Presentation of Congenital Heart Disease in the Neonate and the Young Child

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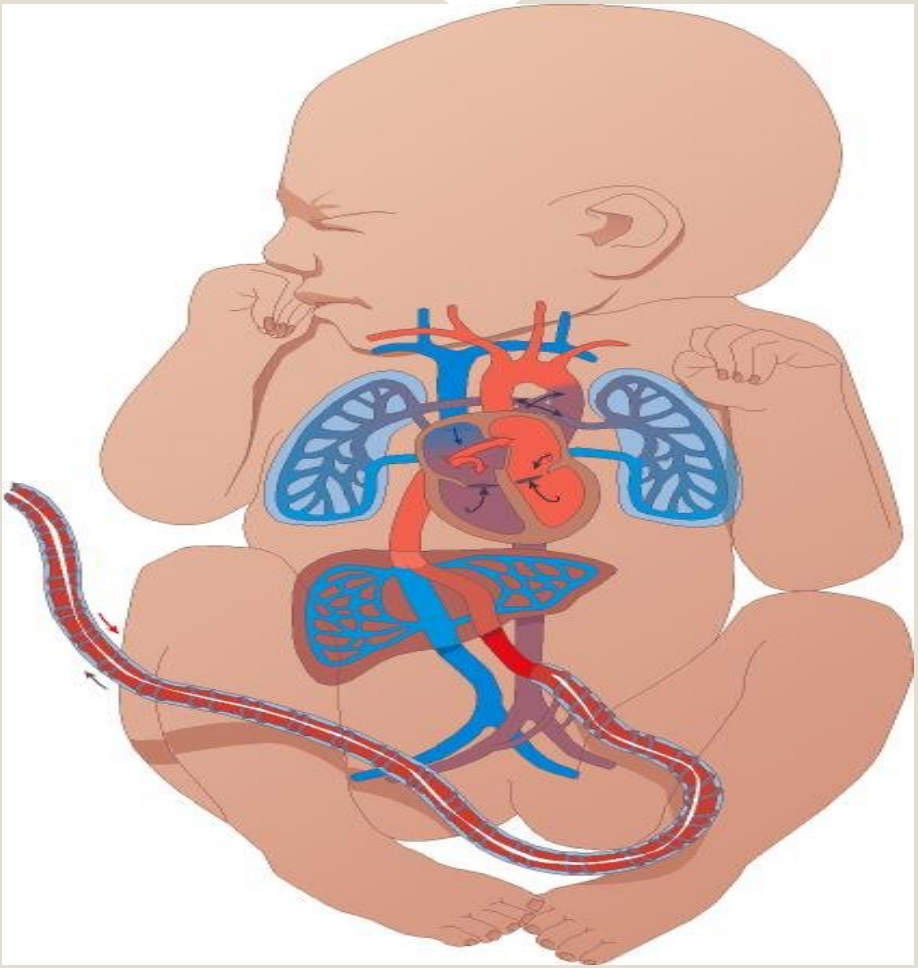
Different Presentations of CHD in the Neonate

- Asymptomatic Murmur
- Cyanosis
- Gradually progressive symptoms of heart failure
- Catastrophic heart failure and shock

Fetal Physiology



Asymptomatic New Born with a Murmur

- Transitional physiology, a murmur of a closing PDA, or a PFO, or PPPS (wait 6 hours)
- Murmur of a small muscular VSD
- Regurgitant murmurs TR, MR
- Stenotic murmurs AS, PS (clicks)
- Pink TOF with later development of cyanosis
- VSD, AVSD, large PDA (4-8weeks)

Neonate with a Cyanotic CHD

- The most common cyanotic CHD is Tetralogy of Fallot
- The most common cyanotic CHD presenting with cyanosis at birth is Transposition of the Great Arteries.
- To be discussed in details, as part of the 6th Year Curriculum

Neonate with a Cyanotic CHD

- The 5 T's
- Transposition of the great arteries
- Tetralogy of Fallot
- Truncus arteriosus
- Tricuspid atresia / Ebstein's anomaly
- TAPVR

Severe Cyanosis

- Cyanosis can be subtle
- SEVERE cyanosis in the first few hours of life is usually
- TGA (increased or normal pulmonary blood flow)
- PA with or without a VSD (decreased PBF)
- Severe Ebstein's anomaly (decreased PBF)
- Tricuspid atresia

Mild cyanosis

With increased PBF:

- TAPVR
- Truncus arteriosus

Cyanosis with decreased PBF

- In Tetralogy of Fallot, Cyanosis is severe only if there is PS leading to decreased blood flow.

CHD with progressive HF in infants

- VSD
- AVSD
- PDA

Symptoms include DIB, sweating upon feeds, FTT and difficulty in feeding.

Signs include gallop rhythm, a murmur and hepatomegaly

CHD presenting as shock or catastrophic heart failure

- Critical AS
- Critical aortic coarctation
- Interrupted aortic arch
- Hypoplastic left heart syndrome

CHD presenting as shock or catastrophic heart failure

- In these situations the systemic blood flow is compromised and is maintained through the RV ejecting blood into the PDA and into the systemic circulation.
- Catastrophic heart failure occurs as the PDA closes.

CHD presenting as shock or catastrophic heart failure

- After PDA closes, systemic blood flow decreases significantly leading to :
- Oligurea
- Acidosis
- Pulmonary edema
- Heart failure

CHD presenting as shock or catastrophic heart failure

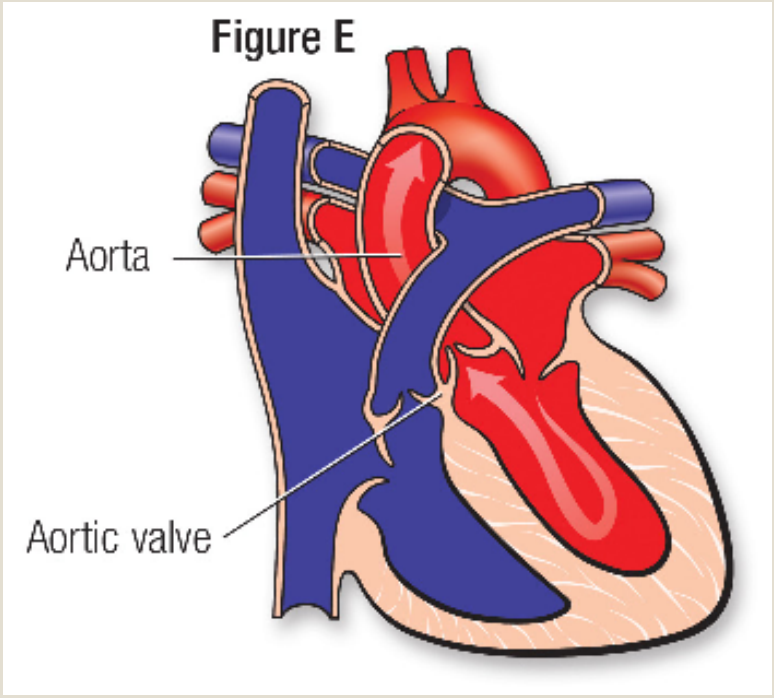
- As cardiac output decreases retrograde flow into the coronaries decreases causing myocardial ischemia, ventricular dysfunction and death

Catastrophic Heart Failure/ Shock

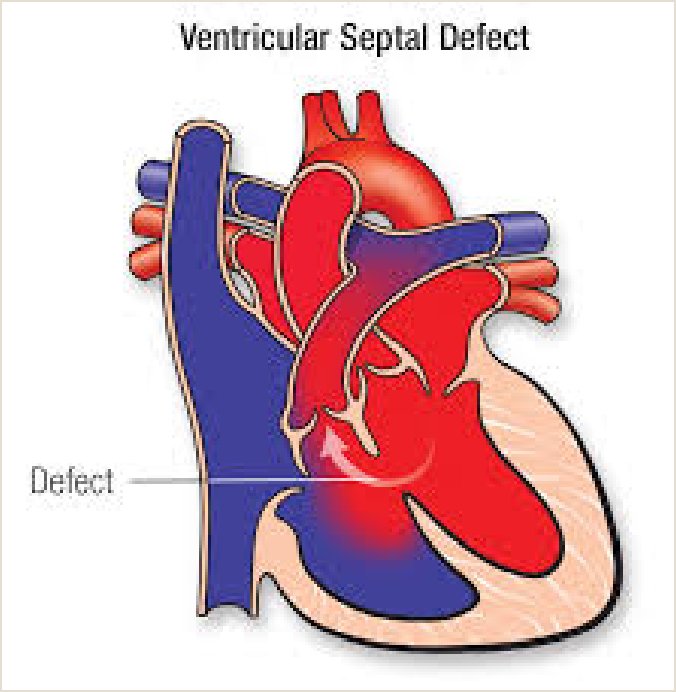
- Catastrophic heart failure mimics severe sepsis/ shock
- Tachypnea, tachycardia
- Mottled skin
- Decreased central and peripheral pulses
- Decreased perfusion (increased cap refill)

Volume Overload Acyanotic Lesions

Normal Heart

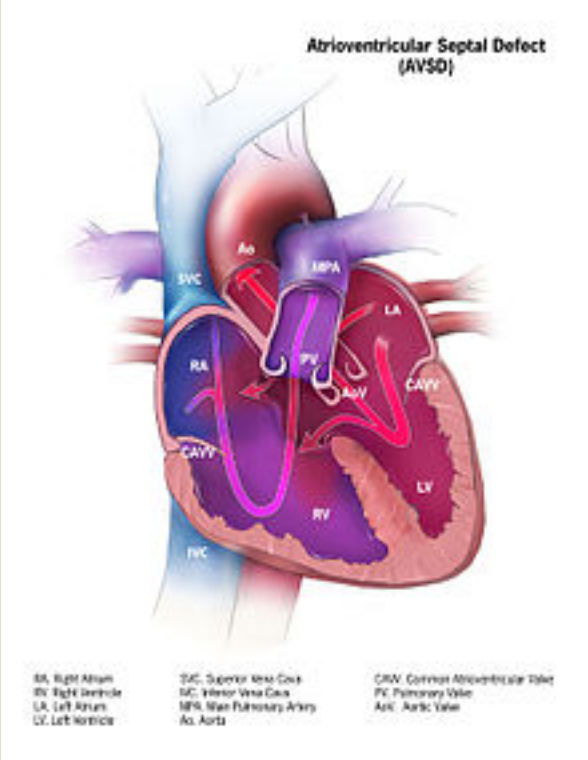


VSD

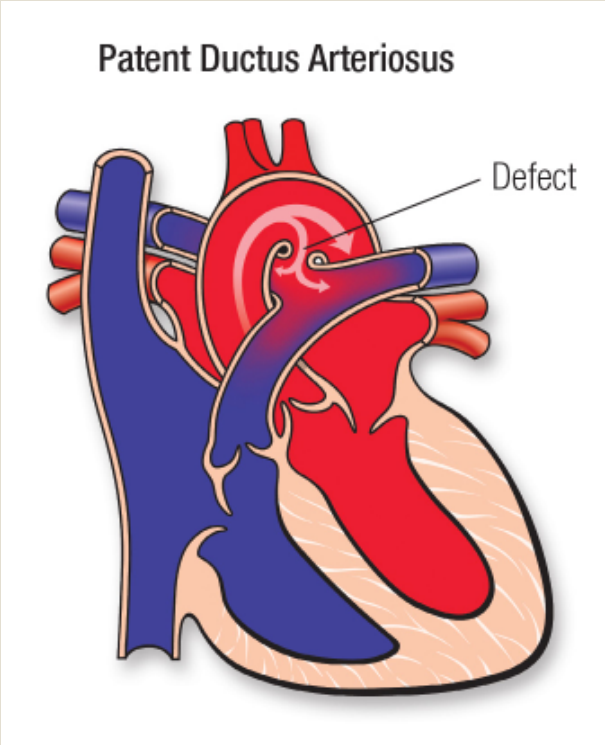


Volume Overload Acyanotic Lesions

Atrioventricular Septal Defect



PDA



Catastrophic Heart Failure/ Shock

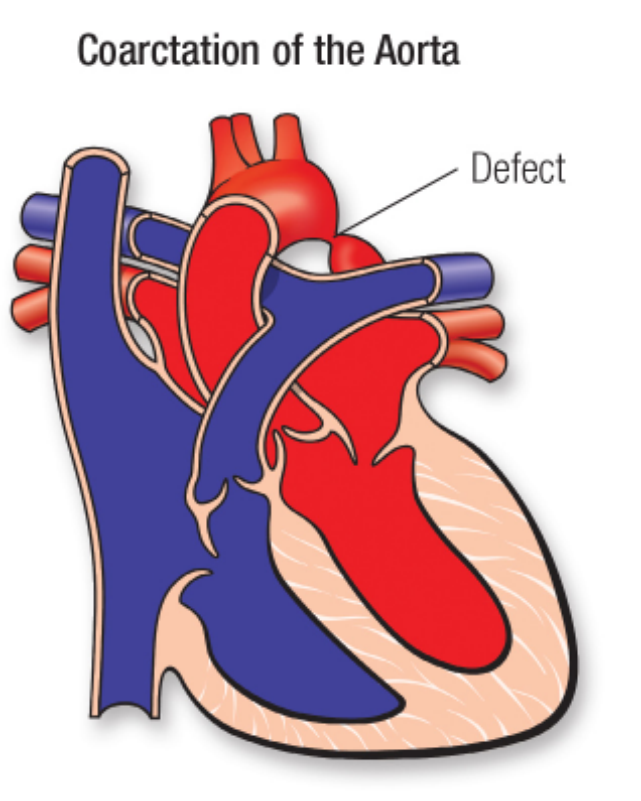
- Clinical management
- Cardiac picture, look for:
- Gallop
- Hepatomegaly
- Cardiomegaly
- Severe metabolic acidosis with a PH less than 7.0
- Monitor response to boluses give 10-20 cc/kg up to three times, assess heart rate hepatomegaly clinically

Catastrophic Heart Failure/ Shock

- Management of neonatal shock:
- ABC's
- Respiratory support
- Inotropes
- Fluid resuscitation
- Get blood labs, and start antibeotics
- PGE1
- Call cardiology

Catastrophic Heart Failure/ Shock

Coarctation of the Aorta



Interrupted Aortic Arch

In conclusion

- CHD in the neonate and young infant ranges from benign to catastrophic
- Sometimes the only clue is to do upper limb and lower limb percutaneous oxygen saturation