



CLINICAL PROFILE OF CHILDREN IN SNAKE BITE ADMITTED IN DMCH

Pediatrics

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ABSTRACT

Objectives: The objective of the study was to determine the clinical profile of children in a snake bite admitted in DMCH. **Materials and methods:** Data were collected from the children admitted in Darbhanga Medical Hospital, Laheriasarai. **Results:** Out of 200 children, 115 (57.5%) children were male and 85 (42.5%) children were female. Out of 181 children due to neuromuscular snakebite all children 181 (100%) presented with ptosis, 170 (94.4%) children presented with pain abdomen, 120 (66.7%) children presented with vomiting and 90 (49.7%) children presented with diplopia. Out of 19 children due to vasculotoxic snakebite, 12 (63.2%) children presented with local edema, 15 (78.9%) children presented with cellulitis, 1 (5.3%) children presented with gum bleed, 8 (42.1%) children presented with hematuria and 1 (5.3%) children presented with hematemesis. 150 (82.3%) children presented with respiratory distress and 1 (5.3%) children presented with acute renal failure. Out of total children, 3 (15.8%) children had reaction to ASV and 5 (2.5%) children died. **Conclusion:** Early diagnosis, appropriate treatment and close monitoring of children for development of complication and its appropriate management can be life saving. Timely and judicious administration of adequate dose of anti-venom minimizes the mortality and severe morbidity among children.

KEYWORDS

Snakebite, neuromuscular snakebite, vasculotoxic snakebite.

INTRODUCTION

Snake bite is a neglected public health problem in many tropical and subtropical regions of the world, especially the Middle East, North Africa, South Asia, and Latin America, although the mortality and morbidity rates from snake bite are high. Although the exact number of snake bites is unknown, an estimated 5.4 million people are bitten every year, resulting in 1.8 to 2.7 million cases of poisoning. As per the WHO fact sheet on snake bites, an estimated 81,000 to 138,000 people die each year as a result of snake bites, and there are approximately 3 times more cases of amputations and other definitive disabilities.^{1,2}

There are various venomous and non-venomous species of snakes worldwide. There are 236 species of snakes in India, most of them are non-poisonous. There are 13 species known to be poisonous, out of these only four species cause maximum poisonous bites. These four species are Cobra, Russell viper, Saw-scaled viper and common krait.³

In India the number of snake-bite fatalities has long been controversial. Estimates as low as 61,507 bites and 1,124 deaths in 2006 and 76,948 bites and 1,359 deaths in 2007 and as high as 50,000 deaths each year have been published.⁴

Snake bite is most common in school age children, adolescent and young adults. It accounts for 3% of all deaths in children of ages 5-14 years. Ninety seven per cent of the victims of snake bite die in rural areas with a survival rate of 3%, among the 97% deaths around 77% are outside health care facilities, presumably because they chose traditional therapy from tantriks, vaidyas and ojhas.⁵

The Aim of the study is to determine the clinical profile of children in snake bite admitted in DMCH.

MATERIALS AND METHODS

The study was carried out in the Department of Paediatrics, DMCH, Laheriasarai. Permission from the hospital authority and ethical committee was taken before conducting this study.

All the children who had presented to the Paediatric emergency department of DMCH with alleged history of snakebite were divided into poisonous and non-poisonous snake bites depending upon the development of the clinical features. A total of 240 children presented to the paediatric emergency department of DMCH. All children due to poisonous snake bite received ASV for treatment on admission and were included in the study. A detailed informed consent was taken from their parents whose children were included in the study.

All children that were included in the study were initially evaluated

with complete history and physical examination. Clinical data about age, sex, clinical manifestation, complication and outcomes were recorded. All children that were included in the study, were given symptomatic treatment along with tetanus toxoid, antibiotics and adequate hydration.

All children that were included in the study were also investigated for complete blood count, renal function test, electrolytes, routine examination of urine, bleeding and clotting time, 20 minute whole blood clotting time and chest radio graph.

ASV were administered by intravenous route after a skin sensitivity test and the dose administered were based on the quantity of particular venom (in mg, dry weight) that can be neutralised by each milliliter (ml) of anti-venom. 50 to 150 ml of a ASV, which was diluted with 300 ML of normal saline, was administered to the children and if needed the dose of ASV were repeated till all the systemic signs and symptoms were disappeared.

The children's were regularly monitored for any neurological or haematological abnormality. The end point of the study was normalization of haematological or neurological parameter or death.

RESULTS

A total of 240 children presented, out of which 200 bites were due to poisonous snakes that were included in the study and 40 bites were due to nonpoisonous snakes that were excluded from the study.

The most common site of bite was lower limb where marks were seen in 165 (82.5%) children which was followed by upper limb which was seen in 28 (14%) children and other site have 7 (3.5%) children. Many times bite marks were very faint which would be appreciated only after keen observation.

In the study, it was found that out of 200 children, 115 (57.5%) children were males and 85 (42.5%) children were females. Out of 115 male children, 103 (89.6%) children were due to neuromuscular snakebite and 12 (10.4%) children were due to vasculotoxic snakebite. Out of 85 female children, 78 (91.8%) children were due to neuromuscular snake bite and 7 (8.2%) children were due to vasculotoxic snakebite. There were various mode of presentation among children suggestive of either vasculotoxic or neuromuscular nature of the bite.

Among 181 children due to neuromuscular snakebite, all children 181 (100%) presented with ptosis. 170 (94.4%) children presented with pain abdomen, 120 (66.7%) children presented with vomiting and 90 (49.7%) children presented with diplopia. **Table 1**

Table 1: Clinical profile of children in neuroparalytic snake bite (N=181)

Clinical presentation	No. of children	Percentage of children
Ptosis	181	100%
Pain abdomen	170	94.4%
Vomiting	120	66.7%
Diplopia	90	49.7%

Out of 19 children due to vasculotoxic snakebite, 12 (63.2%) children presented with local edema, 2 (10.5%) children presented with pain, 15 (78.9%) children presented with cellulitis, 1 (5.3%) children present with gum bleed, 8 (42.1%) children with hematuria and 1 (5.3%) children presented with hematemesis. **Table 2**

Table 2: Clinical profile of children in vasculotoxic snake bite (N=19)

Clinical presentation	No. of children	Percentage of children
Local oedema	12	63.2%
Pain	2	10.5%
Cellulitis	15	78.9%
Gum bleed	1	5.3%
Hematuria	8	42.1%
Hematemesis	1	5.3%

Various complications encountered in our study including reaction to ASV. Among 181 children due to neuroparalytic snake bite, 150 (82.3%) children were landed in respiratory distress for which they had been given artificial ventilation. Out of 19 children due to vasculotoxic snakebite, 5 (26.3%) children had hypotension and 1 (5.3%) children had acute renal failure. Out of 200 children that were given ASV, only 3 (15.8%) children had reaction to ASV, who were treated with Pheniramine maleate and dexamethasone after stopping ASV infusion. The infusion was restarted again after 20 minutes at the rate which was tolerated by the patient.

A total of 5 (2.5%) death occurred among all the snake bite children, out of which mortality rate was higher when treatment was sought at longer time interval from the time of bite. **Table 3**

Table 3: Complication in children

Complications	No. of children	Percentage of children
Respiratory distress	150 (n=181)	82.3%
Hypotension	5 (n=19)	26.3%
Acute Renal Failure	1 (n=19)	5.3%
Reaction to ASV	3 (n=200)	15.8%
Death	5 (n=200)	2.5%

DISCUSSION

Venomous snakes are distributed throughout the warm continents. *Bungarus caeruleus* (krait), *Naja naja* (cobra), saw scaled (echis carinatus) and Russell's viper are poisonous snake. Cobra and krait are common poisonous snakes flourished all over rural Bihar.

In the study, it was found that incidence was more in males (57.5%) as compare to the girls (42.5%), which was similar to the result obtained in the study done by Jamieson et. al.⁶ and Shrestha et. al.⁷ but was not similar to the result obtained in the study done by Currie et. al.⁸ This variation in the result can be attributed to the behaviour and nature to play more of outdoor games by male children.

In the study it was found that 45 children were admitted in the hospital after six hour of bite due to which mortality rate was high among them. This result can be explained as snakebite is more common in rural areas and primary healthcare is not approachable due to non-availability of transport during night hours. This variation can also be explained due to mentality of the villagers to seek the treatment first from tantriks, vaidyas and ojhas and presenting to the hospital later.⁹

In the study, it was found that 82.5% of children have bite marks on lower limb and 14% of children have bite mark on upper limb which was similar to the result obtained in the other study.¹⁰⁻¹² This result can be explained due to accidental stampede while walking or playing in the dark leading to bite marks on lower limb and children are very curious and have habit to explore various holes which maybe the hiding places of snakes which may lead to the bite on upper limb and other site on the body.¹³

In the study it was found that, 82.3% of children of neuroparalytic

snakebite develop respiratory distress which was similar to the result found in the study done by Onyiriuka et. al.¹⁴

In the study, it was found that in vasculotoxic snakebite 63.2% children present with local edema, 78.9% present with cellulitis and 5.3% present with acute renal failure which was not similar to the results found in the other study.¹⁵

The syndromes present, neurotoxic with or without local tissue damage, match with the species of venomous snakes locally described as being in the region. Cobra and Krait. This study provides evidence of *Naja naja* being responsible for the syndrome of neurotoxicity with tissue damage in North Bihar. Patients have a much better ability to identify cobras than other snakes¹⁶ as in this study most of the children whether it is male or female had neuroparalytic a snake bite than vasculotoxic snake bite.

CONCLUSION

From the study we conclude, that snakebite is an important and serious medical problem in many parts of India. Mortality rate is high among the patient presenting late for medical treatment so awareness among people is important regarding seriousness and early treatment. Early diagnosis, appropriate treatment and close monitoring of children for development of complication and it's appropriate management can be life saving. Timely and judicious administration of adequate dose of anti-venom minimizes the mortality and severe morbidity among children.

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