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SCORPION STING

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Majority of doctors only know and remember that scorpion sting means severe intolerable excruciating pain at the site of sting and surprised to note the report of death due to.

Scorpion envenomation is a public health problem, common in certain areas of the world including Middle East, Latin America , Africa and India (1-3). *Mesobuthus tamulus* (an Indian red scorpion) scorpion venom is a potent sodium channel activator (4). The clinical manifestations of scorpion envenomation appear to be secondary to activation of both the sympathetic and parasympathetic nervous system. In 76 % of victims, the main clinical manifestations of scorpion sting are local severe excruciating pain which radiates along the corresponding dermatomes with mild edema and local sweating at the site of sting. Systemic manifestations (vomiting, sweating, salivation, cold extremities, priapism, hyper or hypotension , brady or tachycardia and ventricular premature beats or at times, non-sustained ventricular tachycardia) are not uncommon due to envenoming by the lethal scorpion species *Mesobuthius tamulus*, *Leiurus quinquestriatus*, *Androctonus mauretanicus*, *Buthus occitanus*, *Centruroides*, *A crassicauda*, *Tityus zulianus, Tityus serrulatus* (1,3-4). Similar cardiovascular manifestations have been reported irrespective of different species of scorpion (4). Morbidity and mortality due to scorpion sting is related to acute pulmonary edema, cardiogenic shock and multi organs failure. 13 out of 78 cases died due to scorpion sting a report from Mahad region (5). At rural hospitals from western Maharashtra, India, 3546 scorpion sting cases reported in one year of these 542 had systemic involvement (6).

Opinions differ regarding correct treatment of scorpion envenomation (7). Scorpion antivenin (SAV) is widely used in many countries such as Brazil, Saudi Arabia, Mexico (8-17). The acceptance of scorpion antivenin as an effective treatment in scorpion sting is based mainly on its efficacy in experimental studies. Scorpion antivenin is no better than placebo reported from Tunisia (16). The beneficial effects of antivenin in protecting victims against severe scorpion sting is still questionable (18,19).

Scorpion venom acts indirectly through the release of auto-pharmacological agents (1). Risk of development of severe cardiovascular effects was much higher when more then two hour elapsed between the time of the sting and the administration of antivenin (13). Alpha receptor stimulation plays an important role in the pathogenesis of scorpion envenoming. Since the advent of parzosin the fatality is reduced to <1 % (20). Prazosin alleviates the cardiovascular effects due to scorpion envenoming and is called as a pharmacological antidote to venom actions (21- 23).

Of the 10 victims who received SAV; 80% deteriorated to grade IV, similar experiences regarding SAV have been reported from Israel (17), beneficial effects of SAV in protecting victims against scorpion sting are still questionable (18). However systemic administration of SAV irrespective of clinical severity did not alter the clinical course of scorpion sting (24). Administration of SAV

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within two hours of sting may help to reduce the circulating venom and symptoms (13). Highly purified SAV, F(ab)2 fraction if administered earlier have prevented the fatality in Mexico (14). In a randomized placebo controlled trial no benefit in routine administration of SAV after scorpion sting irrespective of clinical severity has been reported from Tunisia (16). Recently, a report from Mahad has reported that routine administration of SAV at a peripheral hospital did not alleviate the severity of signs and symptoms (19). The use of antivenin for the less severe envenomation common in older children and adults may subject them to unjustified risk. Development of pulmonary edema and cardiac toxicity of scorpion venom is not prevented by 40 ml of SAV a report from Israel (15). Scorpion antivenin neutralizes the circulating venom and it has no action once venom is bound to the sodium channel receptors (8).

Mesobuthus, Leirus and *Androctonus* lethal scorpions flourished allover Turkey and Saudi Arabia. Prazosin did alleviate the pulmonary edema in 3 children who initially received 50 ml of scorpion antivenin in a report from Saudi Arabia (25), similar beneficial effects of prazosin in 52 children of scorpion sting initially treated with SAV have also been reported recently from Turkey (26).

Though Scorpion antivenin is specific therapy for scorpion envenomation, it does not alleviate the cardiovascular effects. Beneficial effects of prazosin, irrespective of different scorpion species with similar cardiovascular manifestations, have been reported in scorpion sting victims from abroad. (16,23,25). Prazosin is called poor man's scorpion antivenin and a universal antidote to scorpion venom action irrespective of different species (19, 23, 25-26). It is surprising to note that World Health Organization is still emphasizing the importance of SAV administration in scorpion envenomation and not recognising the age-old prazosin remedy for severe scorpion envenoming. (1,20,27,28).

REFERENCES

1. Ismail M. The scorpion envenoming syndrome. Toxicon. 1995; 33: 825-58.
2. Gueron M , Ilia R and Sofer S. The cardiovascular system after scorpion envenomation :A review. Clinical Tocxicology. 1992; 30: 245-58.
3. Bawaskar HS. Diagnostic cardiac premonitory sins and symptoms of red scorpion sting lancet. 1982; ii: 552-54.
4. Gwee MCE, Nirtthanan S, Khoo H, Gopalkrishnakone P, Kini Mr,Cheah LS. Autonomic effects of some scorpion venoms and toxins.Clinical experimental pharmacology and physiology. 2002; 29: 795-801.
5. Mundle PM. Scorpion sting. BMJ 1961; i:1042.
6. Bawaskar Hs. Non-allopathic doctors form the backbone of rural health. Issues in Medical ethics. 1996; 4: 112-13.
7. White J, Warrell DA, Eddleston M, Currie BJ , WhyteIM and Isbister Gk. Clinical toxicology – Where are we now? Clinical toxicology. 2003; 41: 263-76.
8. De-Rezende NL, dias MM, Campolina d, Olortegui CC , Diniz CR and Amaral CFS. Efficacy of antivenom therapy for neutralizing circulating venom antigen in patients stung by tityus serrulatus scorpion. The Amer.J.Trop.Med.hyg. 1995; 52: 2770-80.
9. Amral CFS, De-rezende NV, and Freire-Maia . acute pulmonaryedema after Tityus serrulatus scorpion sting in children. Amer.J.Cardiol. 1993; 71: 242-45.
10. Mahaba HM, sayed SE. Scorpion sting , is it a health problem in Saudi Arabia? Evaluation of management of 620 cases. Saudi medical journal. 1996; 17: 315-21.
11. Ismail m the treatment of the scorpion envenoming syndrome: the Saudi experience with serotherapy. Toxicon. 1994; 32: 1019-26.
12. Ghalim N, El-Hafny B, Sebti F, Heikel J, Lazar N,Moustanir R and Benslimane A. . Scorpion envenomation and serotherapy in Morocco. Am.J. Trop. Med. hyg. 2000; 62 (2): 277-83.
13. El-gawad Abd TA, Ibrahim HMM, El-sahrigy SAF , Sherif HA . Study of cardiac changes in Egyptian children with scorpion envenomation before and after antivenin. J.Medical Sciences. 2006; 6: 1033-38.
14. Dehesa –davila M and Possani LD. Scorpionism and serotherapy in México. Toxicon. 1994; 32: 1015-18.
15. Mazzei de Davila C, Davila DF, Donis DJ et al sympathetic nervous system activation, antivenin administration and cardiovascular manifestations of scorpion envenomation. Toxicon. 2002; 40:1339-46.
16. Abroug F, Elatrous S ,Nouira S, Hagiuga H ,Touzi N, Bouchoucha S. . Serotherapy in scorpion envenomation; A randomized controlled trial. Lancet. 1999; 359: 906-9.

17. Sofer S, Shahak E and Gueron M. scorpion envenomation and antivenin therapy. J. pediatr. 1994; 124: 973-8.
18. Al-asmari AK and Al-saif AA. Scorpion sting syndrome in general hospital in Saudi Arabia . Saudi. Med. J. 2004; 25: 64-70.
19. Bawaskr HS and Bawaskar PH. Utility of scorpion antivenin Vs Prazosin in the management of severe *Mesobuthus tamulus* (Indian red scorpion) envenoming at rural setting. J.Asso.Physician India. 2007; 55: 14-21.
20. Bawaskar HS and Bawaskar PH.(1986). Prazoisn in management of cardiovascular manifestations of scorpion sting. Lancet. 1986; ii: 510-11.
21. Gupta V. Prazosin: a pharmacological antidote for scorpion envenomation.J. Trop.Pediatr. 2006; ; 52: 150-1.
22. Bawaskar HS and Bawaskar PH. Management of the cardiovascular manifestations of poisoning by the Indian red scorpion(mesobuthus tamulus). British Heart J. 1992; 68: 478-80.
23. Koseoglu z, Koseoglu A . Use of parzosin in the treatment of scorpion envenomation . Amer.J.Threpeu. 2006; 13: 285-87.
24. Rahav G and Weiss T. Scorpion sting induced pulmonary edema (scintigraphic evidence of cardiac dysfunction) chest. 1990; 97: 1478-80.
25. Al-Asmari AK, Al-Seif AA , Hassen MA and Abdulmaksood NA. Role of parzosin on cardiovascular manifestations and pulmonaryedema following severe scorpion sting in Saudi Arabia. Saudi Med. J. 2008; 29: 299-302.
26. Bosnak M, Ece A, Yoibas L, Bosnak V et al. Scorpion sting envenomation in children in southeast of turkey. J Wilderness environ medicine (in press).
27. Warrell DA. Prazosin: scorpion envenoming and the cardiovascular system (editorial). Tropical doctor. 1997; 27:1.
28. WHO. Rabies and envenoming: a neglected public health issue. Report of a consultative meeting WHO Geneva 10th January 2007; 1-32.