Aortic Dissection SAQ

74 year old woman presents with sudden onset of thoracic & lumbar back pain after leaning forward to pick up some towels. Pain is sharp, radiates anteriorly and worsens with movements. Patient is unable to get into a comfortable position.

She has a past h/o osteoporosis and recently was discharged from rehab after spending 3 weeks for #s of T9,10, L3, L4 after minor trauma. She also has h/o hypertension and hypercholesterolaemia.

Her obs are given below

On arrival
HR: 64/min
BP: 169/92 mmHg
MAP: 118/mmHg
RR: 26/min

Q1) With this history in mind, list 5 differential diagnoses for this patient.

1. New Thoracic/Lumbar #s
2. Renal Colic
3. AAA
4. Aortic Dissection
5. Biliary colic

This case was an illustration of anchoring bias that we tend to have based on few historical aspects.

A thorough examination was useful.
No spinal tenderness on examination was a clue to think about the other serious conditions.

After 2 hours
HR: 84/min
BP: 190/119 mmHg
MAP: 143
RR: 20

CT Aortogram showed

Acute thoracic aortic intramural haematoma, with small focal dissection just above the diaphragmatic hiatus.

Medical management commenced.

Q2) Complete the following table by listing specific findings on history and examination that would support a diagnosis of thoracic aortic dissection.

History	Examination
• Hypertension • Catecholamine induced hypertension eg cocaine • Arteritis eg Takayasu, giant cell • Connective tissue disease: Marfan syndrome/ Ehlers- • Danlos syndrome/ Turner syndrome • Iatrogenic- recent angioplasty, aortic instrumentation, • aortic surgery, previous bypass or valve surgery • Congenital CVS disorders eg coarctation of aorta • Aortic stenosis • Bicuspid aortic valve	• New aortic insufficiency/AR murmur • Signs of pericardial effusion • Branch dissection: ○ Carotid/vertebral – focal neurological deficit ○ Brachiocephalic or subclavian- blood ○ Pressure differential between arms ○ Spinal infarct (ASA)- spinal level • Shock • Hypotension

Q3) Apart from a CT Aortogram, list another 2 useful imaging modalities in this setting?

1. CXR
2. POCUS

Q4) List 7 radiological features on plain CXR

1. Widened mediastinum: >8.0-8.8 cm at the level of the aortic knuckle on portable anteroposterior chest radiographs
2. Double aortic contour - suggesting true and false lumen
3. Irregular aortic contour / Obliteration of the aortic knuckle
4. Left sided pleural effusion
5. Double calcium sign - inward displacement of atherosclerotic calcification (>1 cm from the aortic margin)
6. Deviation of mediastinal structures
    a. oesophagus or NGT to the right
    b. trachea to the right

    c. left main bronchus inferiorly (decreased angle from the horizontal)
7. apical capping, particularly on the left

Q5) What features on bedside US would support a diagnosis of aortic dissection?

	Dissection
	Pericardial Effusion/tamponade
	Acute Aortic Regurgitation
	Intimal Flap

Q6) List 4 life-threatening complications that might become evident in the ED.

1. Dissection extension into other major vessels
    a. Coronary - Acute Coronary Syndrome
    b. Coronary - Cardiac arrhythmia
    c. Carotids - Stroke
    d. Subclavian - Upper limb ischaemia
    e. Mesenteric - Bowel Ischaemia
    f. Renal - Kidney and Suprarenal ischaemia -
    g. Spinal - Spinal Cord infarction
    h. Iliacs and Femoral - Lower limb ischaemia
2. Acute Aortic Regurgitation
3. Haemopericardium and Pericardial tamponade
4. Aneurysm formation
5. Free rupture: haemothorax - sudden death

Q7) List your pharmacological management steps, include the desired clinical end points

	Pharmacological Management	Therapeutic principle	Desired end Point
1	• IV labetalol 10-20mg bolus followed by 0.5 to 2 mg/minute as IV infusion (maximum 300 mg/24 hours) • Esmolol 0.5mg/kg IV over 1min then infusion 50-200mcg/kg/min	Negative chronotropy - Decreased shearing injury	HR <60
2	• GTN IV 5-50mcg/min • Hydralazine 5mg IV	After load reduction - venodilation	< SBP 120mmHg
3	IV fentanyl 25-50mcg	Analgesia	Titrating to effect