

# Acute Laryngitis

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**Acute laryngitis**, often referred to as **acute subglottic laryngitis** or **pseudo croup** (MKN-10: Template:MKN), is swelling of the larynx in the subglottic region. It is usually of viral origin (parainfluenza viruses, adenoviruses, RSV), but non-inflammatory irritations (such as allergens) can cause the same symptoms. It occurs more often than acute epiglottitis and tends to be less dramatic, occurring mainly in the winter months (November – April). It most commonly affects children from infancy up to age 6. Adult population can also be affected. <sup>[1]</sup>

## The Clinical Presentation

The symptoms of the disease appear suddenly, mostly in previously healthy children or follow previous upper respiratory tract infection. The onset is sudden, often at night in the form of paroxysmal inspirational dyspnoea with inspirational stridor, accompanied by a typical barking cough. The child is restless, subfebrile and has a rough voice (hoarseness). In severe cases, symptoms may include anxiety or confusion, agitation and cyanotic skin. There is no sore throat, no difficulty in swallowing. The child is generally in good condition (with a low degree of dyspnoea). Progression can occur within tens of minutes. Clinical status is assessed according to Downes (0-10 points). <sup>[2]</sup><sup>[1]</sup>

Downes score in acute subglottic laryngitis<sup>[3]</sup>

Feature	Score 0	Score 1	Score 2
Lung auscultation	Normal	Weakend, harsh	Scilent
Stridor	None	Inspiratory	Inspiratory and expiratory
Difficulty of breathing	None	Suprasternal retraction, allar deflecton	Retration all soft parts of the chest, open mouth when breathing
Cough	None	Rough, unproductive	Barking, dry
Cyanosis	None	In room air	Even with FiO <sub>2</sub> > 0,4

- Downes score 2 or less – the child can be left in home care (cool humid air, fluids, mucolytics)
- Downes score 3 and more – hospitalization required, ambulance transport (dexamethasone p.o., i.m. or i.v., adrenaline inhalation)
- Downes score 7 and more – Consider tracheal intubation under inhalation anaesthesia <sup>[3]</sup>.

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## Diagnostics

It is essential to distinguish between **acute epiglottitis** and **acute laryngitis**.

	Acute epiglottitis	Acute laryngitis
Average age	3–4 years	6–36 months
Prodrome	–	Runny nose
Cough	– / mild	Barking
Feeding	No	Yes
Mouth	Saliva flows out	Closed
Toxicity	Yes	No
Temperatue	> 38,5 °C	< 38,5 °C
Stridor	Fine	Wheezing
Voice	Weak / quiet	Rough
Recurrences	No	Yes

Differential diagnosis should rule out epiglottitis, retropharyngeal abscess, bacterial laryngotracheitis, allergic or hereditary upper airway edema. Neck examination is done quickly by inspection with the help of tongue depressor. <sup>[1]</sup>

## Treatment

- Monitoring of vital functions (pulse, respiratory rate, blood preassure, SaO<sub>2</sub>);

- Cold nebulization (a mixture of gases of different  $\text{FiO}_2$ , that the child breathes);
- Inhalation of adrenaline (nebulized adrenaline) (5 mg in 5 ml 1/1 0.9% NaCl, the effect appears after 10-30 minutes, after inhalation lasts 60 minutes);
- Dexamethasone i.v. or i.m. (0.6 mg/kg per dose , the effect occurs within 120 min)<sup>[3]</sup>;
- Prednisone per rectum;
- Eventually non-codeine type antitussives;
- **Sedatives are contraindicated** (risk of respiratory depression), for sedative effect use antihistamines (promethazine 1-2 mg/kg/24 hours).

## Guideline treatment depending on severity

### Downes score 0-2:

- Ambulatory procedure;
- Cold air inhalation (not EBM);
- Dexamethasone 0,6 mg/kg p.o. or i.m.

### Downes score 3-4:

- Hospitalization on standard ward;
- Cold nebulization of gases with  $\text{FiO}_2$  approx. 0.3-0.4;
- Dexamethasone 0,6 mg/kg p.o. or i.m.

### Downes score 5-7:

- Hospitalization on ICU, secure i.v. line;
- Cold nebulization of gases with  $\text{FiO}_2$  approx. 0.3-0.4;
- Dexamethasone 0,6 mg/kg i.v.;
- Nebulization of adrenaline 1: 1,000 in a dose of 5 ml or 2 mg of nebulized budesonide;
- Careful sedation (midazolam).

### Downes score 7-10:

- Conservative therapy (see previous procedure) for 20 minutes, tracheal intubation in case of no improvement;
- In critical dyspnea we intubate immediately, we follow the clinic, we cannot "wait" for hypoxia or hypercapnia;
- Intubate by non- apnea technique under inhalation anesthesia, alternatively midazolam 0.2 mg/kg + ketamine 3 mg/kg i.v.;
- We choose a tracheal tube without a cuff with a diameter 0.5-1 mm smaller than the diameter of the tube for a given age;
- After intubation, we start with standard pulmonary ventilation ;
- We extubate at a time when air is already significantly leaking around the ET cannula, usually within 48 hours.

## Further steps

Laryngitis is often recurring with various severity. In recurrence, we investigate other differential diagnostics with a focus on allergic causes („*spasmodic croup*“), gastroesophageal reflux disease (GERD) or obstructions due to adenoid vegetations. Laryngotracheobronchoscopy is needed with frequent recurrences or atypical presentation. <sup>[1]</sup>

## Links

### Related articles

- Acute epiglottitis
- Acute obstructive laryngitis
- Upper respiratory infections (URI)

### External links

- Template:Akutně
- Akutní laryngitis (onemocnění hlasu a řeči) (<http://atlas.lf1.cuni.cz/ohr/akutni-laryngitis-1/>)
- Chronická laryngitis (onemocnění hlasu a řeči) (<http://atlas.lf1.cuni.cz/ohr/chronicka-laryngitis-3/>)

## References

1. HAVRÁNEK, Jiří: *Infekce horních dýchacích cest*
- 2.
- 3.

