COMMON CRISES IN PAEDIATRIC ANAESTHESIA

HYPERCYANOTIC/ "TET" SPELLS

Most frequently occurs in young infants with Tetralogy of Fallot but may occur with other congenital heart defects that have pulmonary or subpulmonary stenosis and a VSD, at any age.

"Tet" spells may be best thought of as an imbalance between pulmonary and systemic vascular resistance favouring decreased pulmonary flow and increased right-to-left shunting. Hypoxemia, metabolic acidosis, hyperpnea, increased systemic venous return, catecholamines, and pulmonary vasoconstriction are thought to be involved.

Common precipitating factors are events resulting in an increase in oxygen demand such as crying, feeding, inadequate depth of anaesthesia and exercise. Other factors include dehydration, acidosis, decrease in systemic vascular resistance (SVR) and excessive airway pressure.

Management:

- Stop precipitating factors, increase depth of anaesthesia
- Maintain airway, 100% oxygen, hyperventilate if intubated
- Bicarbonate to treat acidosis, if present
- Ensure adequate volume status, give boluses of fluid up to 10ml/kg.
- Drugs:
  IV phenylephrine 1-2μg/kg to increase SVR
  IV propanolol 10-20μg/kg, test dose then 0.05-0.1mg/kg over 10 mins or IV esmolol 500 μg/kg to relieve infundibular spasm
- Compression of bilateral femoral arteries. Compression of the aorta (if accessible) during surgery.
- Refer to Cardiology. Patient may need early, urgent correction of TOF if the 'Tet' spells are frequent.

References:

1. Paediatric Cardiac Anaesthesia. Carol Lake, 4th Edition. Appleton and Lange, 2004, pp 348-349.
2. Twite MD, Ing RJ. Tetralogy of Fallot: Perioperative Anesthetic Management of Children and Adults. Semin Cardiothorac Vasc Anesth June 2012 16: 97-105.