



## **Nebulized Epinephrine Use in Croup Management**

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**Received Date: April 25, 2023**

**Published Date: May 10, 2023**

Croup or acute laryngitis is a common disease in pediatric population mainly at fall and winter season. It is a frequent presentation to pediatric clinic and emergency department especially at night and early morning time. It is described as inspiratory stridor, barking cough, and voice changes due inflammation in the larynx and subglottic airway. Parainfluenza 1 virus is the main cause for croup beside to other respiratory and cold viruses. But sometimes, secondary bacterial infection may occur [1].

The highest prevalence is in between less than 6 years old kids, but it may be more severe in less than 3 years kids. Host factors that may contribute to the development of croup some kids are more prone to develop recurrent croup due to functional or anatomic susceptibility to upper airway narrowing [1].

Croup is a self-limited viral illness, and the cough usually resolves within few days. It begin with flu-like symptoms, runny nose, mild fever and typical barking cough with stridor in more severe cases. Respiratory distress is a sign of severe cases with upper airway obstruction.

Croup usually treated as an Outpatient basis with supportive treatment, antipyretics, and nasal saline. For children with mild croup who are seen in the outpatient setting, it is suggested to give a single dose of oral dexamethasone (0.15 to 0.6 mg/kg, maximum dose 16 mg) or oral prednisolone (1 mg/kg) [3]. Randomized controlled trials in children with mild croup have demonstrated that treatment with a single dose of oral glucocorticoid reduces the need for reevaluation and shortens the duration of symptoms [3]. Nebulized epinephrine is not routinely needed in mild croup management.

Both forms of epinephrine are suitable to treat croup. Racemic epinephrine (which is a 1:1 mixture of the D- and L-isomers) and L-epinephrine appear to have similar efficacy and a similar side effect [4]. But, epinephrine is accessible more than racemic epinephrine which is not widely available in hospitals and clinics, also it is not available in all countries [3].

Racemic epinephrine is administered as 0.05 mL/kg per dose (maximum of 0.5 mL) of a 2.25% solution diluted to 3 mL total volume with normal saline. It is given via nebulizer over 15 minutes [3]. While L-epinephrine is administered as 0.5 mL/kg per dose (maximum of 5 mL) of a 1 mg/mL solution. It is given via nebulizer over 15 minutes [4] [3].

Nebulized epinephrine can be given every 15 to 20 minutes, but the child who needs frequent epinephrine nebulization is usually sick enough to warrant hospitalization and close observation for respiratory system [3]. Also, patients treated by nebulization epinephrine has to be observed for few hours before discharge concerning the symptoms rebound after medication effect is finished in 30-60 minutes [5].

## References

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