Addition of ipratropium to nebulized albuterol in children with acute asthma presenting to a pediatric office
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Study Type: POEM

Purpose: Does the addition of ipratropium to a single nebulized albuterol treatment add any benefit in the management of acute asthma in infants and younger children presenting to a pediatric office?

Study Duration: single dose nebulization, 2 year randomization

Trial Design: Prospective, randomized, double-blinded, solo practice in Huntington Beach, California

Drug: albuterol group: 0.15 mg/kg in 2 ml normal saline over 20 min
ipratropium group: 0.15 mg/kg albuterol + 250 mcg ipratropium for those < 15 kg and 500 mcg for those > 15 kg

Patients: n = 53, 19 to 28 months; ~70 male; ~72% hispanic; 24% white, mean asthma score ~8

Inclusion: infants age 4 months to 72 months who had presented at least once previously with acute asthma and responded to albuterol in the past; asthma was defined as acute bronchospasm clinically presenting as coughing wheezing, and respiratory distress; had to present within 24 hours of symptoms

Exclusion: those taking oral, inhaled, nebulized albuterol, steroids or ipratropium within one week of presentation; congenital heart disease, foreign body, cystic fibrosis, those requiring immediate hospitalization

Outcomes: improvement in asthma scores buy at least 30% , 30 min after the treatment; referral to ED, or hospital, respiratory distress score

1. Are the results valid?
   a. randomized? yes
   b. double-blinded? yes
   c. were groups similar? yes
   d. all patients accounted for? yes

2. What were the results?

   Primary Outcome

   Asthma score
   * is calculated from 4 variables: respiratory rate, retraction, auscultation, and oxygen saturation - scores could range from 4 to 12, baseline score = 8
   * three patients excluded and sent directly to the ER
   * no % improvement in asthma scores when ipratropium was added to albuterol, p = NS
   * both groups improved by 38% from baseline
   * One patient in the ipratropium group did not improve and was sent to the hospital.
   * One patient in the albuterol group was admitted to the hospital after being sent home from the office.
   * Follow-up asthma score was < 6, p = NS

   Harm
   * tachycardia, mild jitteriness, vomiting, p = NS
   * no interruption of therapy

3. Will the results help me?
   * Study limitations: single nebulization, but the method was fitting to an office practice
   * The addition of ipratropium to albuterol therapy does not improve outcomes as compared to albuterol alone in a single nebulized dose. There was no difference in rate of referral to the ED or hospitalization with either treatment.
   * Due to the poor reimbursement of drugs given in the office, there is no reason to add ipratropium to albuterol for a single nebulization in infants and children < 72 months old.
   * Cost savings realized =
   * It is possible to do research in your office!