

Acute kidney injury in wasp sting-do early bicarbonate and mannitol make a difference?

Sir,

We read an article by Radhakrishnan^[1] with great interest as it made us to realize the need for aggressive correction of intravascular depletion and renal vasoconstriction, to avert acute kidney injury (AKI). Here we would like to mention the role of sodabarbonate and mannitol in the prevention of AKI in wasp sting.

After resuscitation and restoration of renal perfusion in these cases, the kidneys clear a large amount of acid load resulting in acidic urine. Patients with rhabdomyolysis in the presence of acidic urine are at high risk of developing tubular cast which results in pigment nephropathy and acute tubular necrosis,^[2] since they are unable to alkalinize. However, Knottenbelt have argued that large-volume of crystalloid infusion causes

a solute diuresis sufficient to alkalinize the urine.^[3] On the contrary, a massive infusion of normal saline alone contributes to metabolic acidosis, mainly owing to the dilution of serum bicarbonate with a solution relatively high in chloride ions, generating hyperchloremic metabolic acidosis with the observed reduction in serum pH.^[4] Therefore, administration of both normal saline and sodium bicarbonate seems to be a reasonable approach when fluid is being replenished in patients with rhabdomyolysis.

Mannitol may have several benefits as an osmotic diuretic.^[5] Being an osmotic diuretic, it increases the glomerular filtration rate and urinary volume. Since it is filtered by the kidneys and not reabsorbed, it remains in the renal tubules and causes an increase in the delivery of sodium to the distal tubules and thereby continues its osmotic diuretic effect. This results in a "flushing" effect within the tubules that may reduce the accumulation of cellular debris and casts. Mannitol also to some extent creates a gradient that extracts fluid that has accumulated in injured muscles and thus improved hypovolemia, reduces blood viscosity, and enhances reno-vasodilation; and finally acts as a free-radical scavenger. In view of these, prescribers shall administer mannitol earlier in order to prevent AKI, and shall remember that the advantages of mannitol are lost once complete tubular occlusion occurs.

Wasp stings pose a great hazard in tropics. Doctors being the health guardian of the community, they have to educate and empower the community on health aspects. In this regard, the community shall be educated to bring the cases of wasp stings to the hospital as early as possible, even if the cases appear to be normal or stable. Practitioners must consider and exclude not only an anaphylactic reaction, but also monitor these cases for overt or covert insult to the kidneys, liver, muscles and blood. They shall keep themselves alert and anticipate the unexpected to happen, and be prepared to treat them with appropriate agents.

**Subramanian Senthilkumaran,
Chidambaram Ananth¹, Florence Benita²,
Ponniah Thirumalaikolundusubramanian³**

Department of Emergency and Critical Care Medicine, Sri Gokulam Hospital, Salem, ¹Departments of Anaesthesiology and ²Internal Medicine, Chennai Medical College and Research Center, Irungalur, Trichy, Tamil Nadu, ³Department of Emergency Medicine, Kokilaben Dhirubhai Ambani Hospital and Medical Research Institute, Mumbai, Maharashtra, India

Correspondence:

Dr. Subramanian Senthilkumaran,
Department of Emergency and Critical Care Medicine,
Sri Gokulam Hospital, Salem, Tamil Nadu, India.
E-mail: maniansenthil@yahoo.co.in

References

1. Radhakrishnan H. Acute kidney injury and rhabdomyolysis due to multiple wasp stings. *Indian J Crit Care Med* 2014;18:470-2.
2. Thiruvethiran T, Goh BL, Leong CL, Cheah PL, Looi LM, Tan SY. Acute renal failure following multiple wasp stings. *Nephrol Dial Transplant* 1999;14:214-7.
3. Knottenbelt JD. Traumatic rhabdomyolysis from severe beating – experience of volume diuresis in 200 patients. *J Trauma* 1994;37:214-9.
4. Ho AM, Karmakar MK, Contardi LH, Ng SS, Hewson JR. Excessive use of normal saline in managing traumatized patients in shock: A preventable contributor to acidosis. *J Trauma* 2001;51:173-7.
5. Bragadottir G, Redfors B, Ricksten SE. Mannitol increases renal blood flow and maintains filtration fraction and oxygenation in postoperative

acute kidney injury: A prospective interventional study. *Crit Care* 2012;16:R159.

Access this article online	
Quick Response Code: 	Website: www.ijccm.org
	DOI: 10.4103/0972-5229.142186