry
- Abdomen SNT
- Calves SNT, no oedema, bilateral DP pulses



INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC – normal		ECG – NSR, no ST Δ
Biochemistry – normal		

INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC – normal	CXR – NAD	ECG – NSR, no ST Δ
Biochemistry – normal		PERC rule – low risk for PE <2% risk
Troponin <15		

MANAGEMENT

DISCHARGE **VS.** **ADMIT**

- Normal examination
- No PMHx
- Currently pain free
- Normal ECG, trop, PERC rule, CXR

- Increasing symptoms
- Exertional chest pain
- Possibly crescendo angina
- Strong FHx
- High risk ethnicity
- Smoker, undiagnosed HTN
- For ETT +/- Angio / Gen Med clinic

MRS X

CASE SIX

BACKGROUND

- 73y Chinese female
- PMHx:
    - IHD
    - HTN
    - Dyslipidaemia
    - OA
- DHx:
    - Aspirin, metoprolol, felodipine, atorvastatin, paracetamol & ibuprofen PRN
    - NKDA
- Never smoked, no alcohol

ASSESSMENT

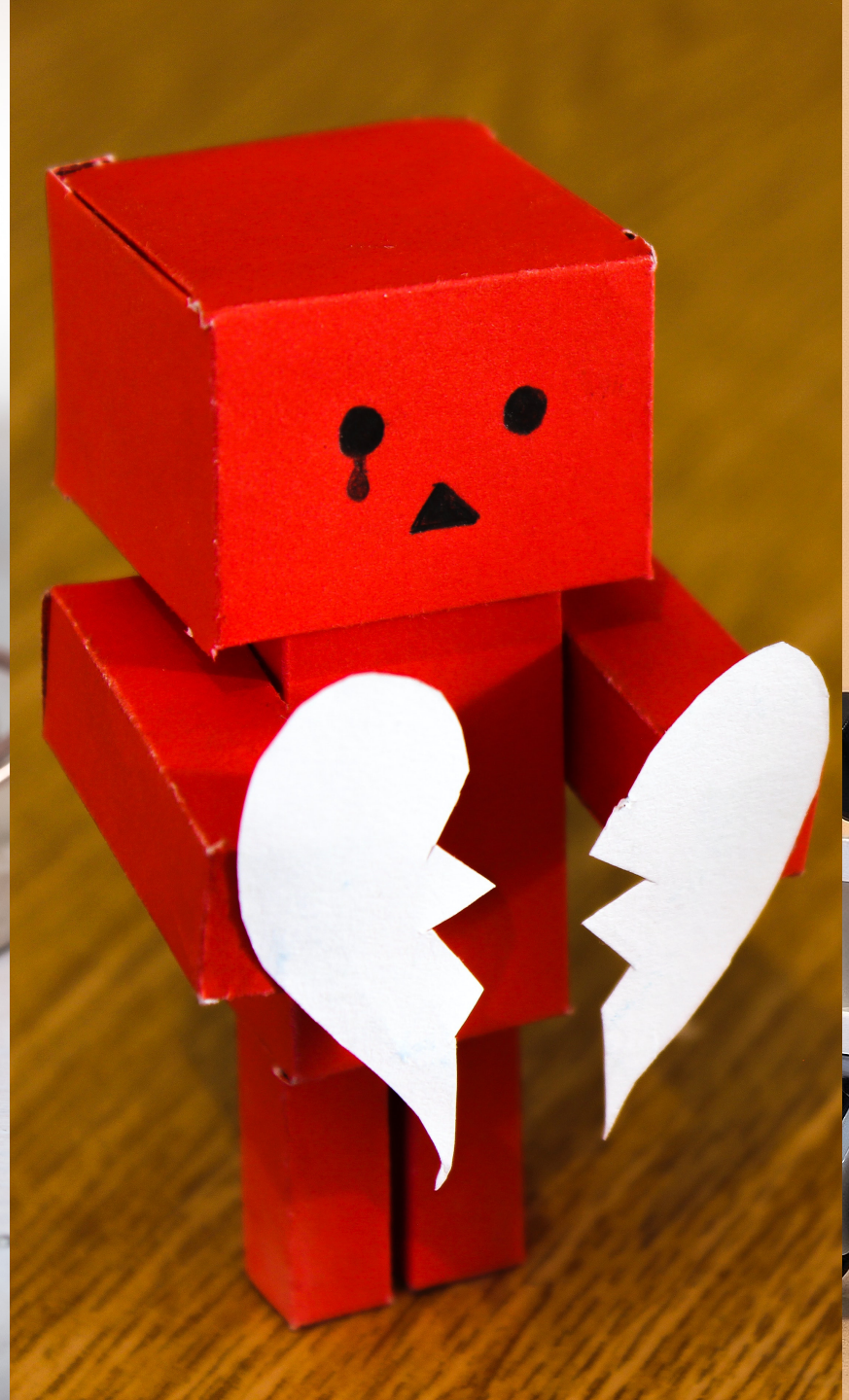
HISTORY

- Central lower chest
- Sudden onset overnight, woke from sleep
- Sharp pain
- Radiation to R shoulder
- Associated nausea and SOB
- Constant pain
- Worse with moving, better with belching
- 7/10 severity

EXAMINATION

- Alert, appears uncomfortable, not shocked
- T 36.1, HR 81bpm, BP 103/62, RR 20, sats 98% on air

- Reg pulse, no R-R delay
- HS normal, no murmurs
- Chest – clear, equal air entry
- Abdomen soft, tender epigastrium
- Calves SNT, no oedema, bilateral DP pulses

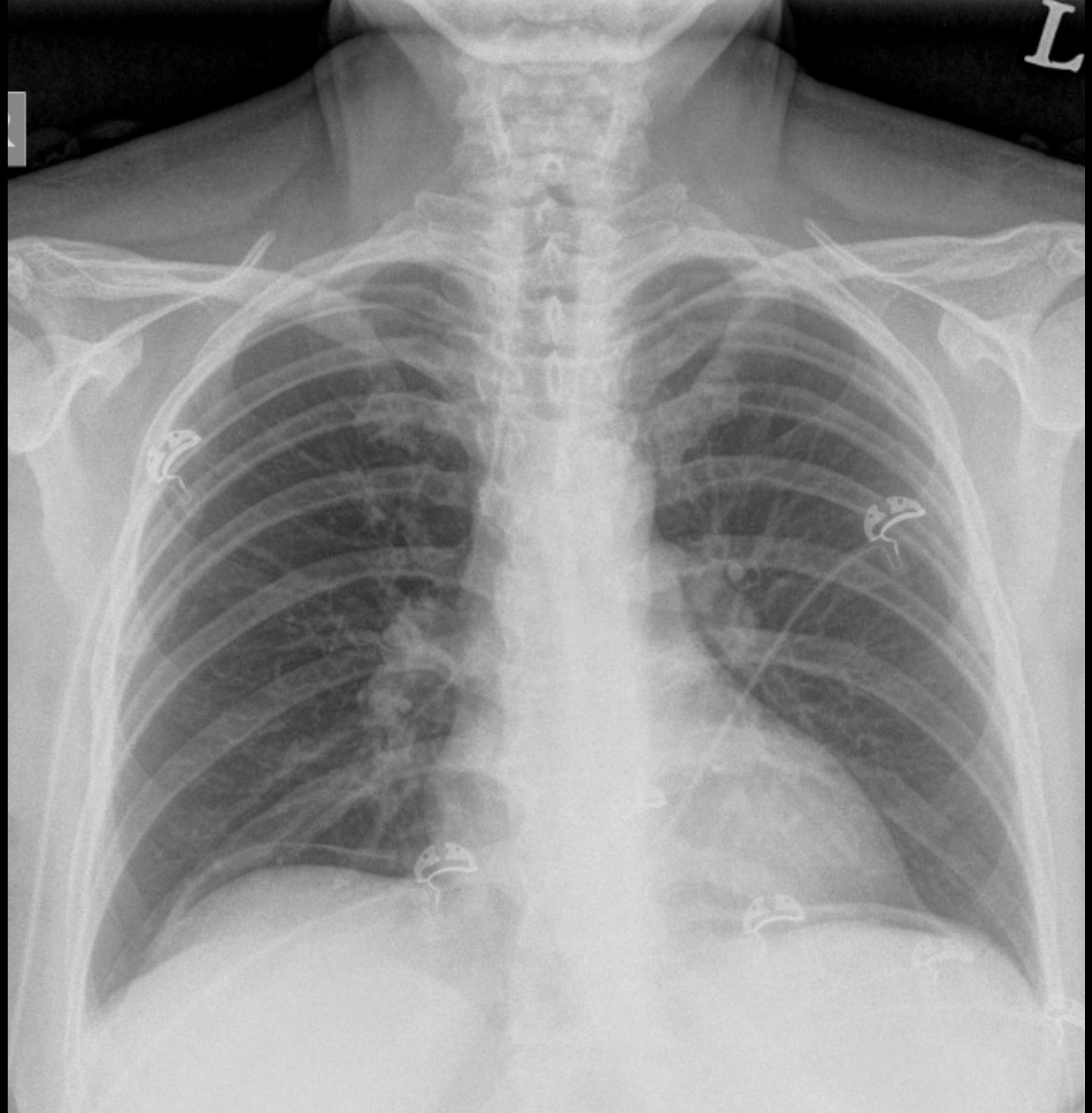


INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC – Hb 110, WBC 12		ECG – old TWI, no new ST Δ
Biochemistry – CRP 72		

INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC – Hb 110, WBC 12	CXR?	ECG – old TWI, no new ST Δ
Biochemistry – CRP 72		
Troponin <15		


L

MANAGEMENT

- CT abdo/pelvis with contrast
  - Perforated gastric ulcer likely secondary to NSAID use

- NBM
- Admit Gen Surg
- IV fluids and analgesia
- Laparoscopic repair

MR M

CASE SEVEN

BACKGROUND

- 58y NZ European male
- PMHx:
    - Nil
- DHx:
    - Nil regular meds
    - NKDA
- Non-smoker

ASSESSMENT

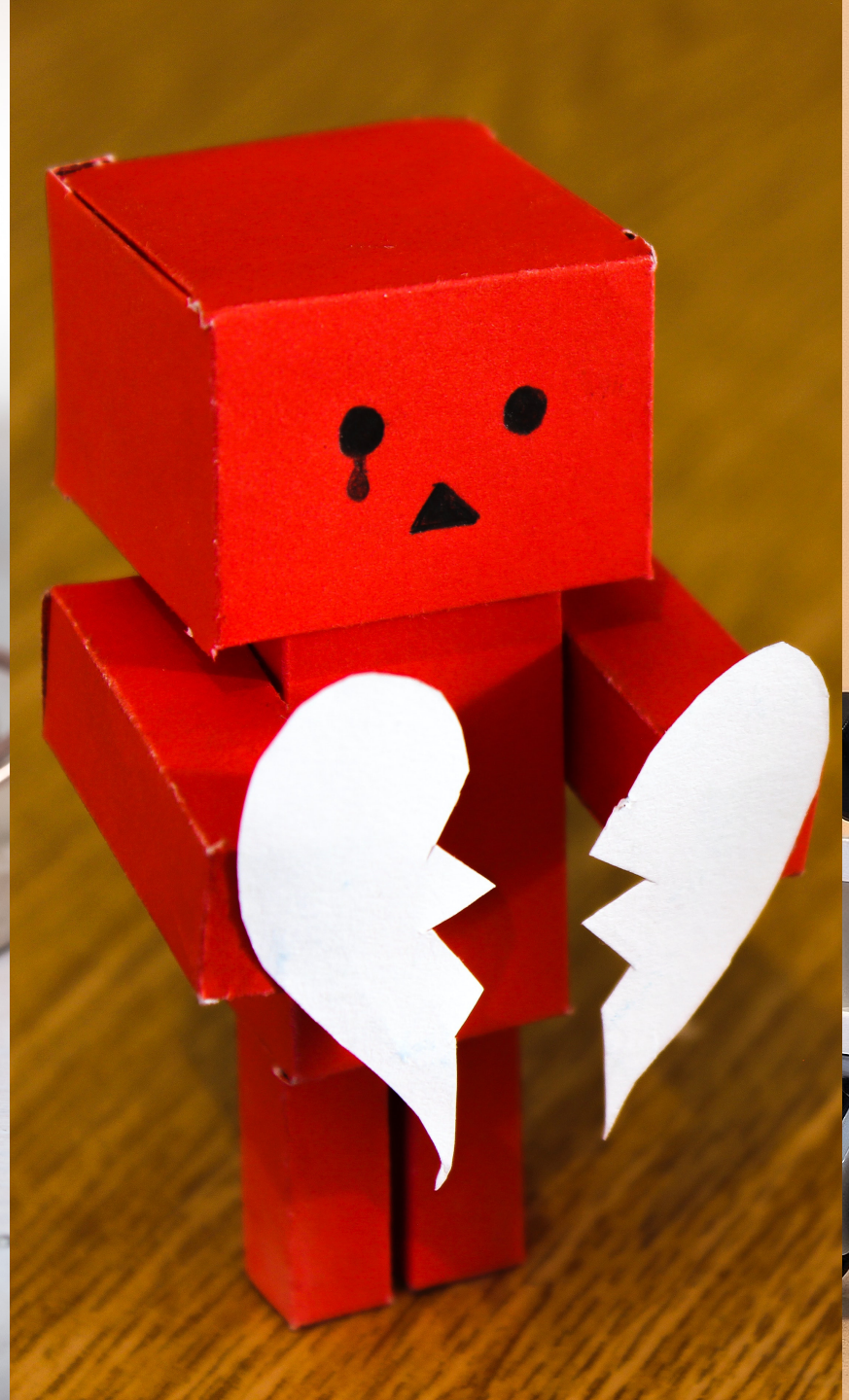
HISTORY

- L lower chest discomfort
- 3 day history, gradual onset after coughing
- Sharp pain
- Radiation through L side of chest
- SOB and dry cough
- Gradually worsening
- Worse with coughing and breathing
- 5/10 severity

EXAMINATION

- Alert, comfortable, speaking full sentences
- T 37.2, HR 129bpm, BP 144/105, RR 18, sats 98% on air

- Reg pulse, tachy, no R-R delay, JVPNE
- HS normal, no murmurs
- Chest – mild crackles L base
- Abdomen SNT
- Calves SNT, mild varicose vein L leg, no oedema



INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC	CXR	ECG?
Biochem – CRP 195, K 3.2		

INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC	CXR	ECG – sinus tachy, no ST Δ
Biochem – CRP 195, K 3.2		
Troponin – 628		

INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC	CXR	ECG – sinus tachy, no ST Δ
Biochem – CRP 195, K 3.2		
Troponin – 628		
D-dimer – >4000		

WELLS SCORE – PE

4.5 points

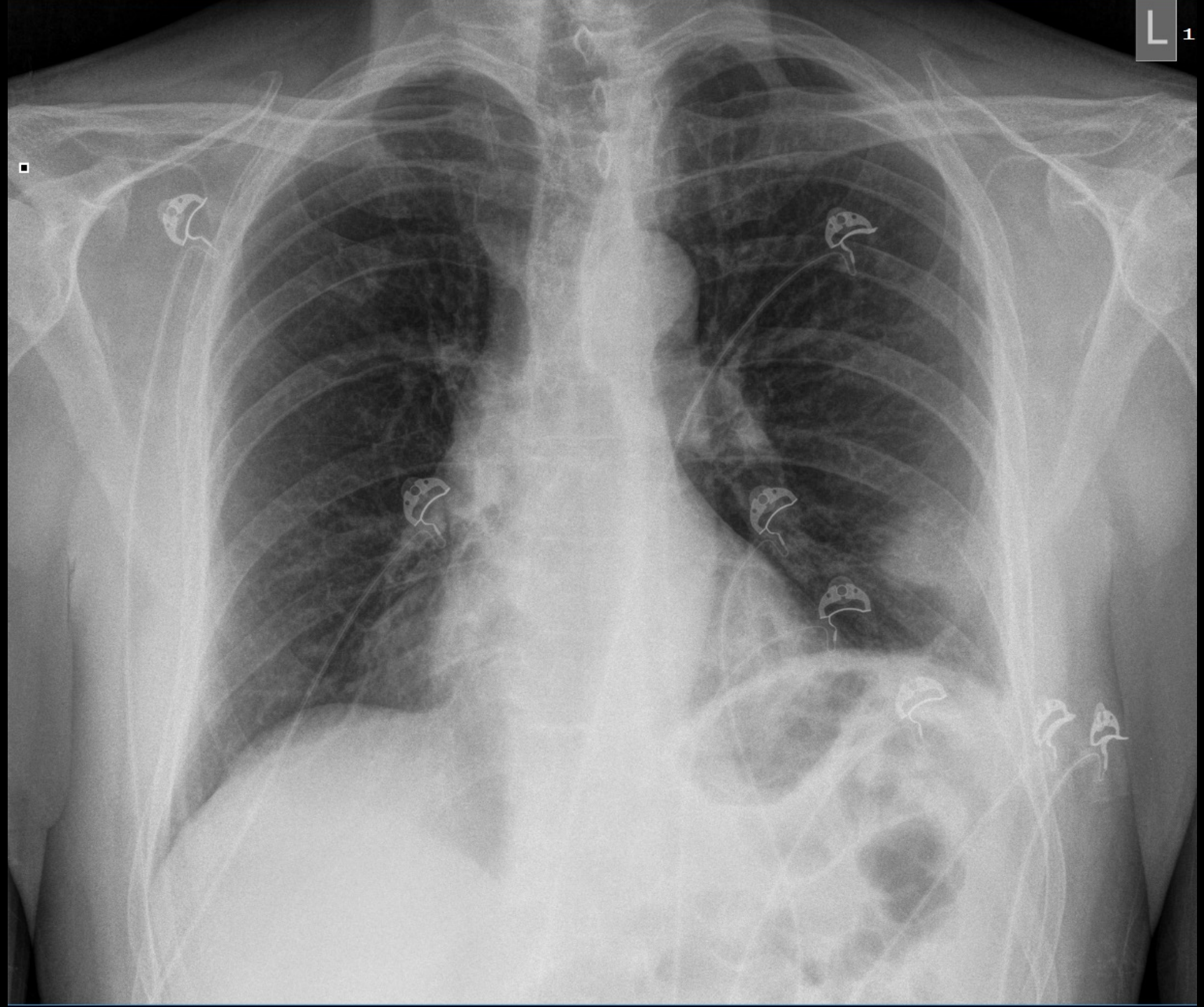
Moderate risk group: 16.2% chance of PE in an ED population.

Another study assigned scores ≤ 4 as "PE Unlikely" and had a 3% incidence of PE.

Another study assigned scores > 4 as "PE Likely" and had a 28% incidence of PE.

Copy Results | Next Steps

Clinical signs and symptoms of DVT	**No 0**	Yes +3
PE is #1 diagnosis OR equally likely	No 0	**Yes +3**
Heart rate > 100	No 0	**Yes +1.5**
Immobilization at least 3 days OR surgery in the previous 4 weeks	**No 0**	Yes +1.5
Previous, objectively diagnosed PE or DVT	**No 0**	Yes +1.5
Hemoptysis	**No 0**	Yes +1
Malignancy w/ treatment within 6 months or palliative	**No 0**	Yes +1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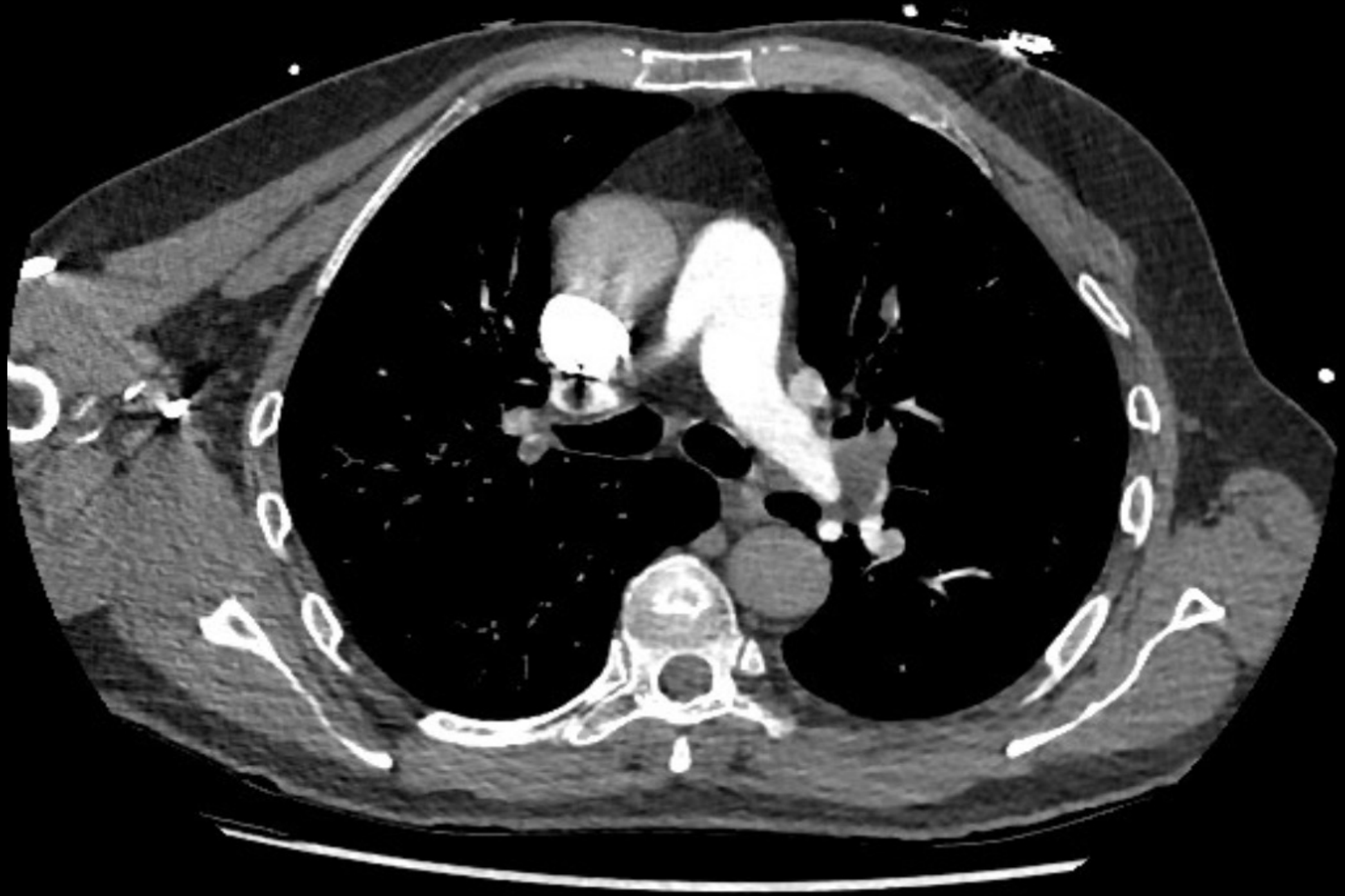


MANAGEMENT

- Clexane
- Admit Gen Med

- Same patient, BP 79/30, HR 160bpm, RR 25, sats 85% on air
- Thrombolysis?

MS B

CASE EIGHT

BACKGROUND

- 69y Maori female
- PMHx:
    - Metastatic breast cancer
        - On chemo – fulvestrant
        - Known mets to nodes, bones and pleura
- DHx:
    - Fulvestrant, paracetamol, oxynorm
    - NKDA
- Ex-smoker

ASSESSMENT

HISTORY

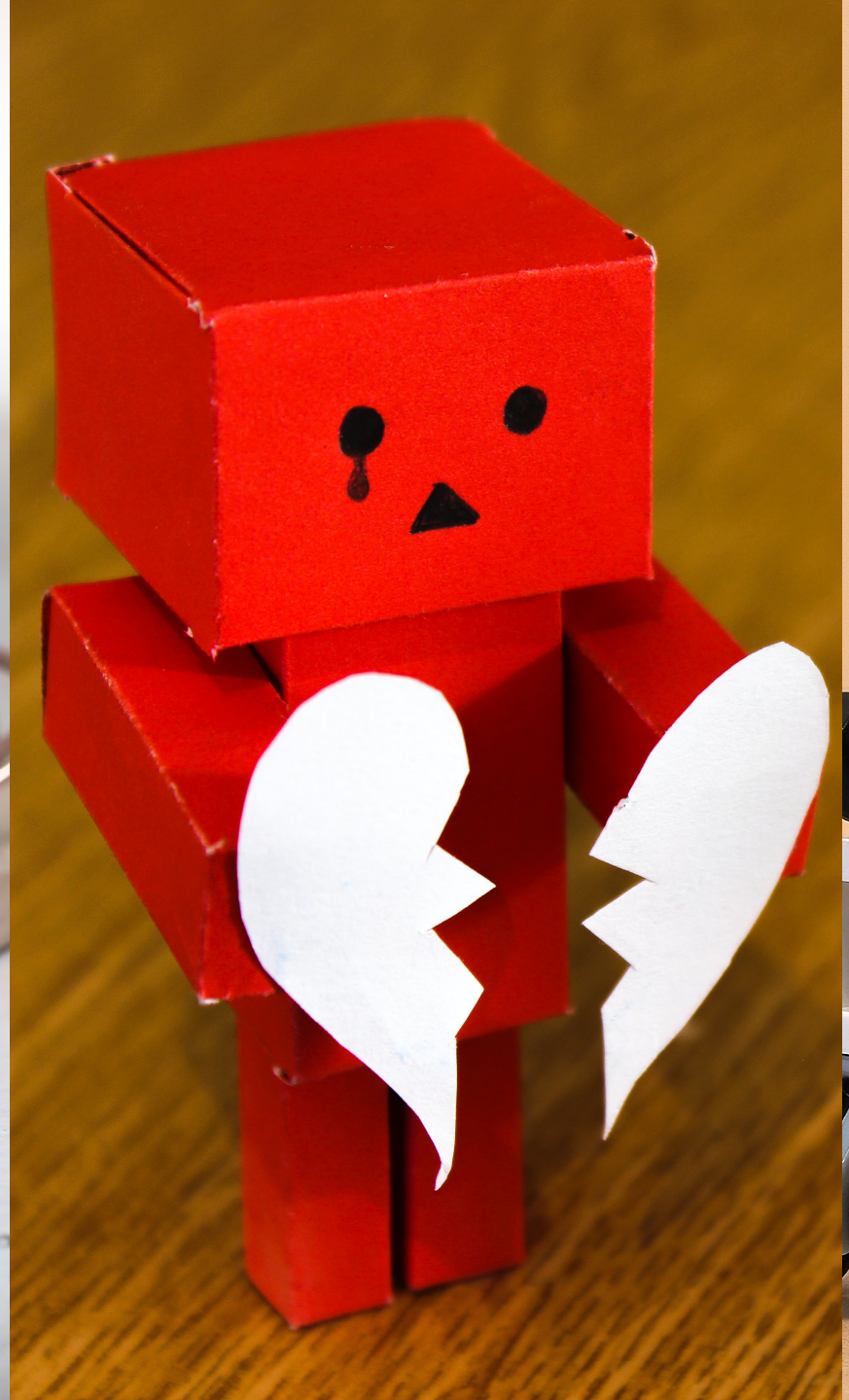
- R sided lower posterior chest pain
- Onset last night, worse overnight
- Sharp pain, constant
- Radiating round to anterior lower chest
- Associated SOB and erythema to L chest
- Worsening overnight
- Worse when lying down flat
- 8/10 severity

- Recent course of flucloxacillin for L breast cellulitis and fungating breast cancer

EXAMINATION

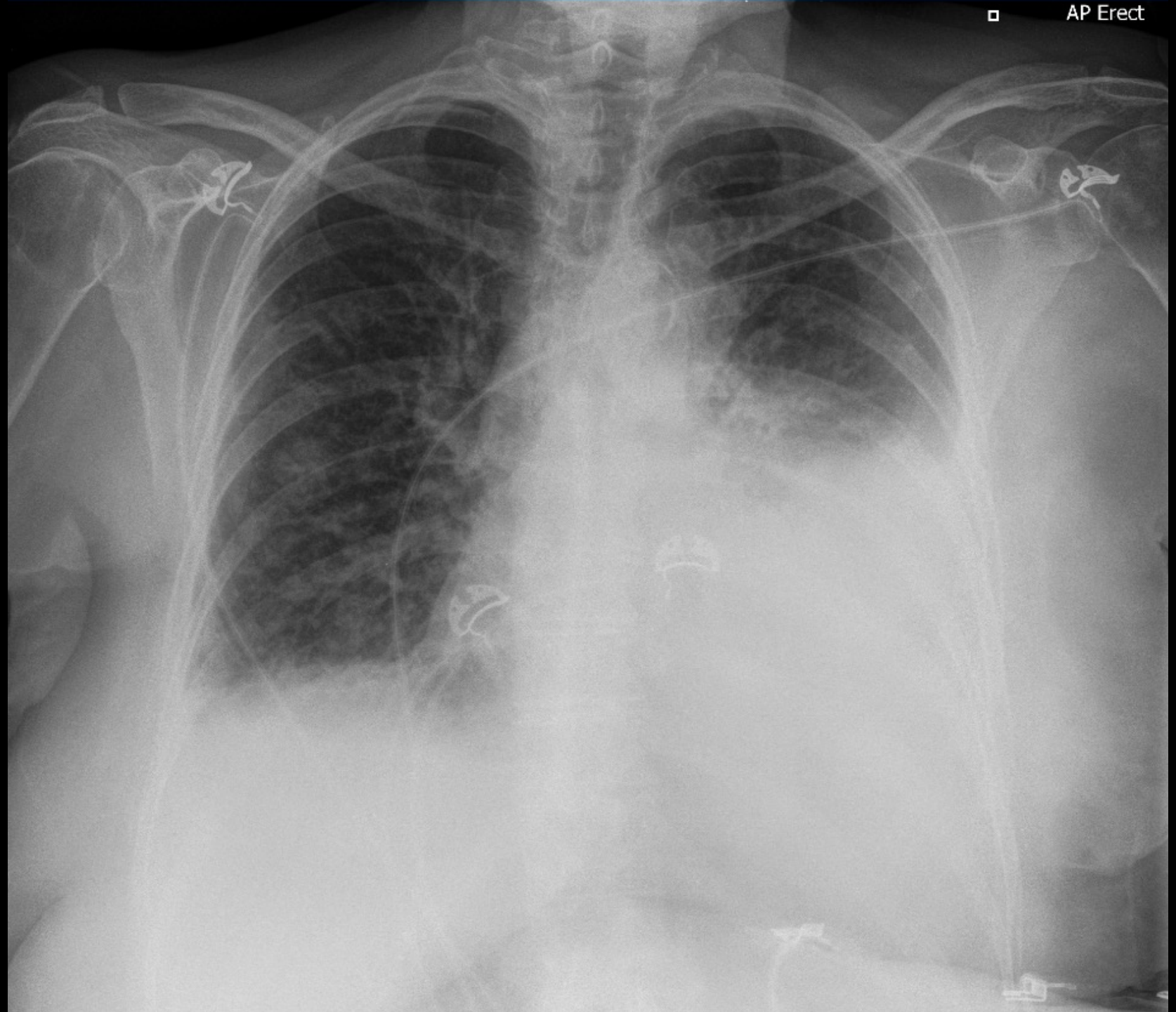
- Alert, breathless, speaking short sentences
- T 37.2, HR 109bpm, BP 144/105, RR 35, sats 90% on air

- Reg pulse, no R-R delay
- HS normal, no murmurs
- Chest – reduced AE L base, fungating L breast lesion, surrounding erythema
- Abdomen – tender RUQ, no guarding
- Pitting oedema to knees bilaterally, calves non-tender



INVESTIGATIONS

BLOODS	RADIOLOGY	OTHER
FBC – Hb 144, WBC 11.1	CXR?	ECG?
Biochem – CRP 179		PERC Rule?
Troponin?		
D-dimer?		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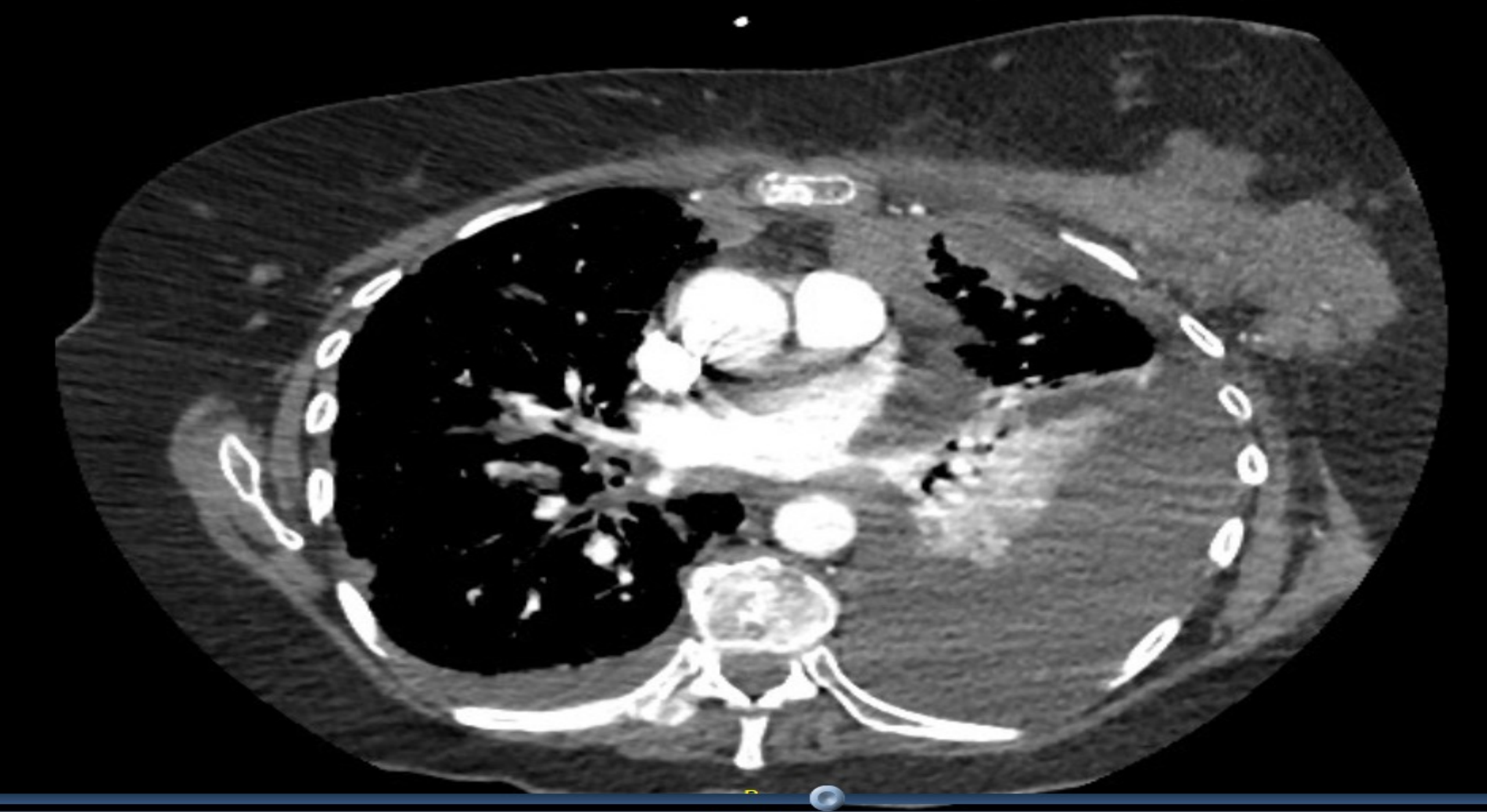
NOW WHAT?



MANAGEMENT

- Clexane
- Admit Gen Med

- Same patient, BP 79/30, HR 160bpm, RR 25, sats 85% on air
- Now what?

SO...

SUMMARY

- Standard initial approach
- SOCRATES
- CVS/Resp/Abdo exam

- Serial ECGs
- Think twice about danger-dimer!

- Trust your gestalt
- Discuss cases / ask for support

DANGER

DISTRESS

DISPOSITION

THANK YOU

ANY QUESTIONS?