

Croup

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Croup occurs in about 6% to 8% of children annually during their first 5 years of life; 13% of all children suffer an attack of croup, and 5% have experienced recurrent croup (3 or more attacks). The condition is more common in atopic children. It occurs mainly between October and April, and 30% of children reported more than one attack over a 3-year period. Most children with croup have only mild symptoms. About 4% of croupy children need to be hospitalized, and only 1 in 170 of hospitalized children (1 in 4500 of all children with croup) needs to be intubated.

- Croup occurs in 2% to 6% of children each year.
- It is most common in children under 6 years of age.
- Boys are more commonly affected than girls.
- Most cases occur in late autumn and winter.
- Most cases are mild; only 2% to 4% of cases are hospitalized, and only 1 in 4500 needs to be intubated.

Causes

Croup is almost always a viral infection. Parainfluenza virus types 1 and 3 are by far the most common causative agents. Croup is a self-limiting illness and is a large burden on health care systems because of the frequent visits made to doctors and emergency departments. Although most children suffer only mild cases of the illness for a short period, croup causes anxiety for parents and FPs.

- The cause of croup is usually viral.
- Parainfluenza virus types 1 and 3 are the most common causes, but influenza types A and B, adenovirus, and respiratory syncytial virus have also been implicated.
- *Mycoplasma pneumoniae* is occasionally implicated.

Clinical course

The specific symptoms of croup are usually preceded by cold symptoms, such as cough, rhinorrhea, and fever. The characteristic barking seal-like cough, inspiratory stridor, and respiratory distress usually develop fairly quickly. Inspiratory stridor is typical, and fever can occur (up to 40°C). The symptoms usually worsen at night and improve during the day.

The majority of children with croup are only mildly ill and their symptoms resolve within 48 hours, although a small number of children have symptoms that last for 5 to 6 days.

When diagnosing croup, it is important to exclude rare but serious diseases such as bacterial tracheitis and acute epiglottitis.

Treatment

The literature discusses how to manage the more serious cases of croup that attend emergency departments and are admitted to hospital. Family physicians manage the vast majority of children with mild croup; there have been no randomized controlled trials evaluating interventions in true primary care settings.

It is important to educate the parents about the self-limited nature of the disease, and to advise them on how to recognize when their children's condition is getting worse.

It is traditional to treat children with croup with humidified air; however, there is no evidence from trials that it is an effective intervention.

- Supportive care for croup patients includes the following:
 - explain the illness to the parents;
 - keep children and parents together; and
 - give an analgesic or antipyretic.
- There is no evidence for the effectiveness of humidified air.

Pharmacotherapy

As croup is a viral illness, there is no point in giving antibiotics. There is no evidence from controlled trials to indicate whether children with feverish croup should be given antipyretics; most authorities consider it reasonable. Antitussives and anticongestants should probably not be given. Oxygen use is now recommended only for children with an oxygen saturation of 92% or less in room air.

Systematic reviews of steroid trials, which were conducted on inpatients or in pediatric assessment units, found steroid treatment to be associated with improvement in croup-severity score, decreased time in the emergency room, and fewer hospital admissions. In the week following administration of the steroid, there were lower rates of re-attendance to any doctor or hospital.

Steroids given orally, rather than by nebulizer or injection, are equally effective, and a single dose of dexamethasone might be all that is needed for most cases.

Epinephrine has been shown to substantially reduce respiratory distress within 10 minutes and to be effective for more than 1 hour; its effects wear off within 2 hours. Racemic and L-epinephrine are equally effective.

Most centres now use both epinephrine and corticosteroids to treat children with croup. The epinephrine acts quickly to produce relief until the slower-acting steroid begins to work, and the steroid action persists long after the epinephrine effect has worn off.

- Nebulized epinephrine is effective in rapidly improving symptoms.
- Oral, nebulized, or intramuscular dexamethasone is effective in relieving symptoms at 6 hours and 12 hours, but there is no additional effect at 24 hours.
- Steroids reduce the following:
 - symptoms,
 - the number of hospitalizations,
 - intubations,
 - time in hospital,
 - duration of illness, and
 - the number of subsequent health care visits.
- A single dose of steroid is usually effective.

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Competing interests

None declared

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