

# Study on Clinical Profile of Snake Bite in Children between 1 to 14 years, Presented to SCB Medical College, Cuttack & Adverse Reactions to Anti-snake Venom

Mangal Murmu\*

Department of toxicology, S C B Medical College, Cuttack, Odisha, India

## ABSTRACT

It is estimated that about 5.4 million snake bites, 2.5 million envenomations, 1.25 lakhs deaths worldwide and about 45 thousand deaths occurs in India annually. In 2009 the world health organization added snake bite to its list of neglected tropical diseases, knowing the importance of the severity of the disease. Antisnake venom is only definite treatment of snake bite which acts by neutralizing the venom in circulation and in tissue fluid. An adverse reaction to ASV is common, unpredictable and fatal at times.

**Key words:** Anti-snake Venom, Snake Bite, Vasculotoxic snake bite, Odisha

**HOW TO CITE THIS ARTICLE:** Mangal Murmu Study on Clinical Profile of Snake Bite in Children between 1 to 14 years, Presented to SCB Medical College, Cuttack & Adverse Reactions to Anti-snake Venom, J Res Med Dent Sci, 2021, 9(9): 1-8

**Corresponding author:** Mangal Murmu

**e-mail:** mangal74murmu@yahoo.co.in

**Received:** 12/10/2021

**Accepted:** 25/10/2021

## INTRODUCTION

Usually more than 20 % cases develop either early (within few hours) or late (5 days or more) adverse reactions to ASV. These reactions are divided into early anaphylactic reactions (both IgE and non-IgE mediated), pyrogenic (endotoxic) reactions and late serum sickness type reactions. ASV usage remains a very risky job and the death due to ASV reactions are sometimes wrongly attributed to anti-venomation. Allergic reactions following ASV administration are often very serious leading to either temporary or permanent cessation of the ASV administration. In addition, the significant problem of acute adverse reactions to ASV compounded by a lack of appropriate recommendations regarding prevention, diagnosis and management of such reactions. Some cases of severe envenomation even the patient is allergic to ASV, it has to be given as there is no alternative drugs available. Prophylactic use of hydrocortisone and antihistaminic before infusion of antivenom is widely practiced although there is limited evidence of their efficacy. De Silva et al<sup>3</sup> studied the effect of promethazine and hydrocortisone. They concluded that premedication with promethazine resulted in 77 % reduction in incidence of early anti venom reactions but hydrocortisone has limited role as they take several hours for their effect and by that time early anaphylactic reactions have taken their toll. Adrenaline is the most effect treatment for management for early anaphylactic reactions by reducing bronchospasm and capillary

permeability. A clinical trial by Premawardhana<sup>2</sup> documented decrease in incidence of anti-venom reactions from 43 % to 11 % with low dose adrenaline premedication. However, potential rare side effect like intracranial bleeding, hypertension limits their usefulness. De Silva et al<sup>3</sup> studied the effect of premedication with low dose adrenaline, promethazine and hydrocortisone alone and in various combinations. However, at present evidence for prevention of anaphylaxis by various premedication is controversial.

There is limited data on this topic globally and also from India especially pediatric population. So this study is undertaken in SCB Medical College, Cuttack, a tertiary care hospital in Odisha to see the prevalence & types of adverse reactions to ASV in this part of world. This hospital based cross sectional study is designed to properly delineate all aspects of snake bites, especially demographic profile, correlation of clinical features with envenoming species with special focus on anti-venom related in pediatric age group.

## AIMS AND OBJECTIVES

To determine the clinical profile of snake bite patients presenting to a tertiary care hospital.

To assess the types & proportions of adverse reactions to anti snake venom (ASV) in pediatric age group.

## METHODS

The present cross sectional study has been taken up at SVPPGIP & SCB Medical College, Cuttack, Odisha, India. Patients of age group 1-14 years with snake bite attending the outpatient department or emergency during the period

of December 2017 to November 2020 were included in the study. A total of 80 numbers of patients were included in this study according to the inclusion and exclusion criteria. Institutional ethical committee has approved this study vide letter no-48/07-02-2020.

### Inclusion Criteria

All indoor & outdoor cases in the age group of 1-14 years alleged to have snake bite.

### Exclusion Criteria

1. Patients with unknown bites
2. Patients who have received ASV prior to admission to our hospital
3. Patients who went LAMA (Left against medical advice) prior to detail evaluations.

### Study Procedure

Patients with signs of envenomations were given ASV. The patients were given 10 vials of anti-venom dissolved in 10ml/kg (250-500ml) of isotonic saline as an intravenous infusion over one hour. Anti-venom treatment was repeated if in neurotoxic snake bite after giving 10 vials of ASV the neurotoxic symptoms either did not improve or worsened (after one hour of first dose) and in vasculotoxic bite 20 minute whole blood clotting time (WBCT) remains abnormal after six hours. Routine blood examinations like Complete blood count, C reactive protein, and renal function test were done. Patients were kept in the hospital for 96 hours after the infusion of anti-snake venom. Parameters like blood pressure, pulse rate, respiratory rate, temperature and respiratory system, cardiovascular, nervous system examination were carried out at half an hour interval for

at least 4 hours. At the first sign of anti-snake venom or prophylaxis temporary stoppage of medication was done. Then patient was given intramuscular adrenaline (0.01mg/kg IM 1:1000 dilution), intravenous chlorpheniramine (0.2/kg IV) or intravenous hydrocortisone (2mg/kg) as rescue medication. When reaction was controlled anti venom was restarted as soon as possible.

Adverse reactions to anti snake venom were classified as mild, moderate or severe according to international classification of anaphylaxis (Modified Hartwig Scale).

Mild: Facial edema, Pruritus, Urticaria, Fever or Rigor

Moderate: Abdominal pain, Nausea, Vomiting, Bronchospasm, Stridor, Angioedema

Severe: Drowsiness or Altered sensorium, Systolic Blood pressure <80mm of Hg, Cyanosis, Confusion.

### Statistical analysis:

The data were expressed in simple percentage, relative risk & odds ratios as appropriate. All the data obtained were present in tabulated form & were statistically evaluated appropriately.

### RESULTS

Out of total 80 patients 50 cases (62.5 %) were vasculotoxic, 16 cases (20 %) were neurotoxic and 14 (17.5 %) were non-poisonous snake bites. Rural are contribute maximum number of cases (81.25 %). There was hardly difference of bite timing by snake; most bites were in the court yard (37.5 %). The lower socioeconomic status group contributes the 63 cases. The maximum number of bite seen in lower limb (72.5 %) followed by upper limb, minimum in the face and trunk.

**Table 1: Table 1. Different Parameter in Snake Bite(n=80).**

Parameter	Number	Percentage
Type of snake	Vasculotoxic	50
	Neurotoxic	16
	Non poisonous	14
Area	Rural	65
	Urban	15
Time of	6 am-6pm	40
Bite	6pm-6am	39
	Unknown	1
Place of bite	Inside house	20
	Court yard	30
	Outside court yard	25
	Near water source	4
	Unknown	1
Type of	First aid	20

First aid	Traditional	4	5
	No first aid	56	70
First aid	Tourniquet	12	15
	Immobilization	8	10
Socio-economic	Lower	40	50
stutu	Upper lower	23	28.75
	Lower middle	13	16.25
	Upper middle	2	3.75
	Upper	1	1.25
Site of bite	Lower Limb	58	72.5
	Upper Limb	14	17.5
	Trunk	3	3.75
	Face	2	2.5
	Genital Area	1	1.25
	Unknown	2	2.5

Out of total 80 cases 51 cases (63.75 %) were male and rest 29 cases (36.25 %) were female.

**Table 2: Age and Sex Distribution of Cases(n=80).**

Age in years	Male	Percentage	Female	Percentage	Total
44200	8	10	6	7.5	14
44325	9	11.25	7	8.75	16
44483	34	42.5	16	20	50
TOTAL	51	63.75	29	36.25	80

Out of total 80 cases 51 cases (63.75 %) were male and rest 29 cases (36.25 %) were female.

**Table 3: Monthly Distribution of Cases(n=80).**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Number/%	1(1.25)	1(1.25)	4(5)	5(6.25)	6(7.5)	21(26.25)	15(18.75)	12(15)	9(11.25)	3(3.75)

The maximum number of bite is seen in June-July month i.e. in rainy season.

**Table 4: Duration between Snake Bite and IST Dose of ASV(n=66).**

Duration	No of Case	Percentage
<2HRS	43	65.15
2-4HRS	14	21.2
4-6 HRS	5	7.57
6-12HRS	2	3.03
>12 HRS	2	3.03

Out of 66 cases 43 cases (65.15 %) received ASV within 2hours; another 14 patients (21.2 %) received within 2-4 hours.

**Table 5: Clinical Presentation of Snake Bite(n=80).**

Clinical Presentation		Number of Cases	Percentage
Local	Pain/tenderness	67	83.75
	Lymphangitis	5	6.25
	Local Swelling	64	80
	Cellulitis	32	40
	Bleeding from Local Sites	5	6.25
	Gangrene	2	2.5
Systemic	Nausea&Vomiting	63	78.75
	Pain Abdomen	30	37.5
	Bleeding from other Sites	17	21.25
	Fever	38	47.5
	Oliguria/Anuria	18	22.5
	Ptosis	14	17.5
	Frothy Saliva	10	12.5
	Drowsiness	12	15
	Shock	4	5
	Coma	1	1.25

Pain & tenderness is the very common in 83.75 % cases, local swelling in 80 % cases in local clinical presentation. In systemic presentation nausea& vomiting were most common 78.75 %.

**Table 6:Reaction Following Antivenom Injection(n=10).**

Type of Reaction	Number	Percentage
Itching &Urticaria	7	70
Nausea & Vomiting	4	40
Chills	3	30
Cough	3	30
Wheezing & Breathlessness	2	20
Angioedema/Facial Edema	1	10
Fever	1	10

From 66 patients who received ASV, 10patients developed adverse reaction to ASV. Risk of getting reaction is 2.08 times more in patients receiving <20

vials than the patients those who received ≥20 vials of ASV.

**Table 7: Use of ASV and reaction (n=66).**

No of Vials	N	Reaction	No Reaction	Relative Risk
<20	16	4	12	2.08
≥20	50	6	44	
Total	66	10	56	

The above table shows there is no correlation between dose of ASV and adverse reaction.

**Table 8: Analysis of Death (n=6).**

Time of Death	Cases	Type of Envenomation	Sepsis	Shock	Dialysis	Ventilator	Adverse Reaction to ASV
>72 HRS	2	Vasculotoxic	1	2	2	0	1

>96 HRS	4	3-Neurotoxic	4	1	2	4	0
		1-Vasculotoxic					

Out of 66 cases of poisonous snake bite, 6 patient succumbed. In 2 cases death occurred after 72 hours, both being vasculotoxic; admitted to the hospital after 6 hours of bite; 1 patient had history of treatment from a traditional healer (intake of holy water). One patient presented with shock & both developed AKI after hospitalization, 1 patient had sepsis. Adverse reaction was reported in 1 case after ASV administration which was controlled with adrenaline (2 doses), hydrocortisone and chlorpheniramine.

4 patients died after 96 hours of hospitalization. 3 cases were neurotoxic snake bite and history of respiratory failure.

### Discussion

Out of 80 cases 14 (17.5 %) cases were non-poisonous and 66 cases were poisonous. Out of 66 poisonous snake bites 50 were vasculotoxic and 16 were neurotoxic. In a study by A Bharadwaj<sup>7</sup> In the year 1998 percentage of non-poisonous snake bite was 90.5 %. But in a study by Poovazhagi V et al<sup>8</sup> in a pediatric population in Tamilnadu in the year 2017 in a tertiary hospital percentage of neurotoxic snake bite was 77 %, 7.69 % being hematotoxic & 15.4 % nonpoisonous. In a study L Das et al<sup>9</sup> in Odisha in a tertiary hospital vasculotoxic snake bite was 63.48 %, neurotoxic being 17.39 % & nonpoisonous being 19.13 %. According to Banerjee et al<sup>10</sup> the viper bite is the most common bite in both in India and Odisha.

Largest majority (62.5 %) of victims were in the age group 10-14 years. Male to female ratio being 1.75:1. The sex distribution of cases of male and female was in the ratio of 2.25:1 by Poovazhagiv et al<sup>8</sup>, while L Das et al<sup>9</sup> reported the ratio to be 1.8:1 with incidence of male being 64.35 % & in female being 35.65 %. This suggests that snake bite predominantly affects the most active section of the pediatric population and during outdoor activities rather than household environment.

65 cases (81.25 %) were found in the months of May to September and in the months between June to August 50 cases (62.5 %) were seen. According to study conducted by Hati AK et al<sup>11</sup> in the year 1992 and Kularatne SAM<sup>12</sup> in 2002, 70-80 % of annual incidence of snake bite was seen in the months of May to September. Study by L Das et al<sup>9</sup> showed maximum occurrence in rainy season (59.52 %) followed by summer (22.17 %) & winter (17.12 %). The incidence of snake bites shows a distinct seasonal pattern closely related to rainfall and temperature which compels the reptiles to come out of their shelter.

50 % bites were found between 6AM-6PM, 48.7 % bites occurred between 6PM -6AM and in the rest one case time of bite is unknown. Sawai et al<sup>13</sup> observed that about 86 % bites in India occurred between 6AM and

midnight. Poovazhagiv et al<sup>8</sup> made similar observation where 52 % bites occurred in day time & 42 % from 7PM-7AM. The timing of bites corresponds to the period of maximum activity (during the day time and during evening). Out of 80 patients 63 cases (78.75 %) were from lower socioeconomic status, 16 (20 %) were from middle and 1 (1.25 %) upper socioeconomic status respectively. About 65 cases (81.25 %) were from rural area. As per Jayanti Prabha et al<sup>14</sup> 85 % cases were from rural area & low socioeconomic status (77 %). Similar observation was made by L Das et al<sup>9</sup> where snake bite incidence from rural population was 85.22 %. Snake bites mainly a disease of rural tropics as most of the people are still below poverty line and mainly rely on agriculture. They to open fields for nature's call and there is lack of proper lighting system in the street.

Most frequent site of bite was lower extremity (72.5 %). This is mainly due to bare foot walking habit and also due to the proximity of snake to the lower extremity which normally stays on the ground. This is followed by upper extremity in 17.5 % cases, trunk and face in 3.75 % & 2.5 % cases respectively. 1 case was bitten around the genitalia and in 2 cases (2.5 %) the site of bite was unknown as the patients came with signs of envenomation but no fang mark on examination. David G Lalloo et al<sup>15</sup> reported that the majority of bites (96 %) in their study group were inflicted in lower limbs. Kulkarni et al<sup>16</sup>, Mitrakul C et al<sup>17</sup> and Sawai et al<sup>13</sup> also reported that lower extremity as the most frequent site of bite with an incidence of 88.9 %, 82.9 % & 67.8 % respectively. According to Poovazhagiv et al<sup>8</sup> the commonest site of this bite was found to be foot (69.2 %), 19.23 % cases were bitten in the hand and in 11.53 % site of bite is unknown. Study by Vinayaka et al<sup>17</sup> showed that the lower limbs were the most common site of bites where fang marks were seen in 74.04 % patients. This was followed by upper limbs which had 19.75 % bite marks and other sites had 6.17 % marks. The marks were very faint in 2.46 % patients which could be appreciated only after keen observation.

Out of 80 bites, highest number of bites happened in the court yard (37.5 %) followed by outside the court yard (31.25 %), inside the house (25 %) and 4 patients were bitten near to water source and in one patient the place could not be ascertained. Study by Lalloo et al<sup>15</sup> showed that most of the snake bites happen during outdoor activities. Therefore, the incidence of snake bite is more during outdoor activities like in the cultivation fields, on road during returning to home from schools/tuitions or during playing in house yard.

Out of 80 cases total 20 cases (25 %) cases received first aid treatment before coming to hospital out of which 12 (15 %) patient's limbs were tied by tourniquets in the form of rope or piece of cloth and 8 (10 %) patient's bitten limb was immobilized. 4 (5 %) were taken to

traditional healers before coming to hospital, out of which 3 died. Therefore, treatment of snakebite by nonmedical professional is strongly discouraged which unnecessarily delays administration of ASV. In the study by Jayantiprabha et al<sup>14</sup> 58 % cases were first treated by traditional healers prior to hospitalization, similar observations were also made by Punde et al<sup>19</sup> (41 %), where as in the study by Poovazhagiv et al<sup>8</sup> pediatric population 15.38 % received native treatment in form of oral medication/local application. There is no clear cut consensus regarding first aid.

Out of 80 cases 16(24.24 %) received 10 vials of ASV, 43 cases (65.15 %) received 20 vials of ASV, 6 cases (9.09 %) required more than 20 vials of ASV. 1 patient received 30 vials of ASV. This shows that 20 vials of initial ASV as initial dose cures maximum patients and they do not require more than 2nd dose of ASV. As per study by Poovazhagiv et al<sup>8</sup> in pediatric population in 53.84 % cases required 20 vials & 46 % required 10 vials of ASV. However very high doses may be required in some cases (50 vials). Despite widespread use of anti-venom, there have been virtually no clinical trials to determine the ideal dose. As each vial of polyvalent ASV neutralizes 6mg Russel's Viper venom, 6 mg cobra venom, 4.5 mg common krait venom and 4.5 mg of Saw scaled viper venom, so the initial dose should be 8-10 vials to ensure that the majority of victims are recovered by adequate anti venom to neutralize the venom as soon as possible.<sup>4</sup>

Out of 66 patients those who received anti snake venom 43 (65.15 %) cases received within 2 hours, 14 (21.2 %) received within 2-4 hours, 5 cases (7.57 %) received within 4-6 hours, 2(3.03 %) cases received within 6-12 hours and rest 2 cases received after 12 hours. Study by S Mishra et al<sup>21</sup> the commonest time from snake bite to 1st dose of ASV was 3-6 hours. While in a study conducted by L Das et al<sup>9</sup> 15 % were admitted within 6 hours, 42.84 % within 6-24 hours & 42.09 % after 24 hours. In another study conducted by Jayantiprava et al<sup>14</sup> 8 % cases received ASV after 6 hours. Anti-snake venom should be ideally administered within 4 hours of bites but it is effective even up to 24 hours. Pain & tenderness at local sites was noted in 83.75 % cases, local swelling 80 % cases, bleeding from local sites in 62.5 % cases, lymphangitis in 6.25 % cases while cellulitis was observed in 40 % cases & gangrene in 2.5 % during hospital stay. Among systemic feature nausea and vomiting was found in 78.75 % of cases, pain abdomen in 37.5 %, frothy saliva in 12.5 %, ptosis in 17.5 %, and fever in 47.5 % during hospital stay. Among the neurotoxic bites (n=16), 10 cases (62.5 %) presented with abdominal pain, 14 cases (87.5 %) developed diplopia in 6 hours from the time of bite and 6 patients (37.5 %) developed respiratory failure for which they had to be given artificial ventilation. In a study conducted by L Das et al<sup>9</sup> commonest features was pain & swelling of affected limb in 87.39 % cases. Bleeding from local sites in 51.17 % ecchymosis and purpura in 19.56 %, hemorrhagic blebs in 23.91 %, necrosis in 6.09 %, gangrene in 4.78 % as local manifestations. In a similar study by Vinayaketa<sup>18</sup> local edema was found in 100 %

cases, pain in 9.5 %, and cellulitis in 15.6 %. As per L Das et al<sup>9</sup> nausea and vomiting were the most prominent systemic manifestation (47.83 %), pyrexia (18.26 %) altered sensorium (23.91 %), ptosis (17.39 %), shock (12.61 %), anuria (3.48 %), oliguria (10 %), hematuria (47.73 %), renal angle tenderness (33.48 %) were other systemic manifestation. According to study by Vinayaketa<sup>18</sup> bleeding from other site was found in 8.16 % cases. Among neurotoxic bites 60 % patients presented with abdominal pain which was main presenting complaint, 73.33 % patients developed diplopia in 6 hours from the time of presentation and 66.66 % patients developed respiratory failure for which they had to be given artificial ventilation.

Involvement of 3rd cranial nerve is the most common cranial nerve involved in neurotoxic snake bites. There is limited data on cranial nerve involvement in snake bite in pediatric population in previous studies. Involvement of cranial nerves is the most common sign of neurotoxic snakebite. 32 cases (40 %) (n=80) of snake bite had grade 1 initial whole blood clot quality abnormality out of which 14 cases were non-poisonous, 16 were neurotoxic & 2 were vasculotoxic who developed abnormal clot during hospital stay. Severe grade 4,5 of initial whole blood clot quality abnormality was found in 38.75 % cases all of which were vasculotoxic bites (62 % of all vasculotoxic snake bites). This test is taken as a marker of vasculotoxic envenomation. Chugh et al<sup>22</sup> observed non-clotting of blood in 75 % of cases, 47 % of cases in the series by Shastry et al<sup>23</sup> & 30 % cases in series by M L Win & Warrell et al<sup>24</sup> also showed prolonged incoagulability of blood.

Most common presentation was itching & urticaria (70 %), followed by nausea & vomiting (40 %), chills & rigors (30 %), cough (30 %), while wheezing & breathlessness (20 %), angioedema & facial edema (10 %), fever & rigor was found in 1 case only. Out of 10 cases who had adverse reactions to ASV, 7 cases were of vasculotoxic snakebite (70 %) & 3 cases were of neurotoxic bite (30 %). The frequency of early reactions varies markedly between individual anti venoms and between different batches of anti-venom from the same manufacturer, occurring with the frequency that ranges from less than 0.5 % up to 87 %, although only small proportion of reactions are life threatening<sup>15</sup>. In study by Poovazhagiv et al<sup>8</sup> occurrence of ASV reactions was 70 %. However the occurrence of ASV reactions varies across studies. Studies from elsewhere has shown that among the children the rates to be as follows - 1.2 % by Kshirsagar<sup>18</sup>, 6 % by Kumaravel et al<sup>26</sup>, 4 % by Pore et al<sup>27</sup>. The high reaction rate of 15 % (10 cases out of 66) observed in this study are in line with rate mentioned above between 0.5 % to 87 % and close to 20 % as mentioned in the study by De Silva et al.<sup>3</sup>

Previous studies have used a variety of different definitions for reactions and we chose to use an established international grading in an attempt to standardize this<sup>25</sup>. Accordingly the adverse reactions to ASV were divided into three categories - mild, moderate and severe (Modified Hartwig Seigel Scale). In study by

Deshpande et al<sup>28</sup> in a total of 56.10 suffered from anti venom reactions; the most common presentation of reaction were chills, rigors (69.3 %) followed by nausea and vomiting (41.3 %) while 10.15 % patients suffered from moderate to severe reactions like hypotension and sudden respiratory arrest. Study by Deshpande et al<sup>28</sup> there was a higher incidence of anti-venom reactions in a case of vasculotoxic snake bites as compared to neurotoxic snakebites.

The dose of ASV and its influence on the incidence of ASV reactions shown by Srimannarayan et al<sup>29</sup> in their study was as follows, 8 cases had adverse reactions after getting 30 vials of ASV and 8 cases had adverse reactions after getting 60 vials of ASV; while those by Tariang et al<sup>30</sup> has shown that low and high dose ASV had similar rate of adverse reactions. The literature by WHO state that the anti-venom reactions are dose related, however in our study we did not find any statistically significant dose response relationship of ASV to risk of reactions. Out of 10 adverse reactions 7 developed within 15 minutes and other 2 within 15-30 minutes and 1 after 30 minutes. So the adverse reactions mostly develop early within 30 minutes. Therefore maximum numbers of reactions are of early anaphylactic type followed by pyrogenic type.

Normally the adverse reaction occurs just after giving ASV. Most cases are seen within 30 minutes of giving ASV. Theakson et al<sup>31</sup> documented 33 % cases of anaphylactic response occurring 50 minutes after the initial ASV dose.

Out of 80 patients 6 patients died. Therefore, the case fatality rate was 9.09 % which was almost same as the national case fatality rate which is between 1.7 % to 20 % (Chipupaux et al 1998)<sup>32</sup>. Out of 6 patients who died in our study only one patient received hospital treatment within 6 hours and rest 4 patients received treatment after 6 hours. Hence any delay in reaching hospital in case of severe envenomation is fatal.

Global mortality from snakebites is 1.25 lakhs and annual mortality in India is around 45 thousand. The mortality rate in India is 5.4 per 10,000 population. In a study by Poovazhagiveta<sup>8</sup> overall mortality was 3.85 %. This study does not reflect the true mortality rate of snake bite in Odisha as the study has been taken up in a tertiary care hospital centre.

### SUMMARY

The case fatality in our study was 9.09 %. 82.5 % bites were poisonous and only 17.5 % bites were non-poisonous. Out of all snakebites, vasculotoxic snake bite was most common (62.5 %). Maximum numbers of cases were from the age group 10-14 years (62.5 %). The male to female ratio was 1.75:1. Majority of the snake bites occurred in the rainy season between May to September (81.25 %). Out of all 63 cases (78.75 %) belongs to lower socioeconomic status. Majority cases were from rural area (81.25 %) than urban area. The most common sites of bites was lower extremity (72.5 %) followed by the upper extremity. Out of total 80 cases, 20 cases received first aid treatment (12 cases used tourniquet & in 8 cases

limb was immobilized). 4 cases were taken to traditional healer (Tantriks) before attending hospital out of which 2 patients died. Reid's quality test showed severe grades of abnormality (grade 4,5) in 31 cases out of 66 cases of poisonous snake bite i.e. 46.96 %, while 18 cases (27.27 %) had no abnormality initially. Among the clinical features, the most common local manifestation was pain & tenderness (83.75 %) followed by swelling (80 %). Other features were lymphangitis, bleeding from site, cellulitis & gangrene. Most prominent systemic manifestations was nausea & vomiting (78.75 %), fever (47.5 %), bleeding from other sites (21.25 %), ptosis, frothy saliva, oliguria/anuria, drowsiness, shock & coma (1 patient at time of admission).

Out of total 16 neurotoxic snakebites in 87.5 % cases cranial nerves 3 was involved in form of ptosis, in 18.75 % cases cranial nerves 4 and 6 were involved and in another 37.5 % cases cranial nerves 9 and 10 were involved together. In most of the envenomation 20 vials of anti snake venom was used (65.13 %) and in another 24.24 % bites 10 vials was used. Out of 66 poisonous snake bites 65.15 % cases received anti snake venom within 2 hours and another 21.2 % within 2-4 hours. Only 4 cases (6 %) received ASV after 6 hours of bite.

Adverse reactions to anti snake venom was seen in 10 cases out of 66 cases who received ASV i.e. 15.15 % cases had mild type of adverse reaction while only 2 had moderate type of reaction. Most common reaction was in the form of itching & urticaria (70 %) followed by nausea & vomiting (40 %). Other symptoms were chills & rigor, dry cough, wheezing & breathlessness, angioedema & facial edema. Fever with rigor was noted in 1 case. There is no correlation between increased risk of adverse reactions to ASV and its doses.

### CONCLUSION

Patients with signs of envenomations should receive ASV without any delay. Keen observation for adverse reaction should be managed with appropriate preparedness. Intensive care unit for complicated case of snakebites for maintaining vitals urge need of time.

### WHAT THIS STUDY ADD

Cranial nerves 3 are the most commonly affected by neurotoxic snakebite. Adverse reactions to anti snake venom are common and high in children, unpredictable and fatal at times. These adverse reactions also contribute to the mortality and morbidity of snake bite. There is an urgent need for prevention of ASV reactions by monovalent venoms.

### REFERENCES

1. Kasturiratne, Anuradhani, Wickremasinghe Rajitha, Nilanthi de Silva Rajitha, and Gunawardena N Kithsiri, et al. "The global burden of snakebite: a literature analysis and modelling based on regional estimates of envenoming and deaths." *PLoS medicine* 5, (2008): e218.

2. de Silva, H Asita, Pathmeswaran Arunasalam, Ranasinha Channa D, and Jayamanne Shaluka, et al. "Low-dose adrenaline, promethazine, and hydrocortisone in the prevention of acute adverse reactions to antivenom following snakebite: a randomised, double-blind, placebo-controlled trial." *PLoS medicine* 8, (2011): e1000435.
3. Simpson, Ian D, and Norris Robert L. "Snake antivenom product guidelines in India:"The devil is in the details"" *Wild Env Med*18, (2007): 163-168.
4. León, Guillermo, Laura Sánchez, Andrés Hernández, and Mauren Villalta, et al. "Immune response towards snake venoms." *Inflam Allergy Drug Targe* 10, (2011): 381-398.
5. Premawardhena, AP, De Silva CE, Fonseka MMD, and Gunatilake SB, et al. "Low dose subcutaneous adrenaline to prevent acute adverse reactions to antivenom serum in people bitten by snakes: randomised, placebo controlled trial." *BMJ* 318, (1999): 1041-1043.