Scorpion Sting in Children From Northwestern Area of Riyadh, Saudi Arabia

*Abdulaziz M Al Rashed, MBBS, ABP**
*Biodun Olasope, MBBS**

Objective : To assess the clinical severity of envenomation in children by scorpion species in Riyadh region and the potential benefit of antivenin administration.

Design : Retrospective medical record review study.

Setting : Teaching and tertiary-care hospital.

Subjects : Children aged 12 years and younger experiencing scorpion sting over a period of 15 years (1983-1998).

Results : Sixty three patients with an age range of 2 months to 12 years (median 6 years) and 20.6% of the patients were below the age of 3 years while 50 (79.4%) were above that age. Forty eight (76.2%) were males while 15 (23.8%) were females with a male/female ratio of 3.2:1. Fifteen (23.8%) patients were stung at the upper half of the body while 48 (76.2%) were stung at the lower half.

Conclusion : We found that there was a significantly higher occurrence of scorpion sting in children above the age of 3 years and also among the males. The lower half of the body was significantly affected. The manifestations of the illness in Riyadh were not severe and antivenin therapy did not affect the outcome of the illness.

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Studies on scorpion stings had been carried out in Riyadh. The species of scorpions identified are those of Androctonus crassicauda, Apistobuthus pterygocercus Leiurus quinquestriatus[1]. A crassicauda has been described as less dangerous[2], but there is another conflicting report about this species which states that it is among the 15 dangerous species of scorpions in the world[3]. It is also said to be widely distributed in Saudi Arabia and all over the Middle East[4]. These authors also reiterated that it is responsible for a significant proportion of sting accidents in this area.

Riyadh is a big urban city with about six referral hospitals which take care of this problem. Scorpion sting is a relatively common emergency problem worldwide[5,6], yet it is grossly underreported. There have been several reports of scorpion envenomation in children from different areas of Saudi Arabia[3,4] including Riyadh region[1]. The variation in morbidity and mortality of the cases reported from the different areas in this country are probably due to different species of scorpions[1]. The objective of this study are to assess the clinical severity of envenomation in children by scorpion species in Riyadh region and the potential benefit of antivenin administration.

METHODS

This is a retrospective study of all patients admitted because of the scorpion sting in the last 15 years (1983-1998). The following data were obtained: the age and sex of the patients; the presenting symptoms and signs; the site of the sting; and the duration of hospital stay. The data also included the date, the time of sting and the time the patient reported to hospital.

The laboratory investigations included complete blood count, blood glucose, serum electrolytes, blood urea, coagulation screening, serum amylase and cardiac enzymes. Chest x-rays, serial electrocardiographic changes and blood gas analysis was looked into. The use of antivenin and outcome of the stings were also documented. The data were reviewed and analysed in a microcomputer using the stat pac gold statistical analysis package. We used the Z-test for proportion (percents) drawn from one or two samples to test for significance of variables.

RESULTS

Most of the stings occurred during April to September between 20.00 and 06.00 hours of the day and patients reported within 1-10 hours after being stung. A total of 63 children were diagnosed to have been stung in the last 15 years. Their ages ranged from 2 months to 12 years with a median age of 6 years. Thirteen (20.6%) patients were below the age of 3 years while 50 (79.4%) were above that age. Comparing percents from two samples this was statistically significant ($P<0.001$). Forty eight (76.2%) were males while 15 (23.8%) were females, and male:female ratio was 3.2:1 with ($P<0.001$).

Thirty nine (61.9%) patients experienced pain at the site of

* Department of Pediatrics
College of Medicine & King Khalid University Hospital
Riyadh, Saudi Arabia

sting while 22 (34.9%) did not complain of pain at the time of reporting. Sweating was observed in only 3 (4.8%) patients while 1 (1.6%) had fever and salivation. Abdominal pain was a complaint in 2 (3.2%) patients while 5 (7.9%) experienced vomiting. Fifteen (23.8%) patients were stung at the upper half of the body while 48 (76.2%) were stung at the lower half ($P < 0.001$). None of the patients had diarrhoea, tremor or convulsion. Visual disturbances, dysphagia or dysarthria were also not experienced. Irritability was observed in 3 (4.8%) patients and 7 (11.1 %) had tachycardia. Three (4.8%) patients had hypertension while 2 (3.2%) were known to be drowsy and another 2 (3.2%) were anxious. None of them had priapism, respiratory distress, hyperthermia, hypothermia, hypotension, coma or paresthesia.

Sting mark was seen in 15 (23.8%) patients while 48 (76.2%) had none. Hyperreflexia, nystagmus and absent gag-reflex were not observed. Ptosis, urinary retension and pulmonary edema were also not noted. None of the children showed any clinical features of hemolysis or bleeding tendency.

Normal values of hemoglobin, prothrombin time and partial thromboplastin time were found in all the patients. The white blood cell and platelet counts were all normal. The serum electrolytes, random blood glucose and blood urea level were also normal for all. The serum amylase as well as cardiac enzymes were all within normal limits. There were no marked electrocardiographic changes and the blood gases were also normal among the series. Thirty (47.6%) of the patients had antivenon while 33 (52.4%) were not given.

Fifty eight (92.1 %) patients were observed for 1 day while 4 (6.3%) and 1 (1.6%) were hospitalized for two and three days, respectively.

DISCUSSION

Many species of scorpions are found in Saudi Arabia; out

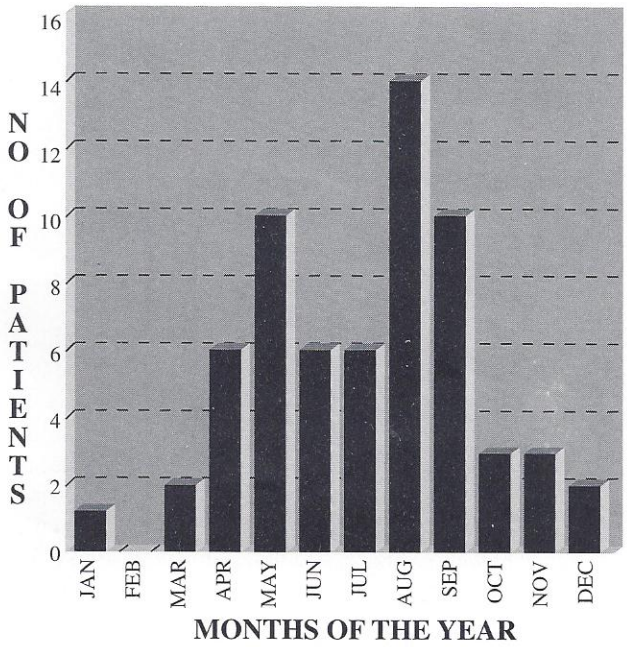

Figure 1. Seasonal variation of Scorpion stings among Saudi Children in Riyadh region

of the fourteen species, nine are said to be present in the Riyadh region[7]. The ones found in Riyadh area Androctonus crassicauda, Apistobuthus pterygocercus, and Buthacus yotvatensis nigroaculeatus. Others are Buthacus leptochelys, Composobuthus arabicus and Leiurus quinquestriatus. The rest are Scorpio maurus, L. Kruglovi and Hemiscorpius arabicus. None of the species responsible for stings in this study was identified in the medical records.

Most of the stings occurred between April and September which are the hot months of the year in this environment (Fig.1). It is a known fact that the scorpion is a poikilothermic animal and that we were not surprised that most of the stings occurred between 20.00 and 06.00 hours which were the coolest time of the day. The stings were significantly higher among children above the age of 3 years. This could be attributed to the fact that children above this age are known to explore their environment better than young ones. The males are also known to be more adventurous than their female counterparts. This could also be due to the life style in the kingdom where the social dominance of the male is not a secret. The Saudis are fun loving people and with the fact that night picnic in the desert is almost a daily routine for many families as this is an important aspect of the social life of the people. Carpets are spread in tents or open air spaces at night and most people assume the sitting position or lying position. This could be the reason why sting is significantly higher on the lower half of the body below the navel as opposed to the fingers from a study in India[8].

The duration of admission in hospital depends on the clinical condition of the patient. Most of our cases were observed for 1 day and then discharged. This cannot be compared with an example from Abha where the scorpion responsible was Nebo hierochonticus[9] and the duration of admission was more than a week because of various complications. The clinical condition depends on the species present in a particular environment. The report from Riyadh differs from that of Madinah Al Munawara where they see about 200 cases annually with case fatality rate ranging between 2.7% and 6.4%. This could be as a result of presence of different species of scorpions.

Some workers were able to identify L. quinquestriatus as the one responsible for severe and toxic presentation in children at Majardah in Asir region of Saudi Arabia[10]. Others at Gurayat in Northwest region also encountered toxic presentations in children[11].

The results showed that scorpion sting in this part of the Kingdom is mild as shown in previous study[1]. We did not encounter any hematological or biochemical disturbances and this compares favourably well with the findings at Al Madinah Al Munawara[12].

Cardiac toxicity was also not observed as the ECG was normal in all our patients. This is in contrast with the findings at Al Baha area of the Kingdom[13] and by other workers[5,14]. Pulmonary edema[12,15] was not encountered in this study but this has contributed immensely to the fatality rates at Al Madinah and Al Baha regions of the Kingdom.

The use of antivenin was not of significant value in our

study as the outcome was good in both groups of patients who received it and those who did not. In addition to species availability, why the dangerous scorpions are not found in Riyadh could be due to urbanization and social interference with normal desert fauna.

CONCLUSION

The report showed that the scorpions in Riyadh, the capital of Saudi Arabia located in the heart of the desert are not as dangerous as those of Al Madinah Al Munawara and Al Baha regions which are surrounded by high mountains. We also conclude that the use of antivenin did not affect the outcome and management of our cases. We advice that scorpion sting should not be taken lightly by parents because species identification can only be done by experts who may be available at the hospitals.

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