

LETTERS TO THE EDITOR

Epinephrine Dose for Treating Contrast Material–Induced Reactions

From

Thomas C. Winter, MD

Department of Radiology, University of Utah, 30 North 1900 East, Room 1A071, Salt Lake City, UT 84132-2140

Editor:

Dr Lightfoot and colleagues (1) are to be congratulated for their well-written survey of radiologists' knowledge regarding the management of severe contrast material–induced reactions, which appeared in the June 2009 issue of *Radiology*. This is obviously an important and, judging from resident performance at oral board examinations and in the literature (2), an anxiety-inducing and confusing topic. Many of us have a difficult time remembering the proper epinephrine dose, given the two concentrations (ie, 1:1000 and 1:10 000 dilution) and three administration routes (ie, intravenous, subcutaneous, and intramuscular), particularly in stressful situations. Thus, I was grateful for the authors' review.

However, one statement in their article piqued my interest: "The acceptable dose ranges in this study were defined as ... 5 µg to 0.5 mg of 1:10 000 concentrated epinephrine for intravenous injections." Is 5 µg given intravenously really an acceptable dose? I was unable to find any references supporting this. To put it into perspective, 0.1 mg of 1:10 000 epinephrine (the intravenous dose I was taught to start with) is 1 mL. However, 5 µg would be 1/20 of a milliliter, which is a small volume to administer intravenously, even with a 1-mL tuberculin syringe. I am concerned that 0.05 mL would be a homeopathic dose, unlikely to benefit the patient.

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Response

From

Robert J. Abraham, MD, FRCPC,*

Christopher B. Lightfoot, MD,* and

Sandeep Kapur, MD, FRCPC†

Department of Diagnostic Imaging*

and Department of Pediatrics,

Division of Allergy,† Dalhousie

University, QE II Health Sciences

Centre, 1796 Summer St, Halifax

Infirmity Site, Room 3316, Halifax, NS, Canada B3H 3A7

e-mail: RJAbrahamResearch@gmail.com

We share Dr Winter's concerns on the low dosing parameters for intravenous epinephrine in severe contrast material–induced allergic reactions. Our intent (1) was to use the widest range that we could find in guidelines for acceptable doses. We chose these values to afford radiologists every opportunity to give a "correct" answer.

Low bolus dosing of intravenous epinephrine, starting at 5 µg, has been predominantly published in anesthesia literature (2–4) and is used more specifically for treating hypotension of allergic reactions. Doses of 0.1–0.5 mg have been recommended for cardiovascular collapse (3,4). A prospective trial of sting challenge anaphylaxis used epinephrine continuous infusions with good results (6). It has been suggested that this may be the most appropriate method of intravenous

treatment, following first line therapy, for experienced care providers (2,7). However, there are no randomized controlled high-level evidence trials investigating therapeutics in severe allergic reactions (5).

Rather than intravenous therapy, guidelines recommend intramuscular epinephrine for initial therapy (2,7,8). Ideally, 0.5 mg of 1:1000 epinephrine is injected in the lateral aspect of the thigh for adult patients. We hope that educational efforts will be widely implemented and helpful; however, we strongly believe lives can be saved with epinephrine auto-injectors because these devices can eliminate treatment delay and dosing errors.

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