

Optimal Dose Of Adenosine Effective For Treating Supraventricular Tachycardia In Children

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INTRODUCTION: Supraventricular tachycardia (SVT) is the most common tachyarrhythmia in children. These tachyarrhythmias are poorly tolerated and potentially fatal in children. The dose of adenosine, although well defined in adults, is not adequately established in children.

METHODS: All children presenting to the department of paediatric cardiology, The Children's Hospital, Lahore with SVT from July 2008 to June 2011 were administered adenosine in rapid boluses according to PALS guidelines using incremental doses of 100, 200 and 300 µg/kg. The response was recorded on 12 lead ECG. Reversion to sinus rhythm for 3 min was considered as effective response. Pre-excitation was documented and echocardiography performed on all children after attaining sinus rhythm.

RESULTS: Eighty five patients were treated for 110 episodes of SVT with adenosine. M:F ratio was 2.2:1. The mean age ± SD was 27.9 ± 48.1 months. Adenosine was effective in reverting 97 episodes of SVT to sinus rhythm (88.2%). A dose of upto 100µg/kg was only effective in 36.4% episodes of SVT. Two hundred µg/kg was effective in 44.3% of those not responding to 100 µg/kg dose (n=31/70, cumulative 71/110, 64.5%). A dose of 300 µg/kg was effective in further 26 patients not responding to lower doses (n=26/39, 66.7%; cumulative 97/110, 88.2%). Mean ± SD effective dose of adenosine was 185.3µg/kg ± 81.0µg/kg with median effective dose of 200µg/kg. Significantly higher dose of adenosine was required in children with underlying pre-excitation, n=18/97 (220.8µg/kg ± 67.6µg/kg vs 177.2µg/kg ± 81.9µg/kg, p=0.039). The effective dose was lower in patients with underlying dilated cardiomyopathy or congenital heart disease but difference was not statistically significant.

CONCLUSION: Adenosine is an effective drug in treating SVT in children but a dose of 100µg/kg may not be adequate as first bolus. Higher starting dose of 200µg/kg may be administered in majority of children specially with pre-excitation.