

Scorpion sting pain: Which way to treat?

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Abstract

The objective of reporting this case is to highlight the clinical usefulness of chloroquine in the management of scorpion sting pain with the hope of stimulating interest and research, especially in areas where local anesthetic agents may not be available. In this case reported here, lidocaine failed to provide sustained analgesia for pain relief following scorpion sting. Two milliliters of parenteral chloroquine was injected intradermally around the bite site. Chloroquine provided immediate pain relief within 3 minutes of injection. The pain relief was sustained beyond 24 hours. The use of local anesthetic agents should be continued while other agents such as chloroquine, which may also have relevant clinical usefulness, should be considered.

Key words: Chloroquine, lidocaine, scorpion sting pain

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Introduction

The ability of the somatosensory system to detect noxious and potentially tissue damaging stimuli is an important protective mechanism that involves multiple interacting peripheral and central mechanisms. This results in pain sensation and stimulates various physiological reactions such as a rise in pulse and blood pressure. Pain, which is left untreated, results in varying responses including aggression, depression, insomnia, increased cardiac work and oxygen consumption as well as behavioral changes.^[1] Effective pain relief is therefore of paramount importance for humane reasons and physiological benefit.

Pain following scorpion bite is very severe and that is why it is worth talking about. Systemic opioids and antihistamines have been used in combination with locally injected lidocaine. However, when lidocaine fails to relieve pain, alternative therapy must be sought. Chloroquine, a quinoline derivative, which can disrupt neural transmission, was tried successfully in the case reported.

Case Report

U.E., a 16-year-old boy presented with a 1-hour history

of scorpion sting affecting the big toe of the left foot while at home. He was in severe pain and was groaning. The pain radiated up to the ipsilateral groin. There was no loss of consciousness, itching, cough or difficulty in breathing. The patient had no relevant medical or surgical history. Pain score using the Visual Analog Scale was 10 (worst pain imaginable). The pulse was 96 beats/minute, regular and of full volume. Blood pressure was 130/90 mmHg.

Treatment was commenced with digital block of the affected toe, using 2 ml of 2% lidocaine. This resulted in instant pain relief. One and half hours later, the pain recurred with the same intensity as at the initial presentation. Digital block was repeated and 100 mg of hydrocortisone and 5 mg of chlorpheniramine were given intravenously. There was instant pain relief, which lasted for 2 hours after which the pain resumed. Alternatives were sought for and chloroquine hydrochloride was chosen. Two milliliters of the agent was injected around the sting site and near the digital nerves. Pain relief was reported 3 minutes later and was sustained for 24 hours.

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Discussion

A number of genera of scorpions are found in the tropics and are usually seen under rocks or in stony areas. The scorpion, while stinging the victim, releases the poison located in the paired glands situated in the terminal segment of the jointed tail. The victim is usually stung on the hands or feet, resulting in severe local pain, which may last for several hours. There may also be minor swelling at the single puncture site with erythema and ecchymoses occasionally. Severity of envenomation varies with the scorpion species, age and size of the patient and is worse in children.^[1]

When there is systemic intoxication, it reflects the overstimulation of the central nervous, sympathetic and parasympathetic systems. Severity ranges from paresthesia, encephalopathy and fatal cardiotoxicity. The symptoms include agitation, vomiting, muscle rigidity and hyperthermia. The effects of the sting become noticeable from a few minutes to 24 hours after the sting. Laboratory investigation may show hyperglycemia, leukocytosis, and transient elevation of cardiac and pancreatic enzymes.

Principles of management include observation of the patient, supportive treatment with fluids and electrolytes, and use of cardioactive agents when needed. In the absence of systemic involvement, treatment should be concentrated on the relief of pain using local or regional blocks. Lidocaine, a local anesthetic agent, is the drug of choice.^[2] Other forms of treatment have been attempted. Gracia and de Freitas have reported the use of alcohol, albeit without success.^[3] They resorted to the use of meperidine with which the local signs disappeared within 48 hours in a patient with scorpion sting involving the penis.

This length of time would be unfair, if not terrible, for the patient to be with severe pain before adequate analgesic effect is produced. This necessitated the search for safe alternatives, which led to the use of chloroquine. Chloroquine is a synthetic 4-aminoquinoline formulated as the hydrochloride for parenteral use. The drug is commonly used in the treatment of malaria and is well absorbed by the intramuscular or subcutaneous route. Chloroquine is known to have anti-inflammatory activity though the mechanism of action is not understood. The agent also affects nerve transmission.

In neurons are found voltage-gated sodium channels that are transmembrane proteins, which are essential for the initiation and propagation of action potential. Protein kinase isoenzymes regulate the function of these channels by causing an increase in current amplitude. This effect was demonstrated to be prevented by chloroquine.^[4] The quinolones and their derivatives have been found by Sieb *et al.* to decrease quantal content of the endplate potential and affect pre- and post-synaptic aspects of nervous transmission.^[5] Lot^[6] has also demonstrated that chloroquine has an inhibitory action on nerve terminals and reduces the response to nerve stimulation.^[7] It is thus possible that chloroquine would inhibit the stimulation of the nerve endings by the scorpion venom or prevent transmission in these nerves. Certain communities in Hausa speaking areas have been known to treat scorpion sting pain with the agent with success (personal communication from residents in the area). When needed, the agent can be used to provide analgesia where local anesthetic agents fail. This was demonstrated in this case report.

Chloroquine is therefore a reasonable adjunct and or an alternative to lidocaine for the relief of the pain due to scorpion sting and so it is recommended. However, more research is needed to determine its exact mechanism/duration of action and possible side effects as well as effective dose regimen for local infiltration.

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