

Treatment of the scorpion envenoming syndrome: 12-years experience with serotherapy

Mohammad Ismail Hamed*

October 6 University, 6th of October City, Main Center 111, Egypt

Abstract

The pathophysiology of the scorpion envenoming syndrome is described with emphasis on the body systems commonly affected. Concepts of the mechanisms underlying venom action, as can be explained by the recently discovered effects on ionic channels, are discussed. A protocol for the treatment of scorpion stings based mainly on antivenom therapy was applied nationwide in Saudi Arabia. A list of drugs with alternatives was specified to be used in adjunctive therapy, when required. Analysis of the outcome from 1033 cases at Al-Baha region, 791 cases at Al-Qassim region and more than 2000 cases from 12 central and specialist hospitals in the Central Province, Saudi Arabia gave impressive results. The incidence of severe venom toxicity following antivenom administration was almost negligible. The period of stay in the hospital was reduced. The early reaction to antivenom administration was lower than expected the severity of the reaction consisting mainly of skin rashes, urticaria, wheezing and bronchial hypersensitivity, but no anaphylaxis. About 13.8% of the victims had been previously treated with antivenom but only 1.7% of the patients showed positive skin tests. This might be due to the low protein content of the antivenom and the action of the venom in releasing massive amounts of catecholamines.

© 2002 Elsevier Science B.V. and International Society of Chemotherapy. All rights reserved.

Keywords: Scorpion envenomation; Serotherapy; Saudi Arabia

1. Introduction

Different approaches to the treatment of scorpion envenoming have been advocated by different investigators. Some investigators recommend treatment of mild cases of envenoming with symptomatic measures and/or antivenin and severe cases with symptomatic measures, support of vital functions and i.v. injection of antivenin [1,2]. Others [3,4] recommend close monitoring in ICU for pulmonary or CNS complications, especially for children. Intravenous hydralazine may be beneficial in the presence of systemic hypertension in such cases. A treatment protocol based mainly on serotherapy using antivenin in high doses was reported to be unsurpassed in reducing the morbidity and mortality from dangerous scorpion stings [5–7].

Scorpion venoms are known to stimulate both branches of the autonomic nervous system simultaneously with predominance of sympathetic stimulation

and release of tissue and medullary catecholamines [8–12]. It would seem logical, therefore, that blockers of the sympathetic and parasympathetic nervous systems can abolish or diminish the actions of the venoms. However, opinions differ in this kind of approach. Antivenom therapy, despite its success in saving the lives of millions of scorpion sting victims, has also caused controversy between different investigators. The majority of investigators consider antivenom the only specific treatment for scorpion stings [13–17,1,2]. Few others, however, questioned its value in preventing cardiovascular manifestations in human scorpionism.

2. Treatment strategy of scorpion envenoming

The extensive studies on the pathophysiology of scorpion envenoming and the understanding of the molecular mechanism of action of scorpion toxins had little impact on the development or selection of drugs used in therapy. Also, the understanding of the absorption, distribution and elimination of scorpion venom and the determination of its site of action in the tissue

* Tel.: +20-2-337-1058; fax: +20-2-337-1058

E-mail address: ahmadmi@gega.net (M.I. Hamed).