

ORIGINAL RESEARCH

Scorpion Stings in Jordan: An Update

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Objective.—Scorpionism is an endemic public health problem in Jordan encountered by health providers in all parts of the country. This study updates epidemiological data on scorpion sting encounters in Jordan.

Methods.—Data on scorpion sting encounters were obtained from government and military hospitals around the country, and the National Drug and Poison Information Center (NDPIC). *P* values and 95% confidence intervals (CIs) were calculated using SPSS Professional Statistics Package version 22 (IBM Corp., Armonk, NY) program.

Results.—Epidemiological data on 1205 scorpion sting cases reported between 2006 and 2012 are reported. Male to female ratio was 1.18:1, aged 23.3 ± 16 (mean \pm SD) and 26.4 ± 16.9 years for males and females, respectively. Age groups between 1 to 20 years old constituted 44.6% of the total sting encounters, while adults aged > 30 years constituted 30%. Scorpion sting encounters peaked in July (22.5%) and August (23%), with the lowest numbers of recorded cases in February and January (1.6 and 1.9%, respectively). Scorpion stings occurred mostly outdoors (66%). Medical complications associated with scorpion sting cases included fever, difficulty in breathing, drowsiness and dizziness, and numbness, while severe complications include respiratory failure and tachycardia. Hospitalization required 1 to 3 days among admitted patients with no fatalities.

Conclusions.—Scorpion stings remain a medical problem in Jordan that requires more attention by health providers. Reporting of scorpion sting cases should be enforced from all healthcare centers throughout the country to better understand the epidemiology and health implications of human encounters.

Keywords: scorpions, epidemiology, Jordan, seasonality

Introduction

Scorpionism is an endemic public health problem in Jordan encountered by health providers in all parts of the country. Epidemiological data are incomplete and the exact number of encounters remains largely unknown. Few studies addressed the epidemiology of scorpion stings in Jordan. The earliest report on scorpion stinging encounters was published by Wahbeh.¹ Five hundred forty seven cases of scorpion sting were reported from 1982 through 1985, with 2 fatalities.² Additionally, 338 cases of scorpion stings in Ma'an Government Hospital and out-patient clinics in the Irbid area from 1989 through 1992 were reported with no fatalities.³ Mutair

et al.⁴ reviewed medical records for 96 patients admitted to 3 hospitals after scorpion sting encounters from 1997 through 1999, with 2 fatalities (2.1%). A comprehensive account on the scorpions of Jordan, with data on scorpion stings was recently published.⁵ Moreover, additional records to the scorpions of Jordan was updated.⁶

In Jordan, 18 species and subspecies of scorpions belonging to 2 families (Buthidae and Scorpionidae) have been recorded.^{2,5–7} At least 5 species are considered dangerous (*Androctonus amoreuxi*, *Androctonus bicolor*, *Androctonus crassicauda*, *Leiurus hebraeus*, and *Leiurus jordanensis*). *Leiurus hebraeus* is the most common species with a wide range of distribution.

In the Middle East, the epidemiology scorpion stings were reported from Saudi Arabia,^{8–10} Turkey,^{11–13} and Iran.^{14,15}

This study updates epidemiological data on human scorpion stings encountered in Jordan from 2006 through 2012.

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Methods

Data on scorpion sting encounters were obtained from Princess Haya Hospital (PHH) in Aqaba, southern Jordan (2006–2012); the National Drug and Poison Information Center (NDPIC), Jordan University Hospital, covering the years 2009 through 2012; and the Ministry of Health, Directorate of Environmental Health (DEH) from 2006 through 2012. The DEH data cover cases treated at hospitals and health clinics operated by the Ministry of Health. Data from PHH and NDPIC that was published by Amr⁵ was pooled with data obtained from DEH.

The Ministry of Health requires mandatory reporting of scorpion stings and snakebite cases from all its affiliated hospitals and healthcare centers to the DEH. The data include age, sex, date of admission, days required for hospitalization, and other relevant information. Despite these regulations, it is noteworthy that some remote health centers do not report to the DEH. Princess Haya Hospital is affiliated with the Armed Forces and serves both civilians and military personnel in southern Jordan. The NDPIC is affiliated with Jordan University Hospital. [Table 1](#) shows the number of cases reported from each source. *P* values and 95% confidence intervals (CIs) were calculated using SPSS Professional Statistics Package version 22 (IBM Corp., Armonk, NY) program.

Results

EPIDEMIOLOGICAL DATA

A total of 1205 cases of scorpion stings were reported to PHH, NDPIC, and DEH during the study period ([Table 2](#)). The highest number of cases was reported in 2011, while the lowest was in 2010. Male to female ratio was 1.18:1 and was statistically significant ($P = .001$, 20.99–23.53, 95% CI for males and 22.95–25.78, 95% CI for females), aged 23.3 ± 16 (mean \pm SD) and 26.4 ± 16.9 years for males and females, respectively, for all groups.

Table 1. Summary for the source of reported cases of scorpion sting accidents

Data Source	Male	Female	Total
Princess Haya Hospital	47	26	73
NDPIC	29	24	53
DEH	547	532	1079
Total	623	582	1205

NDPIC, National Drug and Poison information Center; DEH, Directorate of Environmental Health.

Table 2. Sex of victims of scorpion stings reported from 2006 through 2012

Year	Male	Female	Total
2006	55	38	93
2007	99	78	177
2008	63	66	129
2009	66	61	127
2010	28	29	57
2011	187	153	340
2012	125	157	282
Total	623	582	1205

Victims aged from 1 through 20 years old constituted 44.6% of the total sting encounters, while adults aged >30 years constituted 30% ([Figure 1](#)). Females were less vulnerable in age groups between 1 through 30 years, while more vulnerable at age groups aged >30 years. No significant results were found between males and females within the same age group ($P = .406$). Significant results were found between males and females and their age groups ($P = .014$, 1.93286–9.66714, 95% CI for males, and $P = .034$, 0.40968–6.39032, 95% CI for females).

Scorpion sting encounters peaked in July (22.5%) and August (23%), with the lowest numbers of recorded cases in February and January (1.6 and 1.9%, respectively) ([Figure 2](#)). Significant results were found between the number of cases and the month of the year ($P = .002$, 152.79–44.38, 95% CI).

Data obtained from the NDPIC showed that 17 scorpion stings occurred at the patient's residence (32.2%), 35 occurred outdoors (66%), and 1 case (1.8%) occurred at the workplace. Fingers and toes were the main sites of stings.

We obtained data for the time of exposure to scorpion stings for 64 cases reported to the NDPIC and PHH ([Figure 3](#)). Eight cases (12.5%) occurred between midnight and 0900, 30 cases (46.9%) between 0900 and 1600, and 26 cases (40.6%) between 1600 and midnight.

[Table 4](#) and [Figure 4](#) show the number of scorpion sting cases and incidence per 100,000 inhabitants by governorate. Irbid scored the highest number of scorpion sting encounters, followed by Al Balqa Governorate. Lowest numbers were reported from Ma'an and Jarash Governorates. Overall incidence per 100,000 inhabitants was 2.6.

CLINICAL DATA

We obtained clinical data for 53 cases from the NDPIC. Redness and edema at the site of the stings were the most clinical symptoms observed. Other complications

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