NENC-CHDN
North East and North Cumbria Congenital Heart Disease Network

NHS
The Newcastle upon Tyne Hospitals
NHS Foundation Trust

Coarcatation of the aorta

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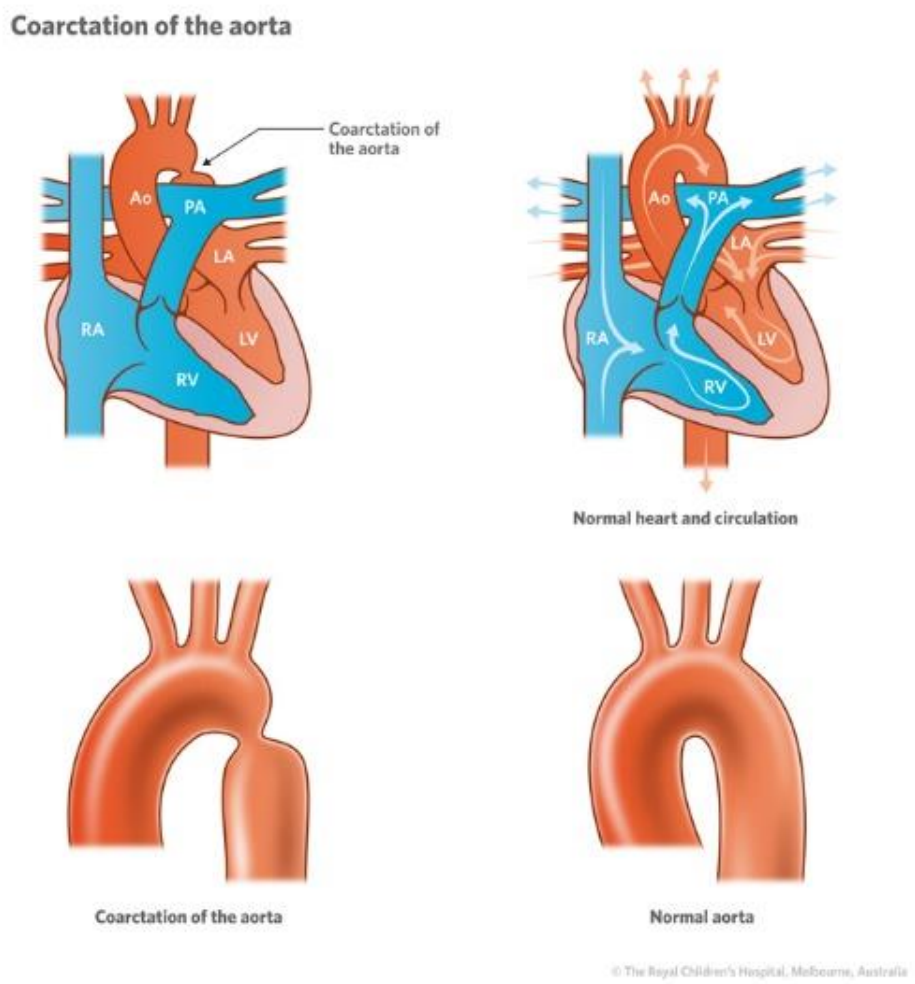
Coarctation of the aorta

The aorta is the major blood vessel to the body.

Coarctation of the aorta refers to a condition where there is a tightness (or narrowing) in the aorta.



Prevalence

It accounts for 5 - 8% of congenital heart defects.

Variable in severity presenting singularly or with other complex lesions;

- Atrial septal defect (ASD)
- Ventricular septal defect (VSD)

- Transposition of the great arteries (TGA)

- Hypo-plastic left heart syndrome (HLHS)
- Mitral Valve abnormalities and Aortic Stenosis

Presentation

- Antenatally
- Post natally
  – 2 groups

Group 1 – neonatal period

Group 2 – late presentation in childhood and later life

Antenatally

Diagnosed with ultrasound

Difficult to diagnose

Counselling of parents

Planned management and delivery

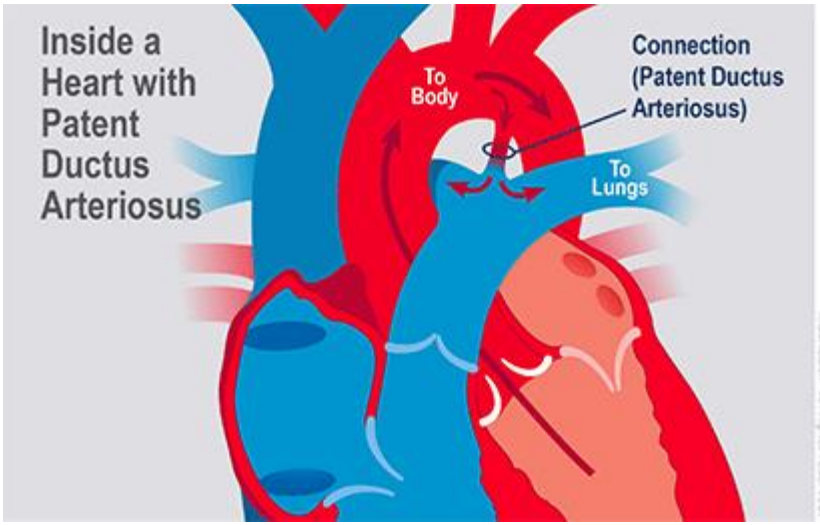
Group 1
Neonatal

- Presents in the first 1-3 weeks
- Initially well followed with ‘abrupt’ and acute deterioration;
  - Poor feeding, lethargy, tachypnoea

Why?.....

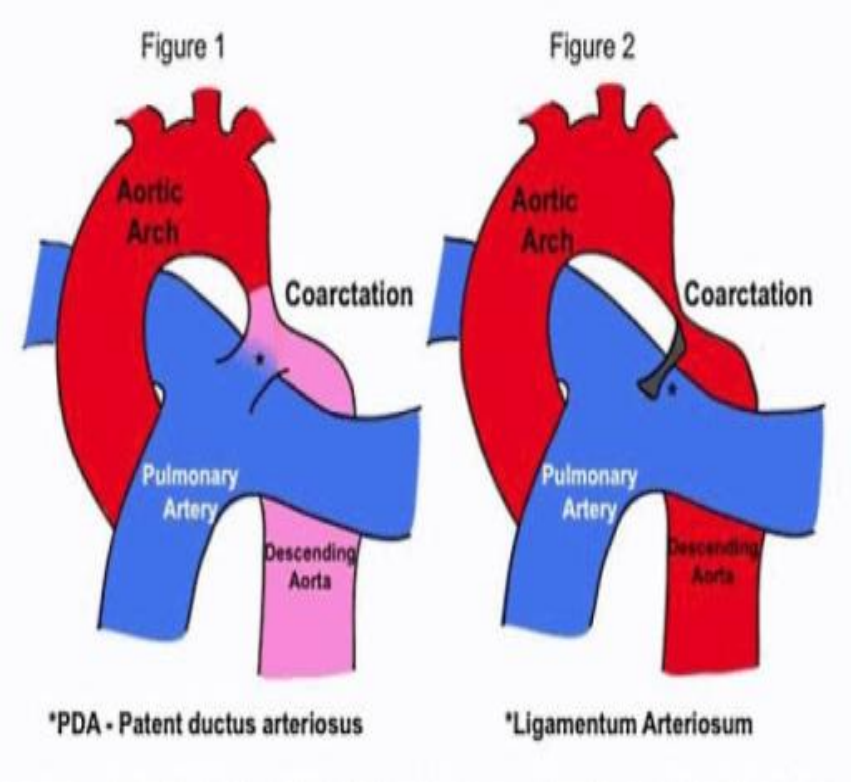
Patent Ductus Arteriosus (PDA)

- Communication between the aorta and pulmonary artery
- Present during fetal circulation
- Normally closes hours or days after birth.



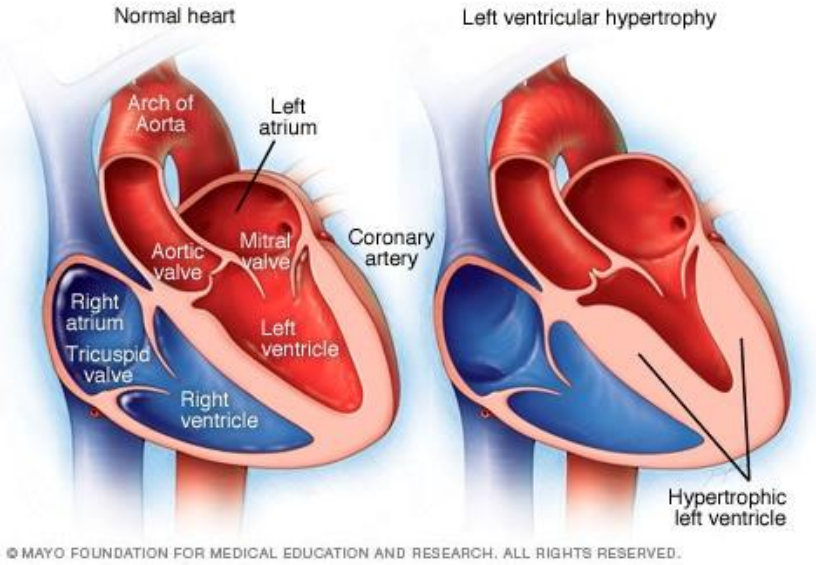
Relevance of PDA

On closing, the pressure in the left ventricle increases and the heart must suddenly pump against a higher resistance.



Why does a coarctation make babies sick?

- Limits amount of blood to lower body and abdominal organs
- Increases left ventricular function and wall stress
- left ventricular hypertrophy
- congestive heart failure



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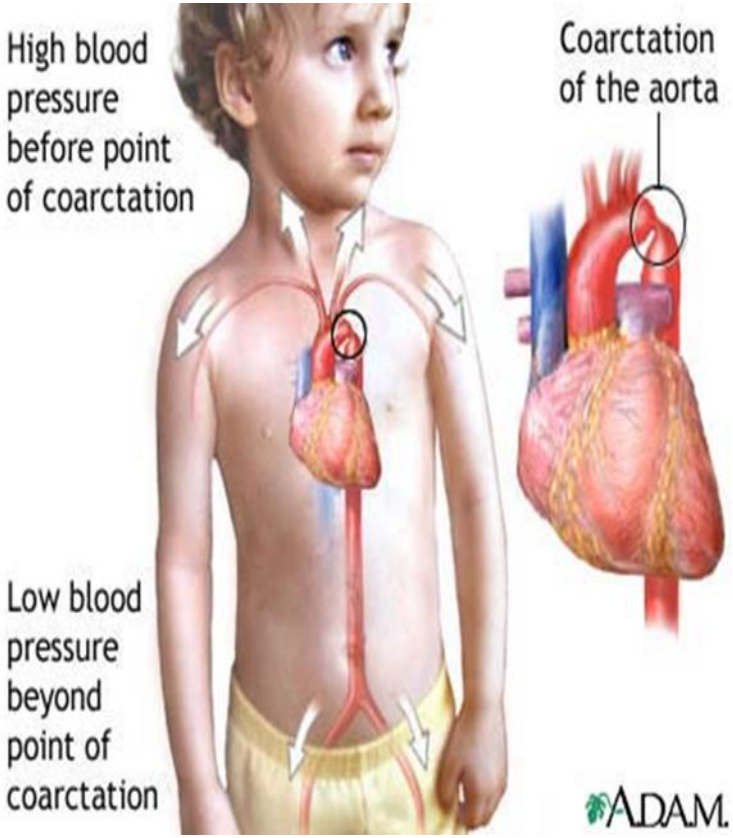
Signs and symptoms

- Reduced feeding
- Tachypnoeic
- Laboured breathing
- Shortness of breath on feeding
- Head bobbing grunting
- Increased sleeping or ‘quiet’
- Cool lower limbs
- Grey colour
- Mottled

Presentation

- Can be mistaken for septic shock.
- Weak or absent femoral pulses.
- Right brachial pulses full & bounding.
- Unequal blood pressure in upper and lower limbs
- Liver enlargement
- Oliguria
- Metabolic Acidosis from reduced blood flow to lower body organs



Diagnosis and management

- CXR
- ECG
- Echocardiography
- Scan- CT or MRI

- Assessment of limb pressures & recording of differences
- Immediate establishment of PDA with prostin to enable some systemic blood flow to bypass the coarctation
- Correction of metabolic acidosis, hypoxia, +/- multi-organ failure

Case

- 8 day baby
- Feeding well and gaining weight
- ‘freezing cold feet’
- loss of interest in feeding.
- Head bobbing and grunting
- ‘quiet’
- Presented at local A + E with dad

Case

- PH 6.8, treated for sepsis
- Xray – cardimegaly
- Absent femoral pulses
- Referred and transferred to FRH
- Mechanical support - ECMO for stabilisation
- Emergency surgical repair

Group 2
Late presentation

- Usually presents in older children.
- Generally asymptomatic with the lesion only being discovered on medical examination.
  - Headaches
  - Dizziness
  - Leg pain

  - Murmur
  - Hypertension
  - Absent pulses in the legs
  - Renal failure – if left untreated

Case

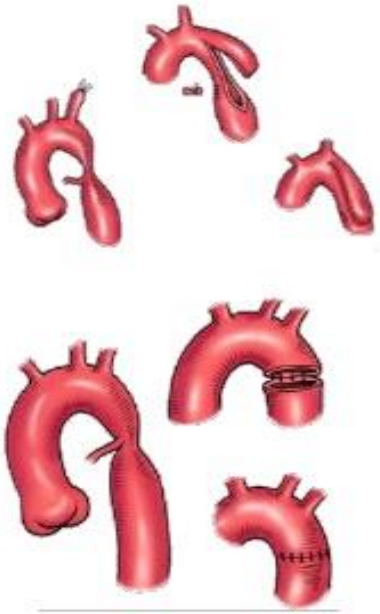
- 13 year old boy
- c/o dizziness, headaches
- Seen by GP; murmur, elevated BP > 150 systolic
- Referred to FRH

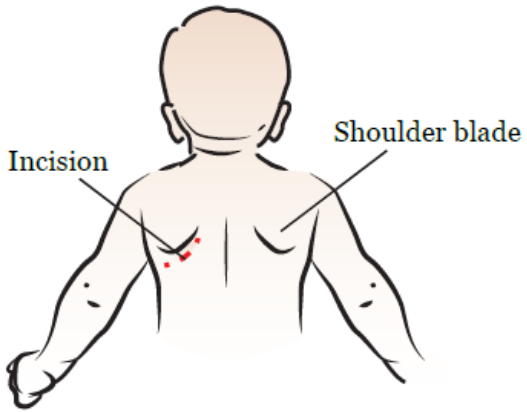
Case

- Weak femoral pulses
- ECHO and CT confirmed coarctation
- Surgical procedure
- Ongoing Blood pressure management

Coarctation repair

- Surgical vs Percutaneous
- Subclavian flap
- End to end repair
- Coarctation angioplasty





End to End Anastamosis involves cutting out the narrow section and then rejoining & suturing the ends of the aorta back together. This is done via a left thoracotomy.

Follow up

- Long term follow – up

  Re-occurrence /Re-narrowing

  Ballooning / stenting / further surgery

  Hypertension in older children

  Risk of aneurysms at the repair site

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Questions?