Acute Aortic Syndrome - Aortic Dissection

an emergency that is often fatal when missed.

v2.7 Mar 2023

IDENTIFY

- Unexplained severe pain to the chest, back, but also to the neck or abdomen.
- Sharp, tearing or ripping.
- Sudden onset reaching a maximum in seconds.
- Pain may be intermittent and migrate as the intimal dissection extends/may resolve or improve
- Neurological signs from end artery/organ e.g. stroke or paraplegia (spinal cord ischaemia).
- Pulse deficit is present in <30% of cases

High Risk Conditions

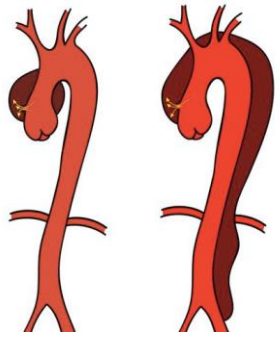
- Thoracic aortic aneurysm
- Marfans/other connective tissue disorders
- Aortic disease/family history
- Previous aortic manipulation (e.g. cardiac surgery)

INVESTIGATE

- CT Scan - do not delay. Request **CT angio Aorta** (thoracic or whole aorta depending on risk factors).
- CXR & ECG - but they may not be helpful.
- DDimer may be >20000 but a normal result does not exclude AD.
- Risk scores & DDimer are unable to be used as a "rule out". Clinical Suspicion is key.
- FBC/Coag/G&S or XM / Biochemistry + Troponin/CK/CRP + VBG.

REFER

Type A involves the ascending aorta with or without involvement of arch or descending aorta



CARDIOTHORACICS @ GJNH *(contact via GJNH)*

Type B - Descending aorta only

COMPLICATED

- Visceral or limb malperfusion
- Persistent or recurrent pain
- Uncontrolled hypertension despite maximal medical treatment
- Early aortic expansion
- Hypotension/shock – possible signs of rupture (Haemothorax or increasing periaortic and mediastinal haematoma)
- Neurological signs

VASCULAR @ QEUH -?TEVAR
*(x:82758 / **R-Page**: 07813456046)*

UNCOMPLICATED

Control pain, heart rate and BP

as detailed in Treatment section below

CCU @ GRI
(contact p13814)

TREATMENT

Move to Resus

Analgesia (titrated IV morphine)

Antiemetic (Ondansteron 4mg 8hrly, supplemental Cyclizine 50mg IV and Metoclopramide 10mg IV)

BP monitoring: Right radial arterial line. Left radial if suspected involvement of brachiocephalic trunk
Target Systolic 100-120mmHg with MAP <80mmHg

Hypertension: **Labetalol** (first choice as Beta-blockade reduces pulsatile pressure on the thinned walls of the false lumen and may prevent extension of the dissection in the hypertensive patient).

- Start with **slow IV bolus** injections – 10mg repeated every 2 minutes to max 200mg
- Also start **IV infusion** to maintain BP control
  - Concentration 5mg/mL if via central access or 1mg/1mL if giving via peripheral access
    Start at 15mg/hr and titrate to clinical effect – usual dose 10-60mg/hr
    (Nicardipine and Hydralazine are second line or additional if BP control problematic – see p2)

Hypotension: options include IV fluids / Blood products / Noradrenaline / Dobutamine / Metaraminol but often requires care and expert discussion.

Also refer to: NHS GG&C guideline 'Medical Management of Acute Type B Aortic Dissection'

Additional Hypertensive drugs

Nicardipine (second line in addition to labetalol, or first line if contra-indications to beta- blocker)

IV infusion (change IV infusion site every 12h if peripherally administered). Concentration 25mg made up to 250ml (5% glucose) = 100micrograms/ml

Dose – titrated to clinical effect
Start at 50ml/hour (5mg/hour). The rate may be increased every 10 mins by 25ml/hour to a maximum of 150ml/hour 15mg/hour)
Once target BP is achieved reduce dose gradually, usual maintenance dose 2-4mg/hour

Hydralazine (third line)

IV bolus – 5mg slow IV injection bolus at 20-minute intervals to a usual maximum of 20mg.
Followed by IV infusion - Concentration 60mg made up to 60ml (0.9% sodium chloride) = 1mg/ml
Start at 3ml/hr (50micrograms/min). The rate may be increased every 10 mins by 3ml/hour to a maximum of 18ml/hour (300micrograms/min)

Hypotension

o **IV fluid resuscitation – may need blood products**

o **Noradrenaline** via central access may be required if **hypovolaemic shock**. Initial dose 0.5 – 1 microgram/Kg/minute. Titrate to response – usual dose 2- 12microgram/Kg/min. Max dose 30microgram/Kg/min

o **Dobutamine** if evidence of **cardiogenic shock**. Initial dose 0.5 – 1 micrograms/Kg/min. Titrate to response - usual dose 2-20micrograms/kg/min. Max dose 40micrograms/Kg/min

Acknowledgements: Derived from guidelines from Clyde ED, ESC Guidance on Aortic Syndromes.
Authors: Orlagh McGlade (CF) / Dr S Taylor (Consultant). Emergency Medicine, Glasgow Royal Infirmary
Created: March 2023 | **Review**: March 2024