CROUP

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INTRODUCTION

- Common childhood illness.
- Viral croup most common form of air way obstruction in children 6mons – 6 yrs.
- Annual incidence (USA) 6 per 100 cases in age < 6 yrs.
- Accounts for 15% of RTIS among children.

Definition

- Heterogeneous group of illnesses affecting larynx, trachea and bronchi.
- Laryngotracheitis, LTB, laryngotracheo-bronchopneumonitis and spasmodic croup are inclusive.
- Upper airway obstruction in croup causes :

✓ A barking cough, hoarse voice, inspiratory stridor and variable respiratory distress.

Epidemiology

- Affects age 6/12 – 12 yrs. PI at 2yrs
- M > Fs
- Predominates in winter and falls.

Aetiology

- Para-influenza viruses (1,2 and 3) in 75% cases.
- Human parainfluenza-1 (**most common).**
- Causes about 18% croup cases.
- Others: Adenoviruses, RSV, rhino viruses, entero-viruses and influenza A and B.
- Rarely mycoplasma pneumoniae

DD/Non- infectious causes of stridor

- F.B aspiration
- Trauma
- Allergic reaction(acute angioneurotic oedema)

Viral croup vs spasmodic croup

Feature	Viral croup	Spasmodic croup
Age	6/12- 6 yrs	6/12- 6 yrs
Prodrome	common	uncommon
Stridor, barky cough	Common	common
Fever	Common	uncommon
Wheezing	Common	Common
duration	2-7 days	2-4 hours
Family history	No	Yes
Predisposition to asthma	uncommon	Common

Spasmodic croup

- Tends to recur
- And may represent an allergic reaction to viral antigens .

Bacterial tracheitis

Common aetiology:

- Staph aureus, H. influenza, Corynebacterium diphtheriae.

- Considered in the DD of croup.

Anatomic explanation of s+s of croup

- Subglottic region of larynx is held within a rigid ring of cricoid cartilage.
- Viral infections cause inflammation with edema in area.
- This can lead to airway obstruction.

Clinical course

- Viral croup typically is preceded by low grade fever and coryza.
- With progress a barky cough follows.
- Other symptoms:
  Dyspnea,hoarseness,wheezing and stridor

Croup

- Symptoms worse at night
- Peak between 24-48 hrs.
- Generally resolve within a week.
- Agitation and crying may aggravate the s+s
- Preference to sit up or be held upright.

➢ **About 15% get complications;**

- Otitis media
- Dehydration
- Pneumonia

DD of croup

- Acute laryngeal fracture
- Angioneurotic oedema
- Bacterial tracheitis
- Burns
- Diphtheria
- Epiglottitis
- FB
- Laryngomalacia
- Neoplasm or haemangioma
- Peritonsillar abscess
- Smoke inhalation
- Subglottic stenosis
- Viral croup
- Vocal cord paralysis
- Laryngeal web
- Laryngeal papillomatosis

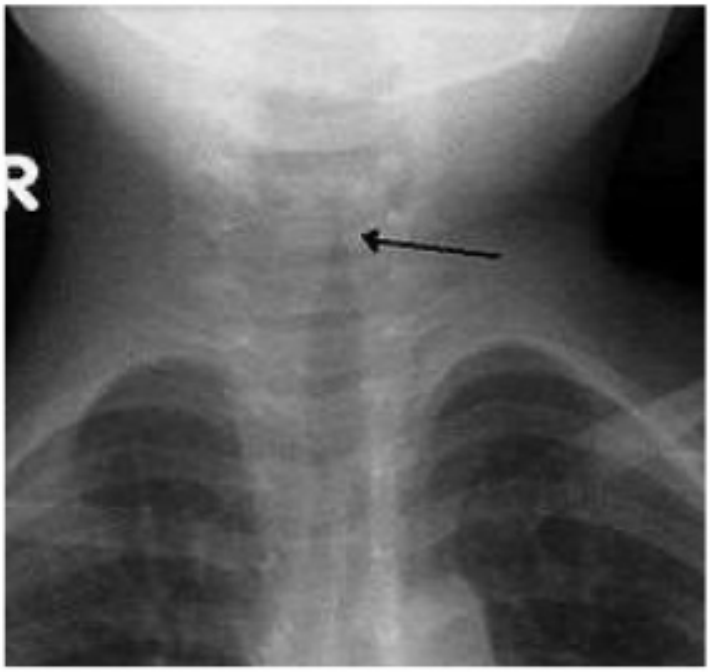
evaluation

- Most cases have normal pulse oximetry.
- Hypoxia and low oxygen saturation only in severe cases.

DIAGNOSIS

- Plain neck x-ray.
- The classic **steeple sign** in 50% cases.
- Narrowed column of air on AP
- And an over distended hypopharynx on lateral view.
- CT scan

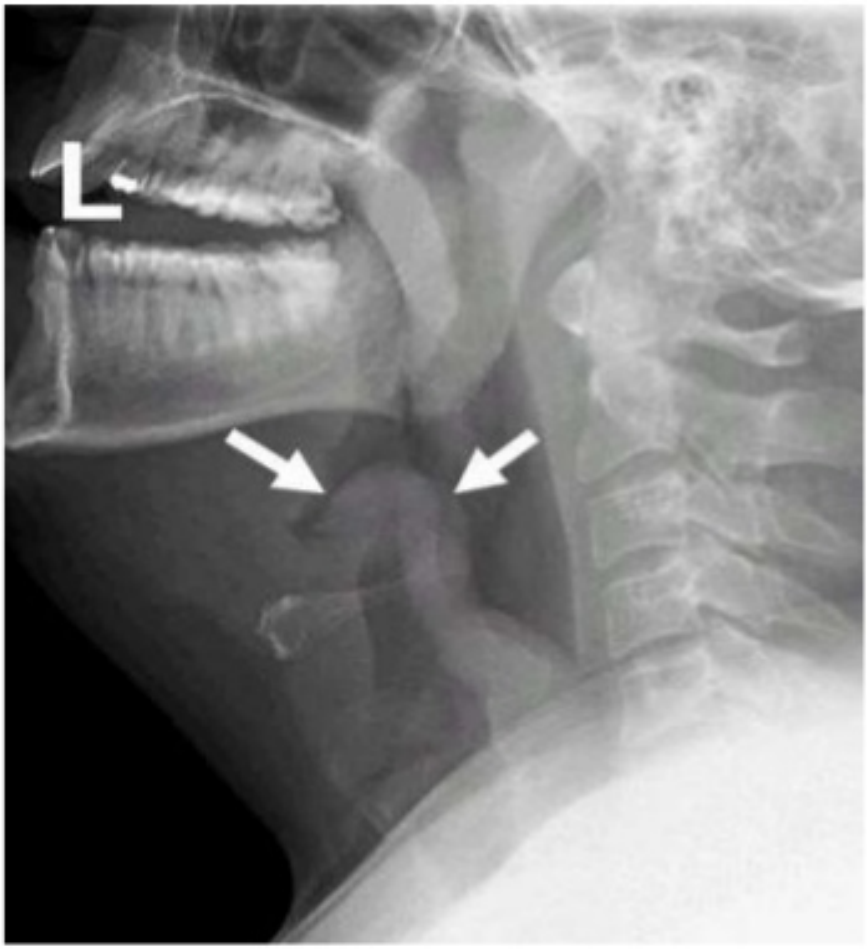
Steeple sign-AP neck film



Features of epiglottitis vs croup

feature	epiglottitis	croup
Age	Infants ,older children and adults	6/12- 6 yrs
Onset	sudden	gradual
Location	supraglottic	subglottic
Temperature	high	Low grade fever
Dysphagia	Severe	Absent or mild
Dyspnea	Present	present
Drooling	Present	Absent
Cough	Uncommon	Xtic cough
Position	Bend forward and mouth open	Confortable in variable positions
Radiography	Positive thumb sign	positive steeple sign

Thumb print sign (lateral C- spine x-ray)



evaluation

- Most children don't require direct visualization of laryngeal area or intubation.
- **Except** for suspected epiglottitis or deteriorating illness.
- Children < 4/12 and those with long standing stridor should be evaluated for anatomic obstruction.

monitoring

- Serial observation and frequent physical examination is most useful monitoring tool.

Prognosis

- Usually self limiting
- Few require inpatient care
- And < 15% of these will require intubation.
- Death is rare provided good air management is taken.
- Studies in older children show those with h/o hospital admission for croup have:

✓ Higher prevalence of bronchial hyper-responsiveness, allergic skin response and serum IgE levels

management

- Airway maintenance is most important.
- Standard treatment: mist therapy, corticosteroids and racemic epinephrine.

Mist therapy effects.

- Mucosal cooling, vasoconstriction and reduced oedema.

COOL MIST

- Cool mist also moistens secretions, soothes inflamed mucosa and decreases viscosity of mucous secretions.

- Warm steam may ease symptoms.

Steroids

- Oral dexamethasone beneficial in Out Patient management of mild-moderate cases.

- Oral dexamethasone 0.6 mg/kg or IM OR 2MG of nebulized budesonide beneficial as by studies

Epinephrine

- For long has been standard for treatment of moderate-severe croup.
- Racemic epinephrine reduces bronchial and tracheal secretions and mucosal oedema.
- **Dose** : 0.05-0.1 ml/kg per dose mixed with NS and delivered with humidified oxygen.

RACEMIC EPINEPHRINE

- Symptomatic relief within 30 minutes and duration of action of about 2 hrs.

- **Common side effects** : tachycardia and hypertension