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Correspondence

Methylene blue for refractory anaphylaxis—is it a magic bullet? The authors' response[☆]

To the Editor,

We wish to thank the authors for their comments concerning our report [1] about the use of methylene blue to treat refractory anaphylaxis. We are entirely in agreement with the need to balance the potential risks and benefits of interventions, particularly in life-threatening situations. Given the limited experience with the use of methylene blue as a salvage medication in refractory anaphylaxis, we would emphasize that the decision to use this drug must be deliberated carefully only after other, more conventional, treatment options have been considered [2].

Although there are a number of potential adverse effects of methylene blue, in a situation where a patient with anaphylaxis is deteriorating rapidly and is unresponsive to epinephrine, this unique agent should be considered. Several reports have used a standardized dose of 1.5 to 2 mg/kg of methylene blue with a rapid therapeutic response and minimal adverse effects [3–6]. In comparison, the recommended dose of methylene blue to treat acquired methemoglobinemia is analogous (1–2 mg/kg) and also produces a quick response [7]. Our experience with this dosing regimen showed rapid reversal of anaphylaxis with little by way of adverse effects. The alternatives, namely, intubation, vasopressor support, and placement of central lines, have a host of potential complications, which were avoided by use of methylene blue.

It is important to recall that epinephrine has a narrow therapeutic window with well-known adverse effects, some of which may themselves be life-threatening. These include ventricular arrhythmias, angina, myocardial infarction, pulmonary edema, sudden sharp increase in blood pressure, and intracranial hemorrhage [8]. Milder adverse effects include anxiety, fear, restlessness, headache, dizziness, palpitations, pallor, and tremor. Patients at higher risk for serious adverse effects from epinephrine are those with comorbidities such as underlying heart disease and those taking monoamine oxidase inhibitors, tricyclic antidepressants, antiarrhythmics, and cocaine [8]. Errors associated with epinephrine administration relate to dosing (related to concentration and ratio dose expressions, ie, 1:1000 and 1:10 000), name (mistaken with ephedrine), and route [8,9]. Furthermore, based on the recommended dosing for children (0.01 mg/kg of 1:1000 solution) and that only 2 fixed doses of epinephrine are available by autoinjector (0.15 and 0.3 mg), children weighing less than 15 kg are overdosed with the 0.15-mg autoinjector, whereas children weighing between 15 and 30 kg are underdosed if treated with 0.15 mg, yet overdosed if treated with 0.3 mg [8].

Despite the potential for adverse effects, medication interactions, and administration errors, epinephrine still remains the first-line treatment for anaphylaxis [2]. For the potentially fatal cases of anaphylaxis refractory to epinephrine, alternative therapies are essential. We feel that the benefits, highlighted in our report [1], compared with the risks, summarized in both our report and this correspondence, favor the use of methylene blue in cases of anaphylaxis refractory to conventional treatment.

Cindy S. Bauer MD

Division of Allergy and Clinical Immunology, Department of Pediatrics
Children's Hospital of Wisconsin, Milwaukee, WI, USA
E-mail address: csbauer@mcw.edu

Peter Vadas MD, PhD

Division of Allergy and Clinical Immunology, Department of Medicine
St Michael's Hospital, Toronto, Ontario, Canada

Kevin J. Kelly MD

Division of Allergy and Clinical Immunology, Department of Pediatrics
Children's Hospital of Wisconsin, Milwaukee, WI, USA

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