

Original Article

District Hospital (DHQ) Capable to Treat Snake Bite Cases

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ABSTRACT

Objectives: 1. To know the proportion of Haemotoxic and Neurotoxic snake bite cases admitted in DHQ Hospital.
2. To collect data about victims and their cure rate by ASV injectable serum.
3. To determine that DHQ hospital is capable to treat snake bite victims or not.
4. To recommend improvements for snake bite treatment on basis of this study.

Design of Study: Cross sectional study.

Place and duration of Study: This study was conducted at Medical ward of District Hospital Mirpurkhas, Sindh from January to December 2005 on snake bite cases.

Patients and Methods: 135 patients of snake bite were taken in this study. Patients were taken of both sexes and all ages.

Inclusion Criteria: Only patients with snake bite history and clinical signs of bite fang punctures were included.

Exclusion criteria: Snake bite cases with only history no fang puncture marks and no clinical envenomation signs or treated by private hospital or GPs were excluded.

Results: 1. 135 Cases admitted during 12 months of the year 2005, 120 (86.2%) were male and 20 (14.8%) females (Table-1).

2. The age distribution of snake bite cases showed that 12 (8.9%) were small children age 01-04 years showing a miserable situation of neglect by mother and family. An other group 38 (28.1%) were also children aged between 05-09 years, the third group is also children between 9-14 years, which is 20 (14.8%), there were 11 (8.1%) in teen age (15 to 19) years. There were 39 (28.9%) cases in age of 30 and above (Table-8).

3. The type or species of snake bite as stated by patients or their attendants revealed that 112 (83.0%) said viper (lundi) have bitten which is haemotoxic and 23 (17.0%) snake bite cases were bitten by Cobra (Nanagor sanp) which is neurotoxic.

4. After ASV treatment all snake bite cases were cured, and no death or referral was reported. Hence DHQ hospitals are capable to deal with snake bite cases of all types.

5. Stock of ASV and supply in DHQ hospital was satisfactory as per data 134 (99.3%) cases when admitted. But for 01 case it was not available. This shows that this Vaccine should be available in excess quantity.

Conclusion: Snake bite is endemic and common public health problem in district Mirpurkhas adolescents and teenagers are bitten in large number but cure rate with Anti Snake Venom (ASV) injection is highly satisfactory, viper and cobra are frequently stated species present in Mirpurkhas. DHQ hospitals are capable to deal all the cases of snake bite. Anti snake Venom supplied in Pakistan is very effective against cobra and viper.

Key Words: Snake Bite, ASV, Cobra, Viper

INTRODUCTION

Snake bite is an injury causing puncture wound due to fangs and on some occasions results in envenomation^{1,2}. It is estimated that there are 3000 types of snake species and out of this large number 15% are harmful to human population.³ They are found every where in the world except Antarctica an Ice laden continent the colubrids family has 700 species but only five are venomous.⁴ It is estimated that there are 5.4 million snake bites, 2.5 million envenoming and 125000 deaths, those who survive suffer from tissue destruction due to venom and have life long disability.⁵ Most envenoming and fatalities occur in South Asia, South East Asia,

and sub Saharan Africa The India reporting highest snake bite deaths than any other single country in the world.⁶ All of these deaths are caused by four species comprising of Russell's viper, Indian Cobra, saws called viper and common krait, In Africa puffadder viper causes most fatalities. Industrial growth, rubber and Banana plantations attract snakes and there are more snake bite cases reported.⁷ Middle East has more venomous snakes than Europe, there are 100 deaths per year. The population of Europe is 731 million but there are only 30 bites annually. Only viper species are present, better health care facilities, availability of anti snake venom hence fatalities are rare. Australian snakes are highly venomous in the world but availability of

anti snake venom has made death, a rare thing. In United states of America there are 120 species of snakes but only 20 are venomous on average 4 bites occur in 100,000 population⁹ There is a global trend that snake bites are more in summer than winter and snakes are more active also human trend to go outdoor in agriculture fields. Tropical regions face more snake bites as compared to non tropical and non agricultural areas. Cases between (17 – 27) years and elderly are more likely to die^{10,11,12} The symptoms of all snakes include fear, panic, emotional instability which causes nausea, vomiting, diarrhoea, vertigo, fainting, tachycardia, cold and clumsy skin, Media, literature, folklore are creating atmosphere and victims may feel danger of sudden death¹³.

The anti snake venom was invented by French physician. Albert Valmette for the treatment of Indian Cobra bite in 1895 by injecting small amount of venom in to animal usually horse or sheep which starts immune response the resulting abti bodies are harvested from animals blood.¹⁴ Despite great advances in emergency cover ASV is still best treatment for snake bites, Hungarian artist Gyula Benczur in a painting in 1911 showed that Cleopatra VII committed suicide by snake bite to her left breast after hearing death of Mark Anthony.^{15,16}

Based on the use of anti-venom it is estimated at least 40,000 deaths episodes occur in every year and 2660 victims die who are children between 09- 15 years of age.¹⁷

Mirpurkhas district was the earlier part of Tharparkar District confined its present territorial existence since 31st October 1990. The Tharparkar district was formed in 1801, the total area of the district is 2925 Sq KM with 96000 population density per square kilometer is 310 persons. There are nos. of hospital and dispensaries with one district Headquarter Hospital, 35 BHUs, 6 RHCs and 4 Taluka Hospitals, the main occupation is agriculture and the district is irrigateble with 2 Cannals i.e Mithairao and Jumrao, and some part is irrigated with Naseer Cannal. The climate of the district is extreme, April to October is hot, and however the winter is considerably cooler by north western breeze. There is Kaho Jo Daro a historical aurchiological site of same age of Mohan Jo Daro of Buddhist Stuppa. The town is 68 KMs away from Hyderabad and is 198.12 meter above the sea level. Mirpurkhas is an important market for agriculture production such as wheat cotton, rice and mangoes. The temperature in summer varies between 39°C to 43°C and in winter 21°C to 32°C the average annual rain fall is 20.32cm.¹⁸

PATIENTS AND METHODS

Study Design: Cross sectional study.

Setting: Medical Ward, District Hospital Mirpurkhas.

Sample size: 135.

Data analysis: SPSS version 16.

Data Collection method: Questionnaire designed and pre-tested was used to collect demographic, clinical and treatment plan data with Anti -Snake Venom(ASV) and outcome was recorded, an informed consent was sought from patient before collecting data. The local language was used in asking the information from respondents.

Inclusion Criteria: Only patients with snake bite history and clinical signs and bite fang punctures were included.

Exclusion criteria: Snake bite cases with only history no fang puncture marks and no clinical envenomation signs were excluded.

RESULTS

1. There were 135 Cases admitted during the twelve months period of the year 2005 out of these there 120 (86.2%) male and 20(14.8%) females (Table 1).

2. The age distribution of snake bite cases shows that 26 (19.3%) cases were in the age group of 10-14, 12(6.9%) in the age group of 15-19 year , 9 (6.7%) case were in the age of 20-24 year, 25(18.5) cases were in the age of 25-29 years, 22 (16.3%) in the age group 30-34 years, 11 (8.1%) in the age group of 35-39 years, 8 (5.9%) were in the age group of 40-44 years, 5(3.7%) in the age of 45-49 years and 17 (12.6%) were in the age group of 50 and above years. The adolescent and teenagers were 28.2%. The 12% were 50 years and above the others were either young or in the middle age between 20-50 years (Table 2).

3. The marital status of snake bite showed that 114 (84.4%) were married and 21 (15.6%) unmarried this is doubtful because age structure showed child victims r child marriage is practiced in this district (Table 3).

4. The religion of snake bite cases as per table shows that 95 (70.4%) cases were Muslims and 40 (29.8%) were non Muslim mostly Hindu (Table 4).

5. The Education status if snake bite showed that 116 (85.9%) case were illiterate and 18 cases were literate (Table 5).

6. It shows the socio economic status of snake bite victims there were 7 (5.2%) snake bite cases who were very poor 116 (85.2%) were poor, only 13 (9.6%) were in middle income level showing association between snake bite and poor socio economic condition (Table 6).

7. The occupation of Snake bite cases shows that 118 (87.4%) were having occupation of agriculture while 17 (12.5%) were in non agriculture occupation (Table 7).

8. The taluka wise/sub district wise distribution of snake bite cases showed that 86 (63.7%) (cases cane

from Mirpurkhas Taluka, 16 (11.9%) from Umerkot taluka which is now separate district, 11 (8.1 %) cases from Digri, 9 (6.7%) cases from Samaro, 6 (4.4%) from Pithoro taluka, 2 (1.5%) cases from Kot Ghulam Muhammad and 5 cases from adjoining district of Sanghar and Tando Allah Yar came to DHQ hospital (Table 8).

9. The distance traveled by snake bite to reach DHQ Mirpurkhas hospital showed that 12 (8.9%) cases traveled 1 to 4 Kilometer, 38 (28.1%) traveled 5 to 9 Km m 20 (14.8%)

Traveled 10 to 14 km, 11 (8.1%) traveled 15 to 19 km, 39 (28.9) cases traveled 30 and above km distance (Table 9).

10. The mode of arrival of snake bite cases showed that 77 (57.0%) reached by public transport, buses, vagans, Train, 2 (1.5%) used ambulance and 56 (41.5%) reached by private or hired transport (Table 10).

11. Whole Blood clotting Time in snake bites cases were observed by using time watch it was seen that 8 (5.9%) cases had normal clotting time less than 5 minute, 25 (18.5%) had clotting time between 5 to 9 minutes, 32 (23.7%) cases had 10 to 19 minutes Clotting time, 68 (50.4%) had clotting time 20 minutes and above 5 (3.7%) cases clotting time was not recorded on data form (Table 11).

12. The Anti Snake Venom (ASV) is available in 10cc vial preparation mostly made by NIH Islamabad or imported from Serum Institute of India Poona is supplied and used as IV infusion dextrose drib or saline drib after test dose and seeing clotting time of venous blood which is 5 minute normal and above it is abnormal, there were 2 (1.5%) cases who settled without ASV perhaps venom could not be in big amount or dry bite happened, 45 (33.3%) settled after giving 1 vial of 10cc of ASV in infusion .same way 62 (45.9%) cases settled after 2 vial of 10cc ASV injections, 19 (14.1%) cases settled after 3 vial of 10cc each ASV injections. 6 (4.4%) cases settled after 4 vial of 10cc each of ASV injection and 1 (0.7%) case settled after 5 vials of ASV injections of 10cc each (Table 12).

13. The symptoms in snake bite cases were observed and data shows that 112 (83.0%) had bleeding symptoms i.e hem toxic signs and symptoms while 23 (17.0%) were Nuerotoxic like salivation, muscle weakness, and paralysis (Table 13)

14. The type or species of snake bite as stated by patient of attendant revealed that 112 (83. 0%) victims or their attendant said viper (lundi) have bitten this is Haemotoxic and 23 (17.0%) snake bite cases or relative said they were bitten by Cobra (Naang or Sanp) this is Nuerotoxic (Table 14).

15. The seasonal trend of snake bite cases showed that 88 (65.2%) cases occurred in summer, 39 (28.9%) cases in Autumn and 7 (5.2%) cases occurred in spring, there was no cases in winter (Table 15).

16. The month wise distribution of snake bite cases shows that there were 7 (5.2%) in March, 15 (11.1%) in April, 24 (17.8%) cases in May, 33 (24.4%) in June these highest in single month, 19 (14.1%) cases in July, 12 (8.9%) in August and 25 (in September this showed 7 months out of 12 month snake bite are occurring but 5 months of winter season no snake bite is occurring this shows low human and snake less movement months in Mirpurkhas and barrage irrigated district with round the year agriculture crops like cotton wheat chilies and sugar can and mango crops sowing and harvesting, (Table 16).

17. After ASV treatment outcome snake bite cases as cured, died or referred showed that all 135 snake bite cases were cured and no death or referral was reported. Hence DHQ hospitals are capable to deal with snake bite cases of all types (Table 17).

18. The blood transfusion was not needed and settled with ASV injections only in 132 (98.5%) case but 2 (1.5%) cases needed blood transfusion and ASV both and they also settled (Table 18).

19. Stock of ASV and supply in DHQ hospital whether satisfactory or unsatisfactory as per data 134 (99.3%) cases when admitted ASV stock and supply remained satisfactory but for 1 cases stock and supply was unsatisfactory or not available. This shows that this life saving medicine. Vaccine be available in excess not in short supply (Table 19)

Table-1: Showing Sex wise distribution of Snake Bite Cases.

Sex	Frequency	Percent
Male	115	85.2
Female	20	14.8
Total	135	100.0

Table 2: Showing age wise distribution of snake bite cases.

Age	Frequency	Percentage
10-14	26	19.3
15-19	12	8.9
20-24	9	6.7
25-29	25	18.5
30-34	22	16.3
35-39	11	8.1
40-44	8	5.9
45-49	5	3.7
50 and above	17	12.6
Total	135	100

Table-3: Showing marital Status of Snake Bite Cases.

	Frequency	Percent
Married	114	84.4
Un-Married	21	15.6
Total	135	100.0

Table-4: Showing Religion of Snake Bite Cases.

Religion	Frequency	Percent
Muslim	95	70.4
Non Muslim	40	29.6
Total	135	100.0

Table-5: Showing Education of Snake Bite Cases.

Education Level	Frequency	Percent
Illiterate	116	85.9
Literate	19	14.1
Total	135	100.0

Table-6: Showing Socioeconomic status of Snake Bite Cases.

Socio- economic status	Frequency	Percent
Very Poor	7	5.2
Poor	115	85.2
Middle Income	13	9.6
Total	135	100.0

Table-7: Showing Occupation of Snake Bite Cases.

Occupation	Frequency	Percent
Agriculture	118	87.4
non- Agriculture	17	12.6
Total	135	100.0

Table- 8: Showing Taluka/area of Snake Bite Cases.

Taluka	Frequency	Percent
Mirpurkhas (MPK)	86	63.7
Umer kot (U.K)	16	11.9
Digri	11	8.1
Samaro	9	6.7
Pithoro	6	4.4
Kot Ghulam Mohd (K.G.M)	2	1.5
Adjoining Districts	5	3.7
Total	135	100.0

Table-9: Showing Distance Traveled in Kilometers by snake bite cases.

Distance in Kilometers	Frequency	Percent
1-4	12	8.9
5-9	38	28.1
10-14	20	14.8
15-19	11	8.1
25-29	15	11.1
30and above	39	28.9
Total	135	100.0

Table-10: Showing Mode of Transport used by Snake Bite Cases.

Mode of Transport	Frequency	Percent
Public	77	57.0
Ambulance	2	1.5
Private	56	41.5
Total	135	100.0

Table-11: Showing Blood Clotting Time of Snake Bite Cases.

Clotting Time	Frequency	Percent
<5 (minutes Normal)	8	5.9
5—9 (minutes Abnormal)	25	18.5
10-19 (moderate Abnormal)	32	23.7
20and Above (minutes High abnormal)	68	50.4
Unspecified	2	1.5
Total	135	100.0

Table- 12: Showing Anti Snake Venom (ASV) injection Vials given to Snake Bite Cases.

ASV 10 CC Vials injected I/V Infusion	Frequency	Percent
No ASV given	2	1.5
1 Vial of ASV	45	33.3
2 Vials of ASV	62	45.9
3 Vials of ASV	19	14.1
4 Vials of ASV	6	4.4
5and Above	1	.7
Total	135	100.0

Table-13: Showing Symptoms Haemotoxic or Neurotoxic present in Snake Bite cases.

Signs and symptoms	Frequency	Percent
Haemotoxic	112	83.0
Neurotoxic	23	17.0
Total	135	100.0

Table-14: Showing Type of snake as stated by victim or his attendant Viper or Cobra.

Type of Snake	Frequency	Percent
Viper	112	83.0
Cobra	23	17.0
Total	135	100.0

Table-15: Showing Season in which Snake bite occurred among victims admitted cases.

Seasons	Frequency	Percent
Summer	88	65.2
Autumn	39	28.9
Spring	7	5.2
Winter	1	.7
Total	135	100.0

Table-16: Showing Month wise distribution of Snake bite cases.

	Frequency	Percent
March	7	5.2
April	15	11.1
May	24	17.8
June	33	24.4
July	19	14.1
August	12	8.9
September	25	18.5
Total	135	100.0

Table- 17: Showing After ASV treatment outcome of snake bite cases as Cured, died and referred.

	Frequency	Percent
Cured	135	100.
Referred	00	00
Died	00	00
Total	135	100

Table-18: Showing Blood Transfusion needed to Snake bite cases.

Blood Transfusion	Frequency	Percent
No blood Transfusion	133	98.5
Blood Transfusion done	2	1.5
Total	135	100.0

Table-19: Showing Stock of ASV whether satisfactory or not satisfactory in DHQ Hospital 2005.

	Frequency	Percent
Satisfactory	134	99.3
Unsatisfactory	1	0.7
Total	135	100.0

DISCUSSION

It is evident from snake bite data that 135 cases of snake bite reported in DHQ hospital, Mirpurkhas for treatment showing endemicity of this problem. It is an agricultural district where cotton, wheat, Banana, sugarcane, chilies and mangoes are grown. It has good irrigation canal system and crops and agricultural activities are round the year which provides snake breeding atmosphere favorable, and due to agriculture fields and farming activities people are bitten. 87%

victims were from agriculture occupation. The age pattern showed that adolescent 10-14 and teenagers 15-19 were about 28.2% of victims which finding is different but very close to Europe and Africa where 17 to 27 years of age is mentioned as most common age of sufferers.¹⁹ Banana crop is also grown in this district hence snake bite cases as reported in international literature is linked to Mirpurkhas district²⁰ The two types of snakes viper and cobra seem common as reported in India. The height of problem is that in whole Europe with 731 million populations 30 cases are reported annually where as in one district of Mirpurkhas with less than one million populations. 135 cases have occurred in one year. The availability and supply of anti snake venom (ASV) remained satisfactory hence death rate remained at level of Europe and USA or even better which gives confidence that our health delivery system and DHQ hospitals are capable to treat snake bite cases at par what is available in developed world. There is larger number of children bitten by snake hence UNICEF and WHO should collaborate and supply anti snake venom in adequate quantity and at a low cost.

RECOMMENDATIONS

- Training programs for Doctors and Para-medical staff working in rural areas for early treatment and management of snake bite cases.
- Provision of anti snake venom (ASV) in adequate quantity with cold chain system.
- Awareness program for the masses about misconception and early management of snake bite cases.

CONCLUSION

Snake bite is endemic and common public health problem in district Mirpurkhas adolescent and teenagers are bitten in large number but cure rate with Anti Snake Venom (ASV) is satisfactory, viper and cobra are frequently reported species present in Mirpurkhas and causing bite from June to September. Rate of incidence is high. Snake bite in Mirpurkhas in a year surpasses the number of snake bites in whole Europe during same period. DHQ hospitals are capable to deal all cases of snake bite without referral. Anti Snake Venom supplied in Pakistan is very effective against cobra and viper.

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