

Study of Clinical Profile and Complications of Snake Bite in Paediatric Age Group

Jinal Trivedi*¹, V.Y.Kshirsagar², Sudheer Beemarapu³
Department of paediatrics, Krishna institute of medical sciences, Karad -415110 India.

Date of Submission: 15-07-2021

Date of Acceptance: 31-07-2021

ABSTRACT

Introduction: In any language of the world, snake produce's unimaginable fear and anxiety. Right from the cases where earliest man lived, snakes would have caused first kind of poisoning. Our aim was to study clinical profile, complications and outcome in patients of snake bite in paediatric age group.

Design: Present study was conducted in Dept of paediatrics of Krishna Institute Of Medical Sciences, karad on all indoor patients of snake bite. It is a Prospective observational study in tertiary care centre

Aims and objectives :- To study the incidence of snake bite in children . To study the clinical profile of snake bites in children .To study the complications and their management .

Result: Majority had poisonous snake bite (57.81%) of which majority of these bites were vasculotoxic(56.75%) . In outcome, majority of the patients i.e. (96.88%) survived and 2 patients died due to respiratory failure .Majority had hospital stay for less than 3 days(51.56%).

Conclusion: Most of the cases were from Rural areas . Vasculotoxic snake bites were more as compared to neurotoxic snake bites .Mortality rate is higher with vasculotoxic snake bite as compared to neurotoxic snake bite . Males were more frequently affected as compared to females

Snake bite which is an important cause of death in rural patients in developing countries, is a neglected public health problem^[1]. It is a recent inclusion to the list of neglected tropical diseases drawn up by the World Health Organization, and it could be the most neglected of all tropical diseases in the 21st century, according to a new analysis^[2]. Recently the Government of India's Central Bureau of Health Intelligence reported only 985 snake bite deaths in 2010. Its incidence is usually underestimated because of lack of epidemiological data. 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^[3].

In any language of the world, snake produce's unimaginable fear and anxiety. Right from the cases where earliest man lived, snakes would have caused first kind of poisoning. The death caused then, might have been first alarm of sensing death at vision of a snake^[3]. Annual mortality from snakebites continues to be as high as 30 to 40 thousand in the world. Snake bite, is almost always an accident. Snakes are legless cold blooded reptiles. Of the 2500 – 3000 species, about 500 belong to the four families of venomous snakes and only about 200 species are poisonous. Nearly 3500 species of snakes exist in the world. India has about 216 varieties of snakes of which about 52 are venomous and of these only 4 varieties of snakes are commonly encountered as the cause of snakebite.

I. INFORMATION

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]. In Maharashtra, common poisonous snakes are cobra, russell viper, saw scaled viper and krait^[6]. Also, snake bite cases have shot up sharply due to long period of electric load shedding in villages leaving them in darkness. Snake bite is thus an important medical emergency and important cause of hospital admission in a rural set up.

II. AIMS OF THE STUDY :-

To study the incidence of snake bite in children .
To study the clinical profile of snake bites in children .
To stud the complications and their management .

III. MATERIALS AND METHODS :-

This is a retrospective, descriptive study conducted in the paediatric department of Krishna Institute of Medical Sciences, Karad, Maharashtra, India between June 2016 – May 2019. All the patients who had presented to us with alleged history of snake bite and received ASV for treatment were registered for the study. Clinical data about age, sex, clinical manifestations, complications and outcome were obtained from case records and were analyzed.

According to our protocols our patients are initially evaluated with a complete history and physical examination. All our snake bite patients are investigated with complete blood count, renal function tests, electrolytes, urine for hematuria, bleeding and clotting time, 20 minute whole blood clotting time . ASV is administered by intravenous route only after taking proper informed consent from the parents.

Anti-venom dosing recommendations are based on the quantity of particular venom (in mg, dry weight) that can be neutralized by each milliliter (ml) of antivenom. In India, each milliliter of polyvalent antivenom is supposed to neutralize 0.6mg of Indian cobra venom, 0.6 mg of Russel viper venom, 0.45 mg of common krait venom, 0.45 mg of saw scaled viper venom^[2]. Skin testing is done prior to ASV administration. According to the severity of symptoms 50-150 ml of ASV was diluted with 200 ml of normal saline and administered as a bolus dose.

Depending on the clinical response the dose is repeated till all the systemic signs and symptoms disappeared. The patients are examined for development of any neurologic or hematological signs and symptoms. Hematological parameters are monitored. The end point of the study was normalization of hematological or neurological parameter or death.

The snake bite was considered as poisonous in the presence of one or more of the following criteria

Neuroparalytic snake bite :-

Patients with following features were considered as neuroparalytic snake bite :-

- 1) Altered Sensorium
- 2) Bulbar involvement : Diplopia/ Ptosis/ Ophthalmoplegia / Dysphagia
- 3) Convulsions
- 4) Respiratory insufficiency
- 5) Neck muscle weakness

Vasculotoxic snake bite :-

Patients with following features were considered as vasculotoxic snake bite :-

- 1) Internal bleeding :- Haemetemesis
- 2) External bleeding :- Through sites of bite / hemoptysis / gums/ epistaxis
- 3) Altered bleeding parameters
- 4) Local effects :- swelling/ cellulitis/ Gangrene
- 5) Acute renal failure

Treatment of complications :-

- 1) Acute renal failure :- was managed conservatively with IV Fluids , Lasix , strict input/output charts and other supportive measures along with renal diet . Dialysis was considered when conservative management failed
- 2) Shock :- was treated with IV Fluids , Blood transfusions , steroids and other supportive measures
- 3) Respiratory failure :- was treated with endotracheal intubation , tracheostomy , IPPV and other supportive measures .
- 4) Surgical intervention :- like Fasciotomy skin grafting was done whenever required .

IV. OBSERVATIONS :-

The incidence of snake bite contributed to total 1.6% of our total hospital admissions during the study period

TOTAL CASES :- 100

MALES :- 68

FEMALES :- 32

TABLE NO 1 :- INCIDENCE OF SNAKE BITE ACCORDING TO THEIR TOXICITY

TOTAL CASES	POISONOUS	NON- POISONOUS
100	48 (48%)	52(52%)

The above table shows that out of total 100 cases , 48 were poisonous (48%) and 52 were Non poisonous (52%)which is statistically not significant

Out of 100 cases , 68 were males (68%) and 32 were females (32%) which suggests that males are more frequently affected as compared to females .

TABLE NO 2 :- DISTRIBUTION OF CASES ACCORDING TO AGE AND THEIR MANIFESTATIONS :-

AGE GROUP IN YRS	LOCAL TOXIC MANIFESTATIONS	LOCAL TOXIC +VASCULO TOXIC MANIFESTATIONS	LOCAL TOXIC + NEURO TOXIC MANIFESTATIONS	NEURO TOXIC MANIFESTATIONS	LOCAL TOXIC +VASCULO TOXIC + NEURO TOXIC MANIFESTATIONS	SNAKE BITE	TOTAL
<5	3	5	2	0	0	10	10(10%)
6-9	2	15	4	1	0	22	22(22%)
10-12	5	38	15	7	3	68	68(68%)
TOTAL	10 (10%)	58(58%)	21(21%)	8(8%)	3(3%)	100	100 %

It is observed that incidence of snake bite below 5 years showed 10 cases (10%) , between 6 -9 yrs showed 22 cases (22%) , and between 10 – 12 yrs showed 68 cases (68%) .

Local toxicity was alone was present in 10 cases , local with vasculotoxicity was present in 58 cases ,

local with neurotoxicity was present in 21 cases , neurotoxicity alone was present in 8 cases , local with vasculo with neurotoxicity was present in 3 cases.

TABLE NO 3 :- INCIDENCE OF VARIOUS VASCULOTOXIC CASES (TOTAL 30 CASES)

SYSTEMIC EFFECTS	NO. OF CASES	PERCENTAGE
Hematuria	19	63.3%
Haematemesis	3	10%
Bleeding from gums	7	23.3%
Oliguria	1	3.3%
Hemoptysis	0	0%

The above table suggests that out of total 30 cases of vasculotoxic snake bite , 19 cases showed hematuria , 3 cases showed haematemesis , 7 showed bleeding gums and 1 had oliguria

TABLE NO 4 :- INCIDENCE OF VARIOUS NEUROTOXIC CASES (TOTAL 18 CASES)

NEUROLOGICAL MANIFESTATIONS	NO. OF CASES	PERCENTAGE
Ptosis	7	38.8%
Ophthalmoplegia	2	11.1%
Dysphagia	1	5.5%
Respiratory distress	3	16.6%
Respiratory paralysis	5	27.7%

The above table suggests that out of total 18 cases of neurotoxic snake bite , 7 cases shows ptosis , 2 cases showed ophthalmoplegia , 1 showed dysphagia , 3 showed respiratory distress and 5 has respiratory paralysis

TABLE NO 5:- INCIDENCE OF CHANGE IN HAEMATOLOGICAL TESTS

BLOOD TESTS	NO. OF CASES	PERCENTAGE
PROLONGED BT	25	83.3%
PROLONGED CT	24	80%

URINE RBC's	15	50%
-------------	----	-----

Out of total 30 vasculotoxic snake bites , 25 cases had prolonged BT and 24 had prolonged CT and 15 cases had urine RBC's.

TABLE NO 6 :- PROGNOSIS OF THE TOTAL CASES IN THE PRESENT STUDY :-

	NON TOXIC	LOCAL TOXIC	VASCU LOTOXI C	NEUROTOXIC	LOCAL+ VASCULO+ NEURO	TOTAL
RECOVERED	48	8	26	11	1	94 (94%)
DIED	0	0	2	4	0	6 (6%)

From the above observations , out of total 100 cases , 94 recovered and 6 died .

I. DISCUSSION

The highest incidence at 6-12 yrs could be due to children involved in labor and farm work⁽¹⁾The higher incidence in boys could be due to boys more involved in outdoor activities and risky behavior. ^(2,3,4) Most cases of snake bite occurring in rainy season & the incidence varies in India due to different pattern of rainfall and agricultural activities.^(1, 5) Majority of cases were admitted within first 6 hours and this helps in assessment of severity of envenomation and administration of antismoke venom. This early referral could be due to significant awareness of snake bite and its treatment in rural areas. ⁽⁶⁾

The variation in the snake bike may be due to geographical distribution in various parts of worlds⁹. The most common complication was cellulitis followed by neuroparalysis and DIC. Many other studies have similar findings.^(6,10) due to vasculotoxic or neuroparalytic cases .In present study, majority of cases survived and 2 patients died of respiratory failure. Many studies observed the same findings.^(11,12)

II. CONCLUSION

Of the four major virulent types of poisonous snakes in India , the common species encountered are Viper and Cobra .

100 patients of snake bites were studied

- 1)Maximum incidence of snake bites were studied , found during the months from May to October
- 2) Males (68%) were bitten more frequently than females (32%)
- 3) 95% cases were from rural areas
- 4) 18% cases were neurotoxic snake bites , 30% were vasculotoxic snake bites out of total 48 poisonous snake bites
- 5) 52 % bites were non – poisonous snake bites
- 6) out of 30 vasculotoxic snake bites 26 recovered completely and 2 died

7) out of 18 neurotoxic snake bites 4 died and 11 recovered completely

8) Total out of 100 cases , 94 patients recovered completely and 6 died .

CONFLICT OF INTEREST

There are no conflicts of interest

FINANCIAL SUPPORT AND SPONSORSHIP

Nil

BIBLIOGRAPHY :-

- [1]. Inamdar IF, Aswar NR, Ubaidulla M, Dalavi SD. Snake bite: Admissions at a tertiary health care centre in Maharashtra, India. S Afr Med J. 2010;100(7):456-8.
- [2]. Kshisagar VY, Ahmed M, Colaco SM. Clinical profile of snake bite in children in rural India. Iran J Pediatr. 2013;23(6):632-6.
- [3]. Savioli L. Neglected Tropical Diseases. Available from: http://www.who.int/neglected_disease/Savioli_presentation.pdf?ua=1
- [4]. Chaudhary S, Singh S, Chaudhary N, Mahato SK. Snake bite in Nepal. J University College Med Sci. 2014;2(3):45-53.
- [5]. Kasturirantne A, Wickremasinghe AR, Silva N, Gunawardena NK, Pathmeswaran A. The global burden of snake bite: a literature analysis and modeling based on regional estimates of envenoming and deaths. PLoS Med. 2008;5(11):218.
- [6]. Warrell DA. Epidemiology of snake bite in South East Asia Region. In: Warrel DA(ed) Guidelines for management of snake bite. New Delhi: WHO regional office for South Asia. 2010;1:135.
- [7]. Chippaux JP. Snake bites: appraisal of the global situation. Bull World Health Organ. 1998;76(5):515-24.
- [8].

- [9]. Kumaravel KS, Ganesh J. A study on the clinical profile of children with snake envenomation in a tertiary referral centre at Dharmapuri, Tamilnadu, India. *Int J Res Med Sci.* 2016;4(6):2142-5.
- [10]. Chandrashekar C, Shariff MA, Gopal K, Ravichander B. Clinical profile of snakebite in children. *J Evidence Based Medi Healthcare.* 2015;2(29):4176-84.
- [11]. Krishana VM, Sheikh NA, Soren C. Clinical profile and outcome of snake bite envenomation in children: a retrospective study in a tertiary care centre KIMS Narketpally. *Int J Information Res Rev.* 2014;1(11):155-8.
- [12]. Sani UM, Jiya NM, Ibitoye PK, Ahmad MM. Presentation and outcome of snake bite among children in Sokoto. North-western Nigeria. *Sahel Med J.* 2013;16(4):148-53.
- [13]. Reddy MP, Sudharshan RC. Clinical, epidemiological and hematological profile of snake bite in children in rural teaching hospital. *Int J Health Sci Res.* 2015;5(7):58-63.
- [14]. Lingayat AM, Wankhade PR. Study of clinical profile complications and outcome in patients of snake bite in pediatric age group. *Int J Healthcare Biomed Res.* 2015;3(3):203-8.
- [15]. Digra S, Singh V. A clinical profile of neurotoxic snakebite in pediatric population of Jammu region. *JK Sci.* 2016;18(2):67-70.
- [16]. Chew KS, Khor HW, Ahmad R, Rahman H. A five year retrospective review of snakebite patients admitted to a tertiary university hospital in Malaysia. *Int J Emerg Med.* 2011;4:41.
- [17]. Wang JD, Tsan YT, Chiao M, Wang LM. Venomous snakebites and antivenom treatment according to a protocol for pediatric patients in Taiwan. *J Venom Anim Toxins Incl Trop Dis.* 2009;15(4):667-79.
- [18]. Paudel KM, Poudyl VP, Rayamajhi RB, Budhathoki SS. Clinico-epidemiological profile and outcome of poisonous snake bites in children using the WHO treatment protocol in western Nepal. *J Nobel Medical College.* 2016;4(7):21-5.
- [19]. Chinchorlikar SV, Patniak B, Raje S. Awareness of snake bite and its first aid management in rural areas of Maharashtra. *Indian J Community Health.* 2014;26(3):311-5.
- [20]. Gautam P, Sharma N, Sharma M, Choudhary S. Clinical and demographic profile of snake envenomation in Himachal Pradesh, India. *Indian Pediatr.* 2014;51(15):934-5.
- [21]. Adhisivam B, Mahadevan S. Snakebite envenomation in India: a rural medical emergency. *Indian Pediatr.* 2006;43:553-4.