

LETTER TO THE EDITOR

Dipyridamole reversal using theophylline during aminophylline shortage

Our cardiac positron emission tomography (PET) center traditionally administers intravenous aminophylline to reverse unpleasant side-effects and infrequent ischemia from dipyridamole. However, in December 2010 aminophylline experienced a drug shortage. While the Food and Drug Administration announced that the shortage had been resolved in February 2011,¹ the American Society of Health-System Pharmacists posted another shortage in July 2011.² Therefore, we would like to summarize briefly our experience using theophylline as an alternative.

Aminophylline is a salt containing approximately 80% theophylline by weight.³ Therefore, typical doses of 75 to 125 mg of aminophylline require only 60 to 100 mg of theophylline. However, theophylline for intravenous administration is much more dilute than aminophylline. For example, suppliers offer 10 mL vials containing 250 mg of aminophylline (25 mg/mL), but 500 mL bags containing 400 mg of theophylline (0.8 mg/mL). To avoid a large volume infusion in most patients, we usually administered 50 mg of theophylline (roughly filling a 60 mL syringe), corresponding to approximately 60 mg of aminophylline. Injection of theophylline by hand required around 1 minute. A second injection was performed in rare cases for refractory symptoms.

Between January and June 2011, we administered theophylline to 154 patients as described above. Only 11 (7%) required a second injection. Side-effects or frank ischemia from dipyridamole were successfully treated in all cases. No manifestations of theophylline toxicity, such as dysrhythmia, nausea, vomiting, tremors, or seizures, were noted. Literature review of theophylline in humans to reverse dipyridamole discovered four studies with a combined total of 61 patients, all published between 1984 and 1994 from Sweden.⁴⁻⁷ Therefore, our largest series provides modern evidence in cardiac PET

that theophylline can replace aminophylline during aminophylline shortages.

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