

Figure 1. Axillary vein denoted with calipers next to artery (top) and axillary vein and artery with compression to differentiate the 2 vessels (bottom).

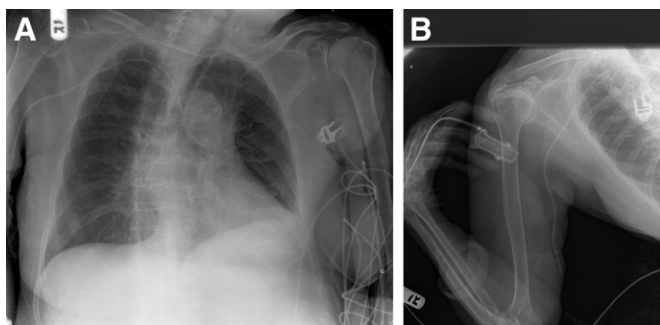


Figure 2. X-ray confirmation of successful central line placement via axillary approach.

Ciguatera Poisoning Successfully Treated With Delayed Mannitol

To the Editor:

Ciguatera poisoning is second to scombroid in nonbacterial fish poisonings in the US.¹ While treatment is mainly supportive, some advocate mannitol within the first 48 hours after symptoms onset.² We describe a patient with substantial improvement when treated nearly one month after symptom onset.

A 51-year-old male with a past medical history of ulcerative colitis and migraine headaches developed watery diarrhea, chills, myalgias, and parasthesias in his hands and lips 2 days after eating amberjack at a local restaurant. He had diarrhea every 2 hours with pain in his masseters, pectorals, and occipital muscles. Four days after eating the amberjack, he developed abdominal pain and began taking indomethacin. He then began to have hot/cold dyesthesias in his hands and feet that were relieved by hot baths.

He is an emergency physician and empirically began himself on prednisone. His gastroenterologist then prescribed ciprofloxacin and metronidazole for presumed UC. Blood work showed an elevated white blood cell count, C-reactive protein, and creatinine. Otherwise all studies, including stool cultures, were normal. He bathed in his hot tub 4 times a day due to the burning pains and bought a new hat and gloves due to pain from the cold weather.

Two weeks later the local health department identified a cluster of ciguatera poisonings from contaminated amberjack from the same restaurant. The diarrhea improved but he developed dysuria, intense burning/parasthesias in his hands, feet and face, and cold intolerance.

He was still symptomatic one month after exposure and went to a local emergency department, where he received mannitol 1 gm/kg IV. The neurologic symptoms resolved almost immediately. His symptoms were completely gone by the time he left the emergency department and did not return. Later he was diagnosed with *Clostridium difficile* colitis and the abdominal cramps improved with more treatment. There are reports of improvement in patients who have had symptoms for up to 8 weeks. Eastaugh described a couple that received mannitol with partial symptom resolution 13 days after exposure.³ However, a double-blind randomized trial comparing the treatment of ciguatera poisoning did not find a significant difference in symptom improvement when patients were treated with mannitol versus normal saline. The trial only included 50 patients.⁴ The exact mechanism of how mannitol improves symptoms is unknown. It has been suggested that it works by inhibiting the ciguatoxin-induced opening of sodium channels on the neuron membranes or reducing the perineural edema by establishing an osmotic gradient.⁵ As there is no definitive explanation, some improvement may be due to a placebo effect, although the patient's improvement was drastic and remains to the present time.

This patient had symptoms for nearly one month. After treatment with mannitol, he had complete resolution of

symptoms due to ciguatera poisoning. This suggests that physicians may consider increasing the window of treatment with mannitol past 48 hours.

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Standardization of Product Concentration In Emergency Dosing: A Response to Fineberg and Arendt

To the Editor:

We read with interest the article by Fineberg and Arendts¹ comparing the time of medication administration and errors of the volume/weight method versus the Broselow Tape™. The unique feature of the Broselow Tape™, the feature which has made it a useful adjunct for so many years, is that it provides a method for obtaining weight for the dosing of medications in situations in which a child cannot be weighed. This is accomplished by an actual patient length measurement and corresponds to an estimation of ideal body weight,² adequate, and sometimes preferred, for the dosing of most emergency medications. Once this weight is obtained the tape functions as a simple calculator, providing doses in milligrams from standard sources. This study utilizes the calculated doses for a given weight on the tape. It then measures administration time and errors from calculating the medication volumes from standard product concentrations versus theoretical universal single

volume/weight product concentrations. The title of the article is somewhat misleading in the sense that it is not a comparison of the Broselow Tape's™ function, but rather any dosing method that provides pre-calculated doses since they all require conversion of milligram doses to volumes with standard product concentrations.

As is pointed out in the article and editorial review there are significant practical and logistical barriers to creating such a volume/weight system. Also, any time the literature suggests a change in dosing of any of these standard medications, the drug companies would need to reformulate and then decide how to deal with the medications already disseminated that no longer have the correct dose. The costs of the initial changeover and initial updates along with the broad educational efforts required could be considerable and also introduce potential errors during these changes. There are also inherent flaws in the concept. Such a system would only provide a correct dose for a single indication of a medication. A medication such as vecuronium which has 3 different emergent indications (0.01, 0.1 0.2 mg/kg for defasciculation, maintenance of paralysis, and the paralyzing doses respectively) could not be dosed by the system.

The overriding concept that the study emphasizes, however, is that calculation of volumes in the administrative phase is fraught with time delay and potential for error. Of note, it is surprising that there was not a higher error rate noted since this phase of emergency dosing is particularly error-prone. This study represents the fourth study to look at this issue.³⁻⁵ To address these concepts, the new addition of the Broselow Tape™ includes the calculated volume of medication from a preferred concentration list. This requires reducing the number of medications on the tape in order to allow adequate sized font. With this approach there is no need to reformulate, but simply to obtain the already available formulations that are selected as the preferred concentrations on the tape. The majority of medications utilized in the out-of-hospital environment are included. A more comprehensive electronic system is being offered for in-hospital dosing to meet this additional need.

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