Administration of adenosine through a stopcock delivers doses lower than intended in patients weighing less than 10 kg, which may account for the decreased response of infants to the first dose of adenosine" Weberding et al (2017).

Abstract:

Study objective: Adenosine administration with a stopcock is the recommended treatment for pediatric patients with acute supraventricular tachycardia. Recent reports suggest that many infants do not respond to the first dose of adenosine administered. Our aim is to determine whether administration of adenosine with a stopcock delivers lower-than-expected drug doses in patients weighing less than 10 kg, corresponding to weights of infants.

Methods: We developed an in vitro model of adenosine delivery. Doses of adenosine corresponding to weights 2 to 25 kg were calculated, using a dose of 0.1 mg/kg, and administered through one port of a stopcock. Distilled water was administered through the second port. The adenosine concentration of the output was measured with mass spectrometry and results were confirmed with spectrophotometry of Evans blue.

Results: The mean doses of adenosine delivered through the stopcock increased as weight increased. The mean dose of adenosine delivered was 0.08 mg/kg for weights 2 to 9 kg and 0.1 mg/kg for weights 10 to 25 kg (95% confidence interval for difference of means –0.03 to –0.009). The median dose of adenosine delivered was 0.07 mg/kg (interquartile range 0.06 to 0.07 mg/kg), 0.09 mg/kg (IQR 0.08 to 0.09 mg/kg), and 0.1 mg/kg (IQR 0.09 to 0.1 mg/kg) for weights 2 to 5, 6 to 9, and 10 to 25 kg, respectively (rank difference=100; P<.05 for 2 to 5 kg versus 10 to 25 kg). Similar results were obtained with spectrophotometry.

Conclusion: Administration of adenosine through a stopcock delivers doses lower than intended in patients weighing less than 10 kg, which may account for the decreased

response of infants to the first dose of adenosine.

Reference:

Weberding, N/T., Saladino, R.A., Minnigh, M.B., Oberly, P.J., Tudorascu, D.L., Poloyac, S.M. and Manole, M.D. (2017) Adenosine Administration With a Stopcock Technique Delivers Lower-Than-Intended Drug Doses. October 28th. .

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