

CASE REPORT

Medicine Science 2022;11(2):883-5

Spondyloarthritis recovering after scorpion sting: A case report **Nur Paksoy¹**,  **Burcu Kayhan Tetik²**

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Received 03 January 2022; Accepted 09 March 2022

Available online 28.03.2022 with doi: 10.5455/medscience.2022.01.03

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**Abstract**

Scorpion venom, which is also utilized in Traditional Chinese Medicine, has been an efficient alternative medicine practice passed down from generation to generation since the Ancient Roman Period. Scorpion venom is now being investigated as a raw material (drug precursors) in a variety of sectors including new-generation pharmaceuticals. We present a 63-year-old male patient who had sacroiliitis symptoms that went away after a scorpion sting, and who recovered completely during follow-up. Apart from developing scorpion venom as a complementary therapy to existing medical techniques in the treatment of chronic inflammatory illnesses, more research into the effects of this prospective pharmaceutical on these diseases is required.

Keywords: Scorpion venom, sacroiliitis, mesobuthus eupeus**Introduction**

The sting of a scorpion puts the lives of 2.3 billion people around the world in jeopardy. Over 3250 people die each year as a result of scorpion stings, which affect 1.2 million people [1]. Aside from the fact that some scorpion species are deadly enough to kill humans, scorpion venom has been used to treat a variety of maladies since ancient times. The medicinal value of scorpion venom is rising nowadays, and research into how it might be utilized to treat a variety of ailments is continuing. Despite the known benefits of medications derived from the venom of animals like snakes and spiders, no pharmaceuticals derived from scorpion venom have yet been developed [2].

The venom of scorpions possesses antibacterial, antifungal, antiviral, and immunosuppressive properties. It produces a rise in regulatory cytokines such as IL-4 and IL-10, according to studies. Furthermore, it has been found to be particularly efficient in suppressing the activation and proliferation of select T cell subtypes in vitro. In vivo, this strong natural venom, which is high

in bioactive peptides, has been shown to prevent delayed-type hypersensitivity reactions. As a result, some research suggests that it may play a role in the etiology of autoimmune disorders [3,4,5].

Case

A 69-year-old male patient was presented to our clinic with a ten-year history of hip pain. The patient's medical history revealed that he had been admitted to several hospitals with this complaint, that MRI imaging had been conducted, and that anti-inflammatory medicines had been taken. With persistent pain for the previous 10 days, he was referred to the rheumatology outpatient clinic. On examination, he had painful lower back motions, no bilateral paravertebral muscular spasms, and a painless lumbar processus spinosus with pressing. The FABER (flexion, abduction, external rotation) and FADIR (flexion, adduction, internal rotation) sacroiliac tensile tests, as well as the Mennel and Gaenslen tests, were all negative in both sacroiliac joints. The chest expansion, hand-to-ground distance, lumbar Schober, and occiput-to-wall distance were all within the usual range. The straight radiography revealed no evident pathology. The patient's sacroiliac MRI findings were consistent with osteitis, which is defined by subchondral bone marrow edema and contrast enhancement after intravenous contrast agent injection in the iliac and, to a lesser extent, sacral faces, close to both sacroiliac joints. On MRI, there was no evidence of synovitis, enthesitis, or capsulitis. RF:0.7, CRP:0.3,

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and normal rheumatological values were found in blood samples. The case was eventually identified with bilateral active sacroiliitis, and therapy was started with colchicine 3x1 and acetaminophen 2x1. A month later, he was called for a control. During the first-month check, it was discovered that his pain had not totally subsided. After two months, he returned to our outpatient clinic and said that a scorpion had bitten him on the hip while he was gardening three days prior, and that he had received complete pain alleviation without seeking medical attention. The veterinarian was consulted about the species of the scorpion that was killed, and a photograph was taken, and it was learned that the species was *Mesobuthus eupeus*, which is common in the region [Figure 1].



Figure 1. The scorpion, identified as *Mesobuthus eupeus* after it was seen by the veterinarian

We wondered if the pain reduction was due to the scorpion sting. There wasn't enough research on this topic. As a result, the patient was advised to follow his own instructions carefully and reapply in a month. Surprisingly, the patient had no longer had any hip pain and had recovered after the scorpion sting when he returned for a follow-up one month later. After the scorpion sting, the patient was evaluated by rheumatology doctors. Since there are rarely similar situations in the literature, it has been reported that recovery may be possible after a scorpion sting.

Discussion

None of the theories proposed in the mechanism of seronegative spondyloarthropathies have so far been elucidated. The close relationship of these illnesses with the HLA B-27 gene family has been proved globally; besides other genetic factors, infections have also been suggested to be involved in the emergence of the disease by triggering autoimmune responses and autoinflammation. T cells, B cells, interleukins, mainly IL-10 and TNF- α , also play an influential role in the mechanism of this kind of disease [6]. Unfortunately, the treatment of such autoimmune diseases is not specific; so, therapies for pain control and prevention of skeletal deformity are often preferred.

Mesobuthus eupeus, known as the eastern yellow scorpion, is generally considered among non-lethal venomous scorpion

species. What effects scorpion venom, which has effects such as nausea, vomiting, and sweating within the first 24 hours, left behind on the body and whether it can be involved in the treatment of some diseases such as cancer, autoimmune diseases, have been the subject of many studies [7,8]. The venom has been shown to have an immunomodulating effect; in addition, its immunosuppressant effect can be used in autoimmune diseases. A study investigating the effects of the venom of the *Mesobuthus eupeus* species on chickens concluded that it both increases and decreases the immune response due to the different protein structures it contains [8,9]. It is contemplated that changes in the humoral immune response can be specified by purifying protein structures separately, and so this venom can be used in autoimmune diseases [10].

Treatments for using methods such as apitherapy and natural resources as drugs are increasing; more importantly, scorpion venom treatment has been the subject of many studies today. The therapeutic direction for scorpion venom content containing many bioactive ingredients, especially in the cancer field, is rapidly developing, and experiments with the separation of these components point to it as a promising new method of also treating autoimmune diseases [11].

As a result, a rational explanation for the scorpion venom's successful pain treatment in our described case of sacroiliitis was not fully grasped. However, we report this unusual case in order to provide insight into future research on the subject.

Limitations

While the diagnosis of sacroiliitis of the patient was made by the rheumatology doctors, the patient's history was prioritized and there were no findings in blood tests other than MRI with contrast. Therefore, the blood tests of the patient whose initial blood findings were negative were not repeated. Contrast-enhanced MRI was not found appropriate by rheumatology doctors after scorpion sting considering the frequency of testing and patients age. As a result, our study's inability to validate the progress of the disease through laboratory evaluation is a shortcoming.

Conflict of interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Patient informed consent

Informed consent was obtained from patient

References

1. Chippaux JP, Goyffon M. Epidemiology of scorpionism: A global appraisal. *Acta Trop.* 2008;107:71-9.
2. Ahmadi S, Knerr JM, Argemi L, et al. Scorpion Venom: Detriments and benefits. *Biomedicine.* 2020;8:118.
3. Meki AR, Mohey El-Dean ZM. Serum interleukin-1 β , interleukin-6, nitric oxide and alpha-1-antitrypsin in scorpion envenomed children. *Toxicon.* 1998;36:1851-9.
4. Pucca MB, Bertolini TB, Cerni FA, et al. Immunosuppressive evidence of *Tityus serrulatus* toxins Ts6 and Ts15: insights of a novel K(+) channel pattern in T cells. *Immunology.* 2016;147:240-50.
5. Xiao M, Ding L, Yang W, et al. St20, a new venomous animal derived natural peptide with immunosuppressive and anti-inflammatory activities. *Toxicon.* 2017;127:37-43.

6. Kınıklı G. Spondyloarthropathies, rheumatology, Ankara university faculty of medicine publications. 2013, p:252-63.
7. Valizade M, Raesi Vanani A, Rezaei M, et al. Mesobuthus eupeus venom induced injury in the colorectal carcinoma cell line (HT29) through altering the mitochondria membrane stability. Iran J Basic Med Sci. 2020;23:760-7.
8. Khosravi M, Mayahi M, Kaviani F, Nemati M. The Effects of Isolated Fractions of Mesobuthus eupeus Scorpion venom on humoral immune response. J Arthropod Borne Dis. 2017;11:497-503.
9. Mirshafiey A. Venom therapy in multiple sclerosis. Neuropharmacology. 2007;53:353-61.
10. Zhao Y, Huang J, Yuan X, et al. Toxins Targeting the Kv1.3 Channel: Potential immunomodulators for autoimmune diseases toxins Toxins (Basel). 2015;19;7:1749-64.
11. Shen B, Cao Z, Li W, et al. Treating autoimmune disorders with venom-derived peptides. Expert Opin Biol Ther. 2017;17:1065-75.