International Journal of Research and Review
Vol. 10; Issue: 1; January 2023
Website: www.ijrrjournal.com
Original Research Article *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

Overview of Snakebite Cases in a Hospital Situated in the Rural Area of Navsari District of Gujarat, India

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DOI: https://doi.org/10.52403/ijrr.20230148

ABSTRACT

Background: Snakebite envenoming is a greatly underreported neglected tropical disease (NTD) responsible for up to 138,000 deaths and 400,000 permanently disabled victims worldwide every year. More than a third of the global deaths, about 46,000 annually, are estimated to occur in India with not much known about other aspects of burden or risk factors in the country.
Objective: To gather evidence on the burden and epidemiological aspects for snakebite in rural pocket of Navsari district of South Gujarat, India.
Materials & Methods: A structured data collection tool was developed & patients hospitalized due to snakebite from year 2009 to 2020 were studied.
Results: Total 1108 lab confirmed patients of snakebite were admitted to the Hospital for the mentioned period out of which 239 (21.6%) patients had bite of poisonous snakes. Majority i.e. 55.7% of the snake bite cases were seen amongst men. Most of the cases were reported during the monsoon season. Local pain at the site of bite was reported by 100% of cases admitted. 24 (2.2 %) cases had developed complications. Cellulitis and Respiratory distress were major complications that were found.
Conclusion: Less bite to hospitalization time, awareness about snake bite and its consequences amongst community, availability and appropriate use of Anti Snake Venom, close monitoring of patients, availability of ventilator support are key measures that needs to be in practice in any institution.

Key Words: Snake Bite, Anti Snake Venom, Monsoon season, South Gujarat

INTRODUCTION

Snakebite envenoming is a greatly underreported neglected tropical disease (NTD) responsible for up to 138,000 deaths and 400,000 permanently disabled victims worldwide every year [1]. In 2018, recognizing the public health impact of snakebite on vulnerable communities the World Health Assembly (WHA) passed a resolution to address the burden of snakebite [2] Earlier in 2019 the World Health Organization (WHO) released a roadmap which aims to halve by 2030 the death and disability due to snakebite globally [3]. The WHO strategy rests on four pillars of action: empowering and engaging communities; ensuring safe, effective treatment; strengthening health systems; and increasing partnerships, coordination and resource usage through collaborations [3] More than a third of the global deaths, about 46,000 annually, are estimated to occur in India with not much known about other aspects of burden or risk factors in the country. [4] In India, the number of snake-bite fatalities has long been controversial. Estimates as low as 61,507 bites and 1124 deaths in 2006 and 76,948 bites and 1359 deaths in 2007 and as

high as 50,000 deaths each year have been published [5].

MATERIALS AND METHODS

Present retrospective hospital based analysis was done with the objective to gather evidence on the burden and epidemiological aspects for snakebite in rural pocket of Navsari district of South Gujarat, India. For that, the hospital had developed a structured data collection tool to record geographic, environmental and clinical details of patients hospitalized at Gram Seva Trust, Sarvjanik Hospital, Kharel Dist. Navsari from year 2009 to 2020. Patients admitted with the history and confirmed through lab investigations were taken as a study participant. Clinical data about type of snakes, gender, clinical manifestations, complications and outcome were obtained from case records and were analyzed using Microsoft Excel 2016.

RESULTS

Table 1 shows total number of cases year wise and on the basis of type of snake bite. It can be seen that maximum cases were reported in the year 2009-10 (i.e. 132, 11.1%) followed by year 2017-18 (i.e. 130 10.9%). In the year 2019-20, maximum i.e. 36 % cases were due to poisonous snake bite. Overall, 21.6 % cases were due to poisonous snake bite. Certain old records didn't have all the information that were needed. That is the reason of difference in total number in each table.

Table 1 -Type of Snakes

Sr No	Year	Poisonous	Non-Poisonous	Total Cases
1	2009-10	33	99	132
2	2010-11	30	87	117
3	2011-12	7	59	66
4	2012-13	23	65	88
5	2013-14	16	92	108
6	2014-15	11	67	78
7	2015-16	17	77	94
8	2016-17	32	88	120
9	2017-18	29	101	130
10	2018-19	14	86	100
11	2019-20	27	48	75
12	TOTAL	239 (21.6%)	869 (78.4%)	1108

Table 2 Gender wise distribution of Snake Bite cases

Sr No	Year	Male	Female	Total
1	2009-10	68	63	131
2	2010-11	32	41	73
3	2011-12	33	32	65
4	2012-13	40	36	76
5	2013-14	67	37	104
6	2014-15	47	31	78
7	2015-16	49	24	73
8	2016-17	43	39	82
9	2017-18	76	56	132
10	2018-19	53	45	98
11	2019-20	45	36	81
12	Total	553 (55.7%)	440 (44.3%)	993

Majority i.e. 55.7% of the snake bite cases were seen amongst men. However incidence among women was also seems to be higher (i.e. 44.3%) [Table 2]

Table 3 – Month wise distribution of snake bite cases.

Sr No	Month	Total	Percentage
1	April	59	5.9 %
2	May	57	5.7 %
3	June	100	9.9 %
4	July	150	14.9 %
5	August	159	15.8 %
6	September	105	10.5 %
7	October	148	14.8 %

Table 3 To Be Continued…			
8	November	97	9.7 %
9	December	45	4.5 %
10	January	22	2.2 %
11	February	31	3.1 %
12	March	29	2.9 %
13	TOTAL	1002	

Majority i.e. 159 (15.8 %) cases were reported in the month of august and most of the cases were reported during the monsoon season. Local pain at the site of bite was reported by 100% of cases admitted [Table 3]

Table 4 complicated snake bite cases

Type of Complication	Total	Percentage
Cellulitis	11	45.8%
Respiratory Distress	8	33.3%
Acute Renal Failure	3	12.5%
Hypotension	2	8.3%
Total	24	

Out of 1108 cases, 24 (2.2 %) cases were having complications as mentioned in table 4. Cellulitis (45.8%) and Respiratory distress (33.3%) were major complications that were found during this period. Only 1 death has been reported during this period. However out of these 24 cases 3 (12.5%) cases were referred to higher center and there outcome was not known. Standard treatment guidelines issued by ministry of health and family welfare, GOI were followed for the management of snake bite cases. There are two types of toxicity after snake bite poisoning – one Hemotoxic & Neurotoxic. Here majority cases were having symptoms and signs of hemotoxic bites. In some cases of viper bite, mild signs like ptosis, dysphagia were also seen along with other hemotoxic signs & complications. This confirmation was done by patient's clinical conditions and investigations. Out of these 24 complicated cases, 8 (33.3 %) cases had cobra bite, 7 (29.2%) had viper bite, 2 (8.3%) had krait bite, and in 7 cases the type of the snake was not known. In some cases victims or relative brought snake (dead) or photo of snake with them when they came to hospital.

DISCUSSION

There are very few articles and data about the incidence, morbidity and mortality of snakebite cases in South Gujarat region. Accurate statistics of the incidence of snakebite and its morbidity and mortality throughout the world does not exist; however, it is certain to be higher than what is reported. [6]

In present study the case fatality rate amongst complicated cases was found to be 4.1 % (overall only 1 death in 1184 cases) which is lower than the rate of a tertiary referral hospital of Pondicherry, JIPMER (13.5%) [7] And Hospital records of the Burdwan Medical College (BMC) of West Bengal (5.9 %) [8] While the fatality rate of the S. Sarkhel et al study was lower (1.04%) than present study. [9]

In present study majority (66%) of the cases were reported during June to October months (Rainy Seasons). Snake bite and death rate is always high in the rainy season [10]. In the S. Sarkhel et al study [9] the maximum (34%) number of snakebite was reported in the months of June-September. Earlier in several studies the incidence of snake bite was found in the months of June-September [11].

In present study 21.6 % cases were of poisonous snake bite. Still only 2.2 % of the cases have developed complications. As the present study was conducted in the hospital which is in the rural area of the tribal belt of south Gujarat, the bite to hospitalization time of the cases was relatively less and the people around the hospital knows the availability of the treatment for snake bite so they immediately come to the hospital after any insect bite for the management. Many other studies found that prolonged bite to hospital time i.e., delayed arrival to hospital was associated with mortality [6]. Most of the studies have observed this

correlation between bite to hospital time and complications or mortality [12]. Incidence of complications is directly proportional to the duration of venom in the blood prior to its neutralization by AVS due to late arrival of patient at hospital [13] and as complications occur mortality will increase. This delay can be attributed to lack of awareness of hazards of snake bite, belief in traditional methods of treatment, lack of proper referral systems and transport facilities. [14]

CONCLUSION

Hospital based studies are a vital source of information about snake bite cases. Less bite to hospitalization time, awareness about snake bite and its consequences amongst community, availability and appropriate use of ASV, close monitoring of patients, availability of ventilator support are key measures that needs to be in practice in any institution. Knowledge about management of snake bite cases in hospital staff is important for effective management of the cases.

Declaration by Authors

Ethical Approval: Not Applicable

Acknowledgement: Gram Seva Trust, Kharel would like to thank L&T CSR Team, Hazira, Surat for providing ASV injections free of cost to the hospital for the benefit of the poor people residing in the vicinity and availing the services of the hospital.

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. J. M. Guti´errez, J. J. Calvete, A. G. Habib, R. A. Harrison, D. J. Williams, and D. A. Warrell, "Snakebite envenoming," Nature Reviews Disease Primers, vol. 3, no. 1, pp. 1–21, 2017.
2. Sachan D: The snake in the room: snakebite's huge death toll demands a global response. BMJ. 2018; 361: k2449.
3. WHO: Snakebite envenoming: A strategy for prevention and control. Geneva: World Health Organization. 2019.
4. Mohapatra B, Warrell DA, Suraweera W, et al.: Snakebite mortality in India: a nationally representative mortality survey. PLoS Negl Trop Dis. 2011; 5(4): e1018.
5. State/UT Wise Cases and Deaths Due to Snake Bite in India, Government of India, Central Bureau of Health Intelligence. Health Status Indicators, National Health Profile, 2007, pp. 107–108 and 2008 (Provisional).
6. Kaushik Mana, Rituparna Ghosh, Kripasindhu Gantait, Kanchan Saha, Poulami Parua, Upasana Chatterjee, Sumana Sarkhel. Incidence and treatment of snakebites in West Bengal, India. Toxicology Reports 6 (2019) 239–243.
7. P. Lal, S. Dutta, S.B. Rotti, Epidemiological profile of snake bite cases admitted in JIPMER hospital, Indian J. Commun. Med. 6 (2001) 45–48.
8. A.K. Hati, M. Mandal, M.K. De, H. Mukherjee, R.N. Hati, Epidemiology of snake bite in the district of Burdwan, West Bengal, J. Indian Med. Assoc. 90 (1992) 145–147.
9. Sumana Sarkhel, Rituparna Ghosh, Koushik Mana, Kripasindhu Gantait. A hospital based epidemiological study of snakebite in Paschim Medinipur district, West Bengal, India. Toxicology Reports 4 (2017) 415–419.
10. G. Brunda, R.B. Sashidhar, Epidemiological profile of snake-bite cases from Andhra Pradesh using immunoanalytical approach, Indian J. Med. Res. 125 (2007) 661–668.
11. D. Majumder, A. Sinha, S.K. Bhattacharya, R. Ram, U. Dasgupta, A. Ram, Epidemiological profile of snake bite in South 24 Parganas district of West Bengal with focus on underreporting of snake bite deaths, Indian J. Public Health 58 (2014) 17–21.
12. S. Kalantri, A. Singh, R. Joshi, S. Malamba, C. Ho, J. Ezoua, et al., Clinical predictors of in-hospital mortality in patients with snakebite: a retrospective study from a rural hospital in central India, Trop. Med. Int. Health 11 (2006) 22–30.
13. K. Narvencar, Correlation between timing of ASV administration and complications in snake bites, J. Assoc. Phys. India 54 (2006) 717–719.
14. B.B. Gaitonde, S. Bhattacharya, An epidemiological survey of snake-bite cases in India, Snake. 12 (1980) 129–133.

How to cite this article: Ashwin Shah, Parth Vyas. Overview of snakebite cases in a hospital situated in the rural area of Navsari District of Gujarat, India. *International Journal of Research and Review*. 2023; 10(1): 425-428. DOI: *https://doi.org/10.52403/ijrr.20230148*

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