



## EVALUATION OF SCORPION STING INCIDENCE IN ALKUFRA CITY DURING 1993 AND 1994

Haeba Maher

Zoology Department, Faculty of Science, Benghazi University, Libya

Received for publication: September 12, 2013; Revised: September 26, 2013; Accepted: October 21, 2013

**Abstract:** Libya is almost desert or semi-desert. Scorpion fauna is widely diversity in the country. However, scorpion in many places are not medical important especially around the coastal area. Meanwhile, scorpion species in desert are almost accounted as a first health problem related to animal toxin. Scorpion stings are ancient hazards. Alkufra is small city in east south of Libya in boarders with Egypt, Sudan and Chad. The most common scorpion genuses in Alkufra city are *Leiurus* sp, *Androctonus* sp. In this study, we evaluated the scorpion sting in Alkufra during 1993 and 1994. The total scorpion sting cases were admitted to Atya Alkashh hospital and to clinical around Alkufra city were 2091 cases (50.5% in 1993 and 49.5% in 1994) with 8 deaths (2 deaths in 1993 and 6 deaths 1994). Death cases were recorded among children less than 15 years old. However, no mortality among adult has been observed. Monthly, the high sting cases during summer time especially June and July. The highest sting cases were 20.1% in July and 21.2 % in June during 1993 and 1994 respectively. Meanwhile, the low sting cases during winter especially in December and January. The lowest sting cases were in 0.75% and 0.19 in January during 1993 and 1994 respectively. These findings highlight the hazardous effects of scorpion stings in Alkufra, and provide beneficial information that can be used in health education and future research studies for the prevention of scorpion sting cases.

**Keywords:** Scorpion, Sting, *Leiurus* sp, *Androctonus* sp, Alkufra city, Libya

### INTRODUCTION

Scorpion found in all places around Libya. However, only desert scorpion considered to be among health problem. Scorpion in coastal and semi-desert area not as dangerous as desert species to human. Species in Alkufra city is lethal to children and very painful to adult. It is ancient serious problem which causes many deaths to children. However, by experiences people learn how to avoid these organisms and treat the scorpion sting as soon as has been observed. Scorpion anti-venom has reduced the mortality to zero, since 2000 in Alkufra city.

The scorpion stings are responsible for significant morbidity and pediatric mortality in many parts of the Middle East, Central and South America, Asia and northern and southern Africa (Groshong, 1993; Freire *et al.*, 1994; Ismail, 1994; Dehesa-Davila and Possani, 1994; Bergman, 1997; Abrough *et al.*, 1999; Ghalim *et al.*, 2000). Scorpion stings are amongst public health problems in many countries including Tunisia (Mounir *et al.*, 2008), Morocco (Ghalim *et al.*, 2000), (Dehesa-Davila and Possani, 1994) Saudi Arabia (El Aminn and Berair, 1995; Saulat J, *et al.*, 2007), Iran (A. Jalali *et al.*, 2010), Israel (Gueron, M. and Yarom, 1970), Brazil (Campos *et al.*, 1980) Venezuela (Carmen *et al.*, 1997) and India (Bawaskar *et al.*, 1991), and many other countries around the world. Scorpion sting is a hazardous and potentially lethal condition. By this primary study which highlight the hazardous effects of scorpion stings in Alkufra.

### MATERIALS AND METHODS

Alkufra is a small city in deep Sahara Desert area of east south Libya, located between 24°11'N 23°17'E. The major axis is 50 km, the minor 20 km long. It is bordered by hills which are at most 100 m high. The soil consists of red marl or sand and in the lowest parts there are salt lakes or dried salines.

In this survey study a total of 2091 scorpion sting cases were admitted to hospital Atya Alkashh and clinical around Alkufra city during two years (1993 to 1994).

### RESULTS

The two most venomous species in Alkufra city appear to be *Leiurus* sp and *Androctonus* sp of the family Buthidae. They are more commonly in Alkufra city known as the yellow scorpion. However, no observation indicate black scorpion in the place. A total of 2091 scorpion sting cases were admitted to hospital Atya Alkashh and clinical around Alkufra city during two years (1993-1994). The higher number of cases was (1056 cases, 50.5%) recorded in 1993 and the lower number was (1035 cases, 49.5%) in 1994.

During the study period, eight death cases were recorded among children less than fifteen years old. Six deaths were in 1994 which mean 0.58% out of 1035 sting cases. Two death cases were recorded which mean 0.19% out of 1056 sting cases during the year 1993.

#### \*Corresponding Author:

Haeba Maher,  
Zoology Department,  
Faculty of Science, Benghazi University,  
Libya.



The scorpion stings had a higher incidence in the months of June-July during the study years. The highest number of cases incidence monthly, were in June 1994 (220 cases, 21.25%), followed by (212 cases 20.0%) in July 1993. The lowest number was (2 cases; 0.19 %) in January 1994, followed by (8 cases; 0.75%) in January 1993. Sting cases during year seasons, the highest records were during summer (June, July and August) (mean 198, 56%) and (mean 195, 57% in 1993 and 1994 respectively). The second highest season were spring (March, April and May) (mean 84, 24%) in 1993 and (mean 82, 24%) in 1994. Autumn (September, October and November) was third highest season with scorpion stings (mean 60, 17%) in both years. However, winter (December, January and February) was the lowest season with scorpion stings (mean 10, 3%) and (mean 9, 3%) in 1993 and 1994 respectively.

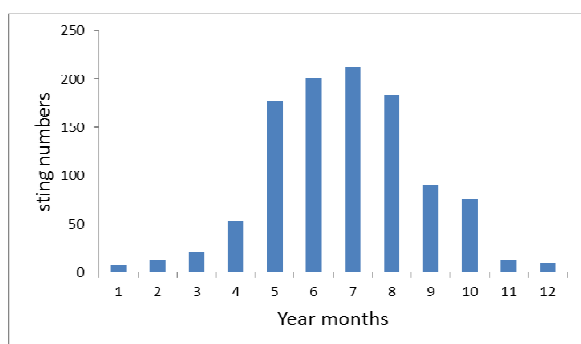


Figure.1: Reported cases of scorpion stings cases monthly reported during 1993 Alkufra city.

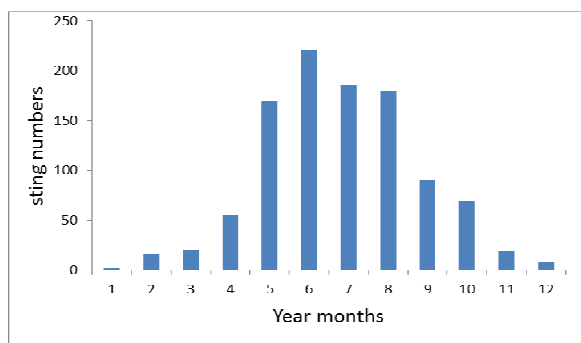


Figure.2: Reported cases of scorpion stings cases monthly reported during 1994 Alkufra city.

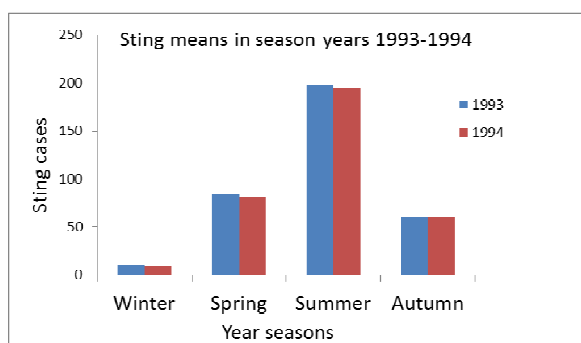


Figure.3: Mean of sting cases according to year seasons in Alkufra city of 1993 - 1994.

## DISCUSSION

The two most venomous species in Alkufra city appear to be *Leiurus sp* and *Androctonus sp* of the family Buthidae, these put emphasizes on study of (Soulaymani, 2007) which shown that on North African countries, the genera *Androctonus* and *Buthus* are most frequently involved in scorpion stings *Androctonus* species, which are considered very aggressive to humans, are responsible for the highest envenomation frequency and severity; they are endemic and well adapted to the presence of humans.

Our result shown similarity with (Amir J et al., 2010) who reported that scorpion stings were highest in July during survey study from 1983 to 1987 in Iran as well as in Tunisia study by (Mounir B. et al., 2008) shown that Scorpion envenomation is more frequent in summer; indeed 82.3% of his patients were admitted between June and September, Cases were collected from hospital patients' files during 13-year (1990–2002). (Soulaymani R, 2007) in Morroco shown the highest number of stings were in July during 2001, 2002, 2003 which indicates that sanitary authorities must reinforce the efforts during the summery period.

Our results did not show the total scorpion stung in the city of the study period, as some people cannot reach the health care easily after scorpion stings, so, those people who unable to reach hospitals treat the stings by traditional ways, and they are missing in our data. Traditional treatment in Alkufra very common including, sucking blood out, tide the arm or leg just upper the sting place to reduce the flowing of toxin in the blood stream, so people usually use this simple methods as first aid.

To summarize, in this survey study, data shown that no death due to scorpion stings on adult was reported during the study period. Death was reported only in children less than 15 years old. Scorpion stings were higher during summer followed by spring and autumn. However, Scorpion stings were lower during winter. We hoped to promote consideration of scientific research on these lethal creatures and provide beneficial information that can be used in health education and future research studies for the prevention of scorpion sting cases.

## REFERENCES

1. Al-Asmari K, Al-Saif A, Scorpion sting syndrome in a general hospital in Saudi Arabia, 2004, Saudi Med J, 25, 1, 64–70.
2. Amir J, Mohammad HP, Ramin S, Rowan EG, A review of epidemiological, clinical and in vitro physiological studies of envenomation by the scorpion *Hemiscorpius lepturus* (Hemiscorpiidae) in Iran, Toxicon, 2010, 55, 173 – 179.

3. Abrough F, Elastrous S, Nouira S, Haguiga H, Touzi N, bouchoucha S, Serotherapy in scorpion envenomation: a randomized controlled trial, *Lancet*, 1999, 354, 9065–9909.
4. Bergman NJ, Clinical description of parabuthus transvaalicus scorpionism in zimbabwe. *Toxicon*, 1997, 35, 759–771.
5. Campos A, Silva OS, Lapez M, Freire I, Signs, symptoms and treatment of severe scorpion poisoning in children. in: eaker, d. and wadstrom, t., eds. *natural toxins*. Oxford. 1980
6. Carmen A, Mazzei DE, Manuel P, Akbar F, Nilce S, Zaida G, Donzalez F, scorpion envenomation in merida venezuela. *Toxicon*, 1997, 35, 9, 1459-1462
7. Dehesa M, possani D, Scorpionism and serotherapy in mexico, *Toxicon*, 1994, 32, 9, 1015–1018.
8. Freire, m, Campos A, Amaral S, Approaches to the treatment of scorpion envenoming, *Toxicon*, 1994, 32, 9, 1009–1014.
9. Forrester B, Stanley K, Epidemiology of scorpion envenomations in Texas, *Vet, Hum. Toxicol*, 2004, 46, 4 219–221.
10. Ghalim n, El-hafny B, Sebti F, Heikel J, lazar N, Moustansir R, Benslimane A, Scorpion envenomation and serotherapy in morocco, *am j trop med hyg*, 2000, 62, 277–283.
11. Groshong D, Scorpion envenomation in eastern saudi Arabia, *Ann, Emerg, med* 1993, 22, 1431–143.
12. Gueron M, Yarom R, Cardiovascular manifestations of severe scorpion sting, *Chest*, 1970, 57, 156-62.
13. Bawaskar H, Hawaskar H, Scorpion sting: a review of 121 cases *j wilderness med*, 1991, 2, 164-174.
14. Ismail M, The treatment of the scorpion envenoming syndrome, the saudi experience with serotherapy, *Toxicon*, 1994, 32, 1019–1026.
15. Mounir B, Mabrouk B, Hatem K, Mohamed S, Hichem K, Hassan D, Mohamed A Kamilia C, Hedi C, Chokri H, Nouredine R, Epidemiological, clinical characteristics and outcome of severe scorpion envenomation in south tunisia: multivariate analysis of 951 cases, *Toxicon*, 2008, 52, 918–926
16. Nunes S, Bevilacqua D, Jardim C, Demographic and spatial aspects of scorpion stings in the northwest region of Belo Horizonte City, Minas Gerais, 1993–1996, *Cad Saude Publ*, 2000, 16, 1, 213–223.
17. Pardal P, Castro C, Jennings E, Pardal S, Monteiro R, Epidemiological and clinical aspects of scorpion envenomation in the region of Santarem, Para. Brazil *Rev. Soc. Bras. Med. Trop*, 2003, 36, 3, 349–353.
18. Saulat J, Abdullah Mohammed S, Abdul H, Scorpion stings in Qassim, Saudi Arabia, A 5-year surveillance report, *Toxicon*, 2007, 50, 302–305.
19. Soulaymani R, Idrissi M, Tamim O, Senglali I, Mokhtar IA, Tayebi M, Soulaymani, A, Scorpion stings in one province of morocco: epidemiological, clinical and prognosis aspects. *J. Venom. Anim. Toxins incl. Trop. Dis*, 2007, 13, 2, 462 - 471.

**Source of support:** Nil

**Conflict of interest:** None Declared