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Adenosine for salbutamol-induced supraventricular tachycardia

Received: 14 December 2006
Accepted: 19 April 2007
Published online: 15 May 2007
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Sir: Rapid onset of action, high success rate, and a short half-life are distinct advantages of adenosine for converting paroxysmal supraventricular tachycardia (SVT) to sinus rhythm. While shorted-lived sensations of dyspnea and chest pain commonly accompany the administration of adenosine, serious side effects are fortunately infrequent and mostly confined to cardiac arrhythmias and, rarely, bronchospasm. Consequently, higher grade AV blocks, sick sinus syndrome, and asthma are listed as contraindications for adenosine. Salbutamol-induced SVT occurring in the alert, spontaneously breathing asthmatic patient thus constitutes a therapeutic dilemma.

We report our experience in two boys with salbutamol-induced SVT who were successfully converted with adenosine during asthma exacerbations. Neither of them had significant hypokalemia at the onset of SVT. One boy with brittle asthma had three episodes of SVT at 20, 22,

and 24 months of age during therapy for status asthmaticus. The first episode was considered salbutamol-induced, and intravenous adenosine at 0.1 mg/kg was successful in all three instances without worsening of his asthma. In all three episodes he was receiving continuous inhalations of salbutamol, the first two while being mechanically ventilated in pressure-control mode. No changes were noted in tidal volumes. Unfortunately there was no end-tidal CO₂ monitor in place at the time. The second boy suffered a salbutamol-induced SVT during an acute asthma exacerbation at the age of 6 years. At the time of the SVT episode he was awake, tachypneic, and saturating around 88% with 6 l/min of oxygen by facemask. No changes in respiratory parameters were observed after SVT termination with 0.1 mg/kg adenosine.

Although adenosine may be safely administered in most children with a history of asthma [1, 2], rare case reports indicate that this drug has a potential for inducing bronchospasm in vulnerable individuals. Only two instances of adenosine administration in acutely asthmatic children with salbutamol-induced SVT have been reported so far, both apparently without adverse effects on asthmatic symptoms [3, 4]. Our experience suggests that salbutamol may provide protection from adenosine-related worsening of bronchospasm during asthma exacerbations.

References

1. Losek JD, Endom E, Dietrich A, Stewart G, Zempsky W, Smith K (1999) Adenosine and pediatric supraventricular tachycardia in the emergency department: multicenter study and review. *Ann Emerg Med* 33:185–191
2. Larsson K, Sollevi A (1988) Influence of infused adenosine on bronchial tone and bronchial reactivity in asthma. *Chest* 93:280–284
3. Cook P, Scarfone RJ, Cook RT (1994) Adenosine in the termination of albuterol-induced supraventricular tachycardia. *Ann Emerg Med* 24:316–319
4. Habashy D, Lam LT, Browne GJ (2003) The administration of β_2 -agonists for paediatric asthma and its adverse reaction in Australian and new Zealand emergency departments: a cross-sectional survey. *Eur J Emerg Med* 10:219–224

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