APPROACH TO CYANOSIS

BLUE OR PURPLE APPEARANCE OF THE SKIN OR MUCOUS MEMBRANES → SECONDARY TO INADEQUATELY OXYGENATED BLOOD PERFUSING PERIPHERAL TISSUES OR INDICATES THE PRESENCE OF ABNORMAL HAEMOGLOBIN FORMS THAT ARE UNABLE TO BIND OXYGEN

MOST COMMONLY SEEN IN PATIENTS WITH HYPOPERFUSED STATES OR KNOWN CARDIOPULMONARY DISEASE

PATHOPHYSIOLOGY:

- Becomes evident when amount of desaturated haemoglobinis elevated (4-5g/dL in whole blood) \rightarrow occurs at a much lower PaO2 in the anaemic patient
- Cyanosis is an insensitive indicator of tissue oxygenation
- Also, abnormal haemoglobin can contribute to cyanosis
 - o Iron molecule may be oxidized to the ferric state to produce methaemoglobin, which impairs the ability to transport oxygen
 - The oxygen/haemoglobin dissociation curve is SHIFTED TO THE LEFT → tissue hypoxia and lactic acid production
 - O Cyanosis appears when greater than 10-15% of total haemoglobin is methaemoglobin
 - The metabolism of methaemoglobin back to haemoglobin is accelerated by METHYLENE BLUE
 - o Most commonly methaemoglobinaemia is ACQUIRED → usually from certain drugs
- COMMON CAUSES OF METHAEMOGLOBINAEMIA:
 - o HEREDITARY → haemoglobin M
 - ACQUIRED → drugs (chemotherapeutic agents, celecoxib, dapsone, local anaesthetics such as benzocaine, prilocaine, lignocaine, GTN, nitroprusside, sulphonamides, quinones such as chloroquine/primaquine). Other chemical agents

DIAGNOSTIC APPROACH:

PERIPHERAL CYANOSIS:

- LOW CARDIAC OUTPUT STATES:
 - o Shock
 - o LV failure
 - o Hypovolaemia
- ENVIRONMENTAL → COLD
- ARTERIAL OCCLUSION → including vasospasm
- VENOUS OBSTRUCTION

CENTRAL CYANOSIS:

- DECREASED ARTERIAL OXYGEN SATURATION:
 - o HIGH ALTITUDE (>8000 FT)
 - IMPAIRED PULMONARY FUNCTION → hypoventilation, impaired
 O2 diffusion, VQ mismatch (PE, ARDS, pulm HT), respiratory

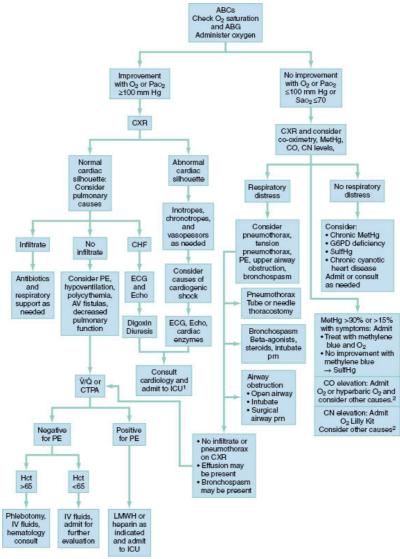
compromise (pneumonia, airway obstruction, tension pneumothorax, polycythaemia)

- ANATOMIC SHUNTS → cyanotic congenital heart disease
- ABNORMAL HAEMOGLOBIN → methaemoglobinaemia, sulfhaemoglobinaemia

CRITICAL DIAGNOSES NOT TO MISS:

- Acute cardiovascular and respiratory compromise, especially when accompanied by shock
 - Acute CHF/cardiogenic shock
 - o ACS
 - o Hypovolaemic/cardiogenic shock
 - o Acute respiratory/ventilatory failure
 - o Massive PE
 - Exacerbation/decompensation of known congenital heart disease

MANAGEMENT ALGORITHM:



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