

J.H. Lee, J.Y. Jung, H.J. Lee, et al.

Efficacy of low-dose nebulized epinephrine as treatment for croup: A randomized, placebo-controlled, double-blind trial. American Journal of Emergency Medicine 2019.

Background: Croup treatment usually involves a single dose of systemic dexamethasone combined with nebulized epinephrine in moderate to severe cases. However, the optimal dose of L-epinephrine remains unclear. Traditionally 0.05ml/kg (maximum of 0.5ml) of racemic epinephrine is recommended which is equivalent to 0.5ml/kg = 0.5mg/kg (maximum of 5ml = 5mg) of regular L-epinephrine.

Objectives: The authors examined whether a low dose (0.1 mg/kg) was inferior to the conventional dose (0.5 mg/kg) of 1:1000 nebulized L-epinephrine in patients with moderate to severe croup.

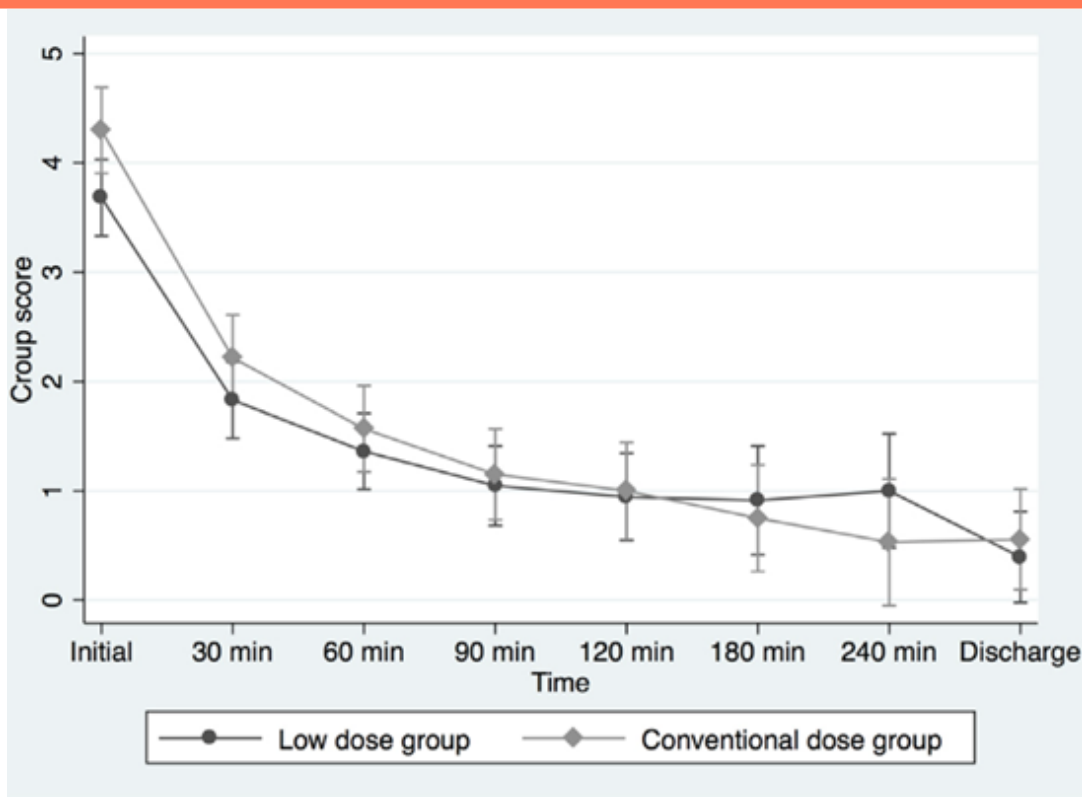
Methods: This randomized double-blind clinical non-inferiority trial was conducted in three pediatric emergency departments from May 2015 to October 2017. Children 6 months to 5 years old with moderate to severe croup (Westley scale scores 3-11) were eligible. Subjects were randomly assigned to the conventional dose (0.5 mg/kg; maximum 5 mg) or low dose (0.1 mg/kg; maximum 1 mg) group. All subjects received 0.6 mg/kg dexamethasone. Croup scores and other vital signs were measured before and at 30, 60, 90, and 120 min after nebulized L epinephrine administration. The primary outcome was the change in croup score after 30 min.

ACADEMIC P.E.A.R.L.S

Pediatric Evidence And Research Learning Snippet



LOW-DOSE NEBULIZED EPINEPHRINE IN CROUP: IS IT AN OPTION?



Results: At 30 min after treatment with nebulized L-epinephrine, the croup scores in both groups were significantly reduced from the baseline values ($p < 0.05$) and did not differ between the two groups ($p = 0.42$). Neither blood pressure nor heart rate differed between the two groups.

Conclusion: Low-dose 1:1000 L-epinephrine was not inferior in croup score reduction to the conventional dose in patients with moderate to severe croup.

EXPERT COMMENT



“Lower dose of nebulised L-epinephrine is as effective as standard dose. There were no serious adverse events reported in either of the groups. Medication errors are common when pediatric populations are treated, with a rate threefold higher than for adult patients. These errors may be even more in a busy ER. Erroneously administered IV epinephrine can be fatal and a higher dose is associated more poorer outcome. So switching to a smaller dose may be beneficial and less hazardous. Further studies are needed, for a standardized application.”

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Reference

Lee JH, Jung JY, Lee HJ, Kim DK et al. Efficacy of low-dose nebulized epinephrine as treatment for croup: A randomized, placebo-controlled, double-blind trial. Am J Emerg Med. 2019 Dec;37(12):2171-2176. doi: 10.1016/j.ajem.2019.03.012.