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"CLINICAL PROFILE AND OUTCOME OF SNAKE-BITE EN-VENOMATION IN CHILDREN: A RETROSPECTIVE STUDY IN A TERTIARY CARE CENTRE KIMS NARKETPALLY."

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ABSTRACT

Background: In India, about 2 lakh snake bites are reported annually, of which 35,000-50,000 people die, out of 216 Indian snake species, 52 are poisonous, despite the availability of polyvalent snake antivenom, inappropriate first aid, regional effects of envenomation and inappropriate use of antivenom result in significant and at times potentially avoidable morbidity and mortality, particularly in children. Snake bite is a neglected disease that afflicts the most impoverished inhabitants of the rural areas in the tropical developing countries.
Aims and objectives: To study the clinical profile and outcome of snake bite envenomation in children.
Setting: Kamineni Hospital attached with Kamineni Institute of Medical Sciences Narketpally District Nalgonda, State Telangana.
Study Design: A retrospective hospital record based descriptive study.
Materials and methods: The study was done by reviewing case records at Medical Record department of KIMS Narketpally, for all children (≤12years) admitted in Department of Paediatric with snake bite envenomation from August 2011 to July 2013. Relevant information was entered in a pre-structured proforma which include age, sex, site of bite, time interval between snakebite and initiation of treatment, and the outcomes of snakebite cases. The statistical tests applied were percentage and 'T' test.
Results: Among a total of 24 cases, 16 (66.67%) were males and 8 (33.33%) were females. The highest incidence of snake bite was observed in the age group of 9 to 12 years (50%). 15 (62.5%) were bitten during day and 9 (37.5%) during night time. 12 (50%) cases were bitten on lower extremity, followed by 7 (29.2%) on upper extremity, 3(12.5%) on the trunk and 2 (8.3%) on head and neck.
Conclusion: Time elapsed between snake bite to hospitalisation plays a major role in deciding the outcome. There is need to educate the community about the prevention of snake bite and early hospitalisation of snake bite cases.

INTRODUCTION

Snake bite is a common medical emergency with significant morbidity and mortality especially in rural areas of tropical and subtropical countries. Over 2,000 species of snakes are known worldwide, of which around 400 are poisonous. These snakes belong to the families Elapidae, Viperidae, Hydrophiidae and Colubridae (Al-Homrany, 1996).

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Viper bites are more common than other poisonous snakebites in human beings (Basu *et al.*, 1977 and Bhat, 1974). Of the different varieties of vipers, the Russell's viper (Vipera russelli) commonly inhabits the Southern Asian countries, and the Russell's viper's bite is regarded as an occupational hazard for the farming community. In India, about 2 lakh snake bites are reported annually, of which 35,000-50,000 people die, out of 216 Indian snake species, 52 are poisonous, (Bawaskar, 2004 and Meenatchi sundaram *et al.*, 2008) despite the fact that India is not home for the largest number of venomous snakes in the world, nor is there a shortage of anti –snake venom in the country (Simpson and Norris, 2007). Among these, there are 4 major poisonous species *viz.* cobras (*Naja naja),* krait

(*Bungarus caeruleus)*, Russell's viper (*Daboia russelli)*, and saw-scaled viper (*Echis carinatus)* (Brunda and Sashidhar, 2007). The available data on the epidemiology of snakebite from the Indian subcontinent Internal medicine section are sparse, because most of the snake bites occur in illiterate, rural people who use witchcraft and traditional healers. Only the cases of snakebite with severe en-venomation reach the healthcare centres. Nalgonda district, being a hilly and rural area, the incidence of snake bite is high. This study was done due to the paucity of research about snake bite in our area and to describe the epidemiology, arrival delays, clinical features, complications, and the outcome of Snake bites which were seen in a tertiary care hospital of KIMS Narketpally.

Aims and objectives

To study the clinical profile and outcome of snake bite envenomation in children.

MATERIALS AND METHODS

A retrospective hospital record based, descriptive study was done by reviewing case records at Medical Record department of KIMS Narketpally, for all children (≤12years) admitted in Department of Paediatric with snake bite envenomation from August 2011 to July 2013. Relevant information was entered in a pre-structured proforma which include age, sex, site of bite, time interval between snakebite and initiation of treatment, and the outcomes of snakebite cases. Cases where the patients were 'discharged against medical advice', Cases of 'unknown' bites & whose outcome is not recorded were excluded. We used use the ICD-10 System for the classification of diseases. The statistical tests applied were percentage and't' test.

RESULTS

A total of 24 cases of venomous snakebite cases were included in this study who had reported to the hospital and hospitalised during the two year of study period. The mean age in the study was 7.86 ± 2.9 years.

Table 1. Sex wise and age wise distribution of snake bite cases (n=24)

Age (Yrs)	Male	Female	Total
0-3	1	1	2
4-8	6	4	10
9-12	9	3	12
Total	16	8	24

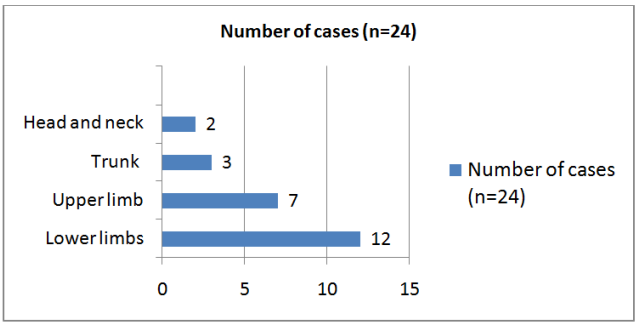
Among a total of 24 cases, 16 (66.67%) were males and 8 (33.33%) were females. The highest incidence of snake bite was observed in the age group of 9 to 12 years (50%).

Table 2. Distribution of cases according to location and time of incidence of snake bite (n=24)

Location	Day	%	Night	%	Total	%
Indoor	3	12.5	4	16.7	7	29.2
Outdoor	12	50	5	20.8	17	70.8
Total	15	62.5	9	37.5	24	100

Most of the victims 17(70.8%) were bitten outdoors while 7(29.2%) were bitten indoors. 15 (62.5%) were bitten during day and 9 (37.5%) during night time.

Table 3. Distribution of cases according to the site of snake bite (n=24)



12 (50%) cases were bitten on lower extremity, followed by 7 (29.2%) on upper extremity, 3(12.5%) on the trunk and 2 (8.3%) on head and neck (Table3).

Table 4. Distribution of cases according to time gap between snake bite and hospitalisation (in hours)

Time gap between snake bite and hospitalization (In Hours)	No. of cases	%
<6	10	41.67%
≥6	14	58.33%

10 (41.67%) patients were admitted within 6 hours, among which 3(12.5%) reached within 1 hour of the bite, 3(12.5%) got treatment between 1 and 3 hours, and 4(16.6%) in 4-6 h time span. Whereas, 14 (58.33%) brought to hospital more than 6hours after snake bite.

Table 5. Distribution of cases according to type of first aid received (n=24)

Type of First aid received	No. of cases	%
Tourniquet	8	33.33%
Traditional	6	25%
No first aid	10	41.67%

8 (33.33%) cases have received first aid in the form of application of tourniquet, 6 (25%) had been given herbal medicine or traditional remedies, and 10(41.67%) did not received first aid prior to hospital visit.

Table 6. Distribution of cases studied according to clinical syndrome (n=24)

Clinical Syndrome	No. of cases	%
Pain abdomen followed by Neuro-paralytic symptoms	6	25%
Neuro-paralytic symptoms with local signs (Swellings etc.)	12	50%
Local signs with systemic bleeding	5	20.8%
Local sings with systemic bleeding with renal failure	1	4.2%

12 (50%) cases presented with neuro-paralytic symptoms with local signs, 6 (25%) had neuroparalytic symptoms with pain abdomen, 5 (20.8%) had local signs (swelling, bleeding etc.) with systemic bleeding and one case (4.1%) had local signs, systemic bleeding and renal failure.

Table 7. Distribution of cases according to grade of severity of snake bite (n=24)

Grade of Severity	No. of cases	%
Mild	2	8.33%
Moderate	7	29.17%
Severe	12	50.00%
Fatal	3	12.5%

Table 8. Distribution of cases according to time lapse before hospitalization & its relation with hospital stay and mortality *p=0.001

Time of Bite to Hospitalization (In Hours)	No of cases	Hospital stay (In days) (Mean ± SD)	Mortality
<6	10	7.4 ± 1.4	0
≥6	14	12.07 ± 2.2*	3

Table 9. Distribution of cases according to clinical syndrome and their hospital stay and fatality (n=24)

Clinical Syndrome	No. of cases	Hospital stay (in Days) (Mean ± SD)	Fatality
Pain abdomen followed by Neuro-paralytic symptoms	6	12.1	1
Neuro-paralytic symptoms with local signs (Swellings etc.)	12	9.2	1
Local signs with systemic bleeding	5	10.2	0
Local signs with systemic bleeding with renal failure	1	7	1

2(8.33%) of cases had mild local symptoms and signs, 7(29.17%) had moderate severity with pronounced or prolonged symptoms or signs and 12(50%) had severe or life threatening symptoms or signs, while 3(12.5%) had extremely severe envenomation leading to mortality. Mean duration of hospital stay was 7.4 ± 1.43 days in cases where the time of bite to hospitalisation was less than 6hrs and no mortality was noted in this group. 14 cases which reported after more than 6 hours of bite had mean hospital stay of 12.07±2.2 days with mortality of 3 cases. *There is significant association between time of bite to hospitalisation to hospital stay. ($p<0.05$). The mean duration of hospital stay in cases with pain abdomen with neuro-paralytic symptoms (krait bite) was 12 days followed by local signs with systemic bleeding (saw scaled viper) was 10 days, neuro-paralytic symptoms with local signs(cobra) was 9 days and in local signs with systemic bleeding with renal failure (Russel's viper) is 7 days. One case of death was noted in each category of syndrome except in local signs with systemic bleeding.

DISCUSSION

In the present study, 50% of snake bite has occurred in the age group of 9 to 12 years which is active age group involved in various outdoor activities and are more prone for snake bites. Male were the common victims than females. Male preponderance seen in our study is in close agreement with earlier studies (Waghmare *et al.,* 2009; Gaitonde and Bhattacharya, 1980). The reason for this is males are more involved in outdoor activities compared to females. In our study, most of the victims were bitten outdoors (70.8%), mostly in the fields during the day time (62.5%) and on the lower limbs (50%). A similar observation was reported in other studies also (Kulkarni *et al.,* 1994 and Alirol *et al.,* 2010).

Most (50%) patients presented with neuro-paralytic symptoms with local signs (cobra bite), followed by neuro-paralytic symptoms with pain abdomen (25%, krait bite), local signs (swelling, bleeding etc.) with systemic bleeding (20.8%, saw scaled viper bite) and one case (4.1%) with local signs, systemic bleeding and renal failure (Russel's viper bite).

We observed that 41.6% cases reached the hospital within 6 hours of bite, and remaining 58.4% after 6 hours of bite. We observed that some delay in seeking medical aid was largely attributed to manipulation by traditional remedies (Sharma, 2002 and Sharma *et al.,* 2004). 41.67% cases reached the hospital without any first aid treatment. Among those who received first aid treatment, maximum were having application of tourniquet proximal to the site of bite and local application of herbal medicine.

The mean duration of the hospital stay was 10.1±3.04 days (range 6-16 days). The cases who came more than 6hours (58.33%) after bite had longer duration of hospital stay than those who came within 6 hours (41.67 %) of bite. No fatal outcome was reported in the victims who were admitted within 6 hours of the snake bite, thus suggesting the importance of an early treatment. There is no significant difference in duration of hospital stay among the various clinical syndromes of snake bite in our study. Mortality rate in our study was 12.5%. Out of 3 deaths one each was noted in neuro-paralytics symptoms with local signs (Cobra), pain abdomen followed by neuro-paralytic symptoms (Krait) and local signs with systemic bleeding with renal failure (Russel's viper).

Conclusion

Most of the traditional methods for the first aid treatment of snake bite have been found to result in more harm than good. The immobilization and the prompt transport of the snake bite victims to the hospital, along with the prompt administration of ASV, remains the mainstay to reduce the morbidity and the mortality which are associated with snake bites. Most of the bite occurs among males mainly in lower extremities during day time. Neurotoxic snake bite (Cobra and Krait) is more common than vasculotoxic (Vipers) snake bite in our area. Time elapsed between snake bite to hospitalisation plays a major role in deciding the outcome. There is need to educate the community about the prevention of snake bite and early hospitalisation of snake bite cases.

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REFERENCES

Al-Homrany M. Acute renal failure following snake bites: a case report and review of the literature.*Saudi J. Kidney Dis. Transpl*, 1996. 7:309-12.

Alirol, E., Sharma, S.K., Bawaskar, H.S., Kuch. U. and Chappuis, F. Snake bite in South Asia: A review. PLoS *Negl Trop Dis.*, 2010. 4:e603.

Basu, J., Majumdar, G., Dutta, A. *et al*. Acute renal failure following snake bites (viper). *J. Assoc. Physicians India.*1977; 25:883-90.

Bawaskar, H.S. Snake venoms and antivenoms: Critical supply issues.J Assoc Physicians India 2004. 52:14‑7.

Bhat, R.N. Viperine snake bite poisoning in Jammu. *J. Indian Med. Assoc*., 1974. 63:383-92.

Brunda, G., Sashidhar, R.B. Epidemiological profile of snake‑bite cases from Andhra Pradesh using immunoanalytical approach. *Indian J. Med.Res.*, 2007. 125:661‑8.

Gaitonde, B.B., Bhattacharya, S. An epidemiological survey of snake bite cases in India. *Snake* 1980. *12*: 129-33.

Kulkarni, M.L., Anees, S. Snake venom poisoning—an experience with 633 cases. *Indian Pediatr* 1994. 31:1239–44.

Meenatchi sundaram, S., Parameswari, G., Michael, A., Ramalingam, S. Neutralization of the pharmacological effects of Cobra and Krait venoms by chicken egg yolk antibodies. Toxicon 2008. 52:221‑7.

Sharma, B.D. Indian poisonous snakes: an ecological and a clinical study. New Delhi: Anmol Publications Pvt. *Ltd*, 2002.

Sharma, S.K., Chappuis, F., Jha, N., Bovier, P.A., Loutan, L., Koirala, S. Impact of snake bites and determinants of fatal outcomes in southeastern Nepal. Am J Trop Med Hyg 2004. 71:234‑8.

Simpson, I.D., Norris, R.L. Snakes of medical importance in India: Is the Concept of the" Big 4" still relevant and useful? *Wilderness Environ Med.*, 2007. 18:2-9.

Waghmare, A., Deopurkar, R.L., Salvi, N., Khadilkar, M., Kalolikar, M., Gade, S.K. Comparison of Montanide adjuvants, IMS 3012 (Nanoparticle), ISA 206 and ISA 35 (Emulsion based) along with incomplete Freund's adjuvant for hyperimmunization of equines used for production of polyvalent snake antivenom. Vaccine 2009. 27:1067‑72.

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