Erythropoietin Stimulating Agents

Indications for use: (4)

- Hb <100 g/L
- No other identifiable causes

Target Hb: (5)

- 100 to 120 g/L
    - Check monthly when in range

Dosage: (3)

- Epoeitin
    - Initial dose: 80 – 120 IU/kg/week in divided doses
    - Maximum dose: 900 IU/kg/week
- Darbepoetin alfa
    - Initial dose: 0.45ug/kg/week in a single dose

Route of administration: (3, 16)

- Haemodialysis patients:
    - Given as either sub-cut or intravenous injection
- Predialysis and PD patients:
    - Given as a sub-cut injection, with rotation of site

Response to ESA therapy: (1, 2)

- **Prior to commencing treatment:**
    - Check FBC
    - Iron studies
    - B12 and folate levels
    - Check CRP (indication of infection and/or inflammation)
- **Once treatment has been commenced: (1, 2)**
    - Monitor BP
    - Check Hb 2nd weekly until Hb within range
    - Monitor iron studies monthly until Hb has stabilized.

INADEQUATE RESPONSE TO EPO THERAPY:

- In patients with inadequate response to EPO, possible causes should be investigated (12, 14)

- **Possible causes:**
    1. Absolute or Functional Iron Deficiency
    2. Insufficient levels of B12 and folate
    3. Infection/inflammation (i) p 368
        a. Including access infection and auto-immune diseases

   b. Up to 53% of patients can have elevated levels of serum CRP
4. Chronic blood losses
   a. Retention of blood in lines and dialyser
   b. Blood sampling for laboratory testing
   c. Accidental bleeding from access and surgical blood losses
   d. Occult gastrointestinal bleeding
5. Inadequate dialysis
6. Malnutrition, low albumin and poor absorption of oral iron
7. Elevated PTH and hyperphosphatemia
   a. Associated with bone marrow fibrosis
7. Aluminium toxicity
8. Haemoglobinopathies
9. Multiple myeloma or other malignancies
10. Hemolysis
11. Alcohol consumption

COMPLICATIONS OF EPO THERAPY: (12, 16)

1. Worsening of hypertension:
   - 33% of patients will need to increase antihypertensive medication
   - Not found in anaemic patients without renal disease who are treated with EPO
   - Risk factors
     - pre-existing hypertension
     - rapid increase in haematocrit
   - Possible causes:
     - reversal of hypoxic vasodilatation as haematocrit rises
     - increased blood viscosity
     - increased cardiac output

2. Seizures:
   - Small risk associated with periods of rapidly rising haematocrit

3. Fistula/graft thrombosis:
   - No conclusive evidence
   - Risk associated with increased blood viscosity

4. Underdialysis and decreased Kt/V:
   - Associated with increased clotting of dialyser
   - Reduced proportion of plasma to red cell volume

5. Phosphorus balance:
   - Associated with an improvement in appetite and dietary intake in combination with reduced dialyser clearance

6. Flu-like symptoms immediately following injections
   - Can last up to a few hours to weeks after injection

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