

Cyanosis As a Pediatric Neonatal Cardiac Emergency

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Scenario: It's 2.00am – your first night on call on your Pediatric rotation – the Nurse in Newborn Nursery call you to see a Blue Baby..... What do you expect to do??? = to run, ask for help or proceed to start thinking of management!!!!

You find Oxygen saturation 58% - Respiratory Rate 82/minute and mild respiratory distress. It's your worst nightmare= Neonatal undifferentiated collapse....

So, you start think this condition may be due to Cyanosis or low cardiac output state.

Cardiac cyanosis does not respond to Oxygen – does not respond to Ventilation and usually with No respiratory distress. What will be your next step?

Hyperoxia Test: -Administration of 100% Oxygen

Significant increase in PaO₂ seen with pulmonary and hemoglobin disorders

In Congenital Cyanotic Heart Disease, PaO₂ will not increase or will increase slightly.

Deoxygenated Blood bypasses lungs and goes directly to left side of the heart, diluting the fully oxygenated blood coming from the lungs with deoxygenated blood.

PaO₂ after administration of 100% Oxygen

- >300 mmHg = Normal.

- >150 but <300 mmHg = pulmonary disorder, CNS disorders or Methemoglobinemia.
- >100 but <150 mmHg = cardiac mixing lesions with increased Pulmonary Blood Flow.
- <100 mmHg = cardiac condition with parallel circulation – cardiac mixing lesions with restricted PBF.

Duct dependent lesions as duct needed to perfuse lung or periphery

Lungs: Tetralogy of Fallot – Transposition of Great Vessels –Tricuspid or Pulmonary Atresia.

(PDA results in preserved pulmonary blood flow).

So, for treatment open the closed duct using Prostaglandin E

PGE₁... it functions by dilating vascular smooth muscle, both systemically and in the pulmonary vascular bed.

Prostaglandin PGE₁ preparation available as 1ml ampule containing 500mcg/ml – diluted 0.1 ml (50mcg) in 50 ml 5% Dextrose under laminar air flow to avoid sepsis...

One ml equals 1mcg PGE₁...Infusion is started at 0.05-0.1 mcg/kg/min.

Depending on clinical response, infusion rate can be increased up to 0.4 mcg/kg/min.

Once desired response obtained, maintaining patency by continuing infusion at 0.01-0.05 mcg/kg/min.

Side Effects of PGE₁: Apnea - Hypotension – Tachycardia – Hypoglycemia.

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