

Best drugs for avoiding paradoxical bronchospasm during spirometry

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Abstract

Background: Asthma could be diagnosed by its characteristic presentation. Spirometry can help the diagnosis by revealing post-bronchodilator response. Classically, salbutamol (albuterol) is used for evaluating post-bronchodilator response. This drug causes paradoxical bronchospasm in less than 1% of asthmatic patients. This study aimed to evaluate the frequency of paradoxical bronchospasm with salbutamol during spirometry and compare it with other drugs that did not reveal paradoxical bronchospasm such as levalbuterol and ipratropium. **Materials and Methods:** One hundred-Ninety two asthmatic subjects were entered in this clinical trial. All patients showed clinical manifestations of asthma and revealed obstructive pattern during spirometry. They were randomly assigned into three groups of drugs included: salbutamol, levalbuterol and ipratropium. Two puffs of these drugs were administered via a spacer and patients waited for fifteen minutes for the maximal effect to take place. Then spirometry was obtained again and post-bronchodilator FEV₁ and its alterations were compared among the three groups. **Results:** The mean± SD age of patients was 49.4±17.4 years; the mean age, demographic data, clinical findings and spirometry results showed no significant difference among groups. FEV₁ percent of predicted was 68.6±19.6 which proved that most subjects were suffering from severe asthma. Improvement of FEV₁ by salbutamol (22.2±3%) and levalbuterol (17±1%) was significantly more compared with ipratropium (9.4±1%) (t=2.0, P=0.01 and t=2.2, P=0.01, respectively). Paradoxical bronchospasm (more than 1% decrease in FEV₁) was seen in two (3%), one (1.6%) and four (6%) subjects of salbutamol, ipratropium and levalbuterol groups, respectively. Regarding clinical improvement, levalbuterol resulted in the higher frequency of clinical improvement compared to salbutamol and ipratropium. **Conclusion:** With the dosage recommended for reversibility testing during spirometry, salbutamol showed comparable bronchodilator response and paradoxical bronchospasm frequency compared to levalbuterol and ipratropium. ©2009 NRITLD, National Research Institute of Tuberculosis and Lung Disease.

Reaxys Database Information

Author keywords

Albuterol; Asthma; Ipratropium; Levalbuterol; Paradoxical bronchospasm; Salbutamol

Indexed Keywords

EMTREE drug terms: ipratropium bromide; levalbuterol; salbutamol; unclassified drug; ventalex; xoponex

EMTREE medical terms: adolescent; adult; aged; article; asthma; bronchodilatation; bronchospasm; child; clinical trial; controlled clinical trial; controlled study; disease severity; drug effect; female; forced expiratory volume; human; major clinical study; male; paradoxical bronchospasm; randomized controlled trial; school child; spirometry

Chemicals and CAS Registry Numbers: ipratropium bromide, 22204-24-7; levalbuterol, 60293-90-8; salbutamol, 18009-94-9

Drug tradename: atrovent, Boehringer Ingelheim, ventalex, sina daru, xoponex, Sepracor.

Manufacturers: Drug manufacturer: Boehringer Ingelheim; Sepracor; sina daru.

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