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An Epidemiological Study of Patients with Snake Biting in the Health Centre of Bandar Mahshahr, SW Iran

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ABSTRACT

Snake biting is one of the most important medical emergencies in Khuzestan Province SW Iran. Therefore, the current epidemiological study was conducted in the Mahshar of Khuzestan to initiate preventive measures to reduce snake biting incidences. In the current study the data of snake biting was studied from the points of epidemiological aspects. The data were collected from health centre of Bandar Mahshahr regarding patients with snake biting during 1997-2001. Totally, 190 files were studied during five years. The indicated parameters in the results were: age, sex, season and month of biting, geographical of location of biting and location of bite in the body. According to the results of the current study, snake biting is a seasonal phenomenon based in Bandar Mahshahr. This care program should be worked for all the people but be more concerned amongst middle-aged males during the warmer months in Bandar Mahshahr area regarding this medical emergency.

Key words: Snake biting, epidemiological study, Mahshahr, Iran

INTRODUCTION

Snake-bite is a medical important emergency in many parts of the world. There are different data related to the snake biting cases in the world. WHO estimated that there are 300,000 of snake biting cases with 40000 cases leading to deaths each year (Vahdanei, 1995).

Snake biting is one of the most important medical emergencies in Khuzestan province SW Iran. The health centre of Khuzestan province reports 900-1000 cases snake biting with 1-2 deaths each year (KHC, 2000).

The snakes most commonly associated with human mortality in Khuzestan are *Walterinnesia aegyptica* of Elapidae family and *Cerastes cerastes*, *Echis carinatus*, *Pseudocerastes persicus* and *Vipera lebetina* of Viperidae family (Latifi, 2000).

The snake biting is not well documented in Khuzestan. Therefore, the current epidemiological study was conducted in the Mahshar of Khuzestan to initiate preventive measures to reduce snake biting incidences. Because snake-bite incidences vary from region to region and depend upon (I) the natural habitat of particular species of snake in the region and (ii) probability of human being coming in contact.

MATERIALS AND METHODS

Bandar Mahshahr is located in Khuzestan province of SW Iran with 30° 33' 22" North, 49° 9' 6" East and 3 meters of sea level altitude (http://www.maplandia.com). Mean day time temperature

is 31.5°C in the year and maximum day time mean temperature in the year is 43°C in July and August and minimum mean night temperature in the year is 8°C January. Annual rainfall is 197 mm with the maximum rainfall is in the January with 53 mm (http://www. worldclimateguide. co. uk).

In the current study the data of snake biting was studied from the points of epidemiological aspects. The data were collected from health centre of Bandar Mahshahr regarding patients with snake biting during 1997-2001. Totally, 190 files were studied during five years. The data was included: age, sex, season and month of biting, geographical of location of biting and location of bite in the body. The results are presented as graphs and tables. The frequencies of epidemiological parameters were converted to the percentage rank.

RESULTS AND DISCUSSION

The results based on the epidemiological parameters are presented in the Table 1-4. The snake biting cases regarding year are presented in the Table 1 from 1997 to 2001.

The results of this study indicated that the highest and lowest rates of snake biting were happened amongst 30-39 and 0-9 age groups, respectively. The results are summarized in details in Table 2.

The results showed that 84.7 and 15.3% of snake biting cases were males and females, respectively. A total of 190 cases, 62.2% were residents of rural residents and 37.8% of urban residents.

Frequency results related to the parts of human bodies whom exposed by snake biting were 68.4, 27 and 4.6% regarded legs, hands and heads and trunks, respectively. The results regarding months and seasons of snake biting are presented in the Table 2 and 3.

Data collected during 1997-2001 explains an irregular trend in the rate of snake-biting cases in Mahshahr area. However, snake biting rate in the year of 2000 was three times greater than this rate in 1997. This increasing trend (1997-2000) is parallel to the studies of Ismail and Memish (2003) in Saudi Arabia and Vazirianzadeh *et al.* (2008) in Ahwaz from point of ecologic view. It was explained that the Middle East region, including Asian Turkey, Syria, Lebanon, Jordan, Israel,

Table 1: Frequencies of snake biting cases based on the seasons

Year	Number	Percentage
1997	22	11.6
1998	41	21.6
1999	28	14.7
2000	64	33.7
2001	35	18.4

Table 2: Percentage of snake biting amongst different age groups

Age groups (year old)	Number	Percentage
0-9	4	2.1
10-19	25	13.2
20-29	40	21.1
30-39	54	28.4
40-49	36	18.9
50-59	17	8.9
60<	14	7.4
Total	190	100

Table 3: Frequencies of snake biting cases based on the months

Months of snake biting	Number	Percentage
Apr.	18	9.5
May	22	11.6
Jun.	26	13.7
Jul.	19	10
Aug.	35	18.4
Sep.	22	11.6
Oct.	17	8.9
Nov.	10	5.3
Dec.	5	2.6
Jan.	4	2.1
Feb.	4	2.1
Mar.	8	4.2

Table 4: Frequencies of snake biting cases based on the seasons

Months of snake biting	Number	Percentage
Spring	66	34.8
Summer	76	40
Fall	32	16.8
Winter	16	8.4

Palestine, The Arabian Peninsula, Iraq, Iran and the former Southern Asiatic Soviet Republics is predominantly arid and recently there has been a trend towards a drier climate which happened more cases of snake bitten patients (Ismail and Memish, 2003).

The Table 2 shows that the highest rate of snake biting were happened amongst 30-39 age group, which is followed by 20-29 age group with 28.4 and 21.1% of cases, respectively. However, pooling both data reveal that nearly to 50% of snake biting cases belonged to the 20-39 age group. Results of the current study are similar to the studies of Mostaghni and Alipour (1998) and Besharat *et al.* (2008) of Iran, Kulkarni and Anees (1994) and Hayat *et al.* (2008) of India and Albuquerque *et al.* (2005) of Brazil which revealed that the majority of snake biting cases belonged to the middle-aged group. This age group is a very active age group that employs a vast range of occupations and business.

Results of the present study show that the males with 84.7% of cases were in the greater risk of snake biting than females, with 15.3% of cases. This is accords with the results of Vazirianzadeh *et al.* (2008), Mostaghni and Alipour (1998), Nadimi (1997) and Besharat *et al.* (2008) of Iran and Hayat *et al.* (2008) of India. In contrast a study in Nepal recorded an equal rate of snake-biting between males and females, however, indicated that the females have had slightly higher victims because of having a bit more outdoor and indoor activities (Pandey, 2006).

A total of 190 cases, 62.2% were residents of rural residents and 37.8% of urban residents. It means that geographical location of the residents were 6:1. This is consistent with the results of Hayat *et al.* (2008) of India, Vazirianzadeh *et al.* (2008) and Nadimi (1997) of Iran. However, the ratios of rural area to urban area were calculated different. This shows that geographical locations of snake bitting in rural areas are greater than urban areas. It is related to the occupations of residents of rural areas as they are farmers. This provides more contact with snake habitats for them. Legs, as the lower parts of the body were targeted by snake biting (68.4%) more than the other parts of human body in Mahshar. This accords with the results of Vazirianzadeh *et al.* (2008)

of Ahvaz, SW of Iran near to Bandar Mahshahr, Nadimi (1997) and Besharat *et al.* (2008) of Iran and Kulkarni and Anees (1994) of India. It shows that the farmers did not use the safe covers (boots or wilingtons) when they were working or walking along the farms. Therefore, in this case using boots or wilingtons are an applicable approach to reduce the snake biting cases.

Data collected during the current study, revealed that the highest incidence of snake biting cases were taken place in summer with 40% of the cases (Table 4) and the largest frequencies were in August with 18.4% of the cases (Table 3). It is concluded that the maximum rate of snake biting cases were in the warm weather with an average of 40°C. In addition, the incidence of snake bites in the study of Kulkarni and Anees (1994) of India, Pandey (2006) of Nepaland and Vazirianzadeh *et al.* (2008) of Khuzestan (South West of Iran) show a similarity to the current study from point of a seasonal pattern related to the temperature too.

The Table 3 shows that the snake biting cases increased from March to the end of June. After that there was a decreasing in the snake biting cases over July, however, there was another increasing in the August. This trend is very consistent with the results of Vazirianzadeh *et al.* (2008) of Khuzestan (South West of Iran). The high rise of temperature in June caused a reduction of human activities e.g., farm working. On the other hand, may be this has been a reason for snakes to leave the human habitats to catch enough humidity, going to the habitats as microchmate with good condition of humidity and temperature, in the places such as deep hollow far away of the human habitats. The very dramatically reducing of snake biting cases over the cold weather has been due to the biology of snakes, that they hibernate. It has been confirmed by Ismail and Memish (2003) of Saudi Arabia that have expressed that the seasonal peaks in the incidence of bites are associated with agricultural activities. One obvious reason being that the snakes similar to the insects are cold blooded animals and decrease significantly both in activity and population during the cold weather, but increase with warmer weather.

CONCLUSION

According to the results of the current study, snake bitting is a seasonal phenomenon based in Bandar Mahshahr of sw Iran (Province of Khuzestan). However, there are other factors such as: sex, age, location of biting on the human bodies and geographical locations which determine how this phenomenon is happened in Bandar Mahshahr as a pattern for the similar regions. However, species of snake and occupations of the victims have to be considered in the further studies. In addition, those discussed categories have to be focused in the educational and health care program, related to the protection of snake biting from epidemiologic aspects. On the other hand, this care program should be worked for all the people but be more concerned amongst middle-aged males during the warmer months in Bandar Mahshahr area regarding this medical emergency.

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