Dexamethasone vs. Prednisolone for Acute Asthma Exacerbation in the Pediatric Emergency Department

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February, 2012

Asthma is a disease that represents a significant burden on the pediatric population, currently affecting 9.4 percent of all children, and is the reason for 3 percent of all pediatric admissions and 2.8 percent of all pediatric emergency department visits. Standard treatment of acute asthma exacerbation, based on the National Heart, Lung and Blood Institute’s Expert Panel Report 3, is a short course of oral systemic corticosteroids, with prednisone or prednisolone, in addition to short acting beta agonist therapy. However, in the pediatric age group, oral prednisolone is not always well-tolerated (due to poor taste, duration of therapy, and difficulty in general with administering oral medications to young children). Therefore, a review of the literature was undertaken to determine if dexamethasone (oral or parenteral) is a suitable alternative. PubMed, PubMed Clinical Queries, and the TRIP Database were searched using ther terms “prednisolone vs. dexamethasone,” “oral prednisolone AND dexamethasone AND asthma.” Articles focusing on adults, the use of steroids in diseases other than asthma, and one outdated article were excluded. Five studies in total were included in this analysis. All used a non-inferiority approach. Several trials included children less than two years old – these trials may have included children who had bronchiolitis rather than an asthma exacerbation. Several studies also did not use an intention-to-treat analysis but in the preparation of this review, the results were re-calculated using intention-to-treat criteria. Endpoints used in the studies were either relapse rate or admission rate, and overall no difference was detected between prednisone and dexamethasone. The clinical bottom line for this topic is that oral dexamethasone seems to be an acceptable alternative to oral prednisone/prednisolone in preventing relapse and hospital admission in patients presenting to the pediatric emergency department with acute asthma exacerbation. In addition, patients may miss less days of school and exhibit improved compliance with oral dexamethasone. Intramuscular dexamethasone appears to be an acceptable alternative in younger children but it is not well-studied in older children and adolescents. Therefore, in patients who cannot tolerate oral prednisone or prednisolone, oral or intramuscular dexamethasone should be considered as an alternative.

References:

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