CROUP

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DEFINITION

- Acute viral inflammation of upper airway causing oedema of larynx and trachea and presenting with barking cough, stridor and respiratory distress
- Causative agent: parainfluenza virus (sometimes influenza, respiratory syncytial virus, rhinovirus)

Aetiology

- Aged 6 months–6 yr (peak aged 2 yr)
- Seasonal peak: Spring and Autumn
- Transmission: usually by droplet spread
- Incubation period: 2–6 days

Differential diagnosis of stridor

Acute

- Croup
- Epiglottitis (rare since immunisation against Haemophilus influenzae type B)
- Bacterial tracheitis
- Foreign body

Chronic

- Allergic airways disease
- Congenital abnormality e.g. laryngeal haemangioma
- Laryngomalacia
- Foreign body
- Laryngeal papilloma

CROUP

Symptoms and signs

- Preceding coryzal illness
- Fever
- Harsh bark/seal-like cough
- Hoarse voice
- Inspiratory stridor
- Symptoms worse at night
- Child does not look toxic

Assessment

- Record croup severity:
    - C – Cyanosis
    - R – Recession of chest
    - O – Oxygen saturations (keep >92%)
    - UP – Upper airway obstruction e.g. stridor
- Respiratory rate
- Heart rate
- Level of consciousness
- Do not examine throat as it may cause acute severe/total obstruction
- Do not distress child
- Any clinical concerns call consultant paediatrician immediately

Severity

Mild croup

- Barking cough
- Mild stridor, but not usually at rest
- No recession
- No cyanosis

Moderate croup

- Intermittent stridor at rest
- Mild recession

- Alert and responsive

Severe croup

- Stridor at rest
- Cyanosis
- Oxygen saturation <92% in air
- Moderate to severe recession
- Apathetic/restless

Investigations

- No investigations necessary, do not attempt to take blood or put in cannula
- If diagnosis unclear, or child severely unwell, call consultant as an emergency measure

IMMEDIATE MANAGEMENT

Mild to moderate croup

- Analgesia e.g. paracetamol or ibuprofen for discomfort
- Adequate fluid intake
- Leaflet on croup and reassurance
- Oral dexamethasone 150 microgram/kg
- Admit/observe moderate croup for 4 hr and reassess
- Dexamethasone dose can be repeated after 12 hr or if well, patient can be discharged with a single dose of prednisolone 1 mg/kg rounded up to nearest 5 mg to take 12–24 hr later

Note

If parents do not clearly understand what to do, do not discharge

Severe croup

- Keep child and parents calm – do not upset child e.g. by forcing oxygen mask onto face or examining throat; nurse on parent's lap and in position they find comfortable
- High flow oxygen 15 L/min via mask with reservoir bag, which must be prescribed
- Dexamethasone 150 microgram/kg oral (or if child refuses to swallow oral medication, nebulised budesonide 2 mg)

- Nebulised adrenaline 400 microgram/kg to maximum 5 mg (0.4 mL/kg to maximum 5 mL of 1:1000 injection) can be used to relieve symptoms whilst dexamethasone/budesonide starts to work
    - short duration of action; can be repeated after 30 min
    - if severe enough to require nebulised adrenaline likely to be admitted to ward; if considering discharge, ensure observed for ≥3 hr
- Contact on-call consultant paediatrician urgently to assess clinical situation
    - discuss whether to involve on-call paediatric anaesthetist and ENT surgeon
- If no sustained improvement with adrenaline and dexamethasone:
    - secure airway in theatre by experienced anaesthetist
    - transfer to PICU

DISCHARGE AND FOLLOW-UP

- Leaflet on croup
- Antibiotics, antitussives and humidified air do not help
- Encourage oral fluid intake
- Advise parents to seek help urgently if any of the following are present:
    - drooling
    - laboured breathing
    - persistent fever
    - biphasic/worsening stridor
    - cyanosis
    - reduced level of consciousness/confusion
- No need for follow-up of croup
