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Clinical Profile and Management of Snake Bite Patient Attending a Tertiary Health Centre in Kumaon Region of Uttarakhand.

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ABSTRACT

Background: Snake bite is life threatening medical emergency and a major public health problem throughout the world especially in tropical countries like India. It is one of the commonest cause of morbidity and mortality in India particularly in rural and hilly areas .The purpose of the study is to throw light on the clinical profile and management of snake bite patients attending a tertiary care centre in Kumaon region of Uttarakhand. **Methods:** All the patients of snake bite attending the department of medicine, GMC Haldwani were included in this study. **Results:** 103(64 males and 39 females) snake bite cases were studied. Majority were in age group of 15-40 with male predominance (62.1%).Majority of the snake bite were in night time (63.1%). Outdoor (64.08%) provoked bite(39.81%) , first aid received in mostly cases(61.17%) being tourniquet and ASV in 4.85%. 33% cases were bitten on upper limb 59.22 % in lower limb and 2.91% had bite on axial body. Neurotoxic bites were 61.2% and vasculotoxic were 8.7% and 30.1% was non-toxic. Krait was the most common identified snake. 26.2% had local site swelling and necrosis, 9.7% had bleeding from site of bite, 60.2% had dyspnoea, 58.3% had ptosis and 70.8% had diplopia. 29 patients required ventilator support. **Conclusion:** In our study majority of bitten patients were young males predominantly night time mostly by neurotoxic and patient reached to tertiary centre with tourniquet as fist aid treatment. Lower limb was most common site of bite and half of the patient of neurotoxic bite required ventilator support and half of hematotoxic bites required hemodialysis. Krait was most common identified snake.

Keywords: Medical Emergency, Snake Bite, Paralysis.

INTRODUCTION

Snake-bite is a life-threatening medical emergency & major public health problem throughout the World, especially in tropical countries like India. Snake bite is known to the mankind from antiquity and has been described in some of the oldest myths and medical writings.

Snake bite is one of the commonest causes of morbidity and mortality in India, particularly in rural areas. All the snakes are generally considered as poisonous, in the sense that venom in their saliva is sufficient to kill or paralyze their prey. Fact is that majority of them are non-poisonous. There are about 3000 species on the earth and they are predominantly in warm climate and bushy regions of the tropics.

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In India, there are 216 species, out of which 52 are poisonous.[1] The annual death rate due to snake bite in India is estimated to be 4.1 per 1,00,000 population.India has highest number of deaths due to snake bites in the world with 35000-50000 people dying of it each year Four species popularly known to be dangerously.[2,3]

Poisonous to man are spectacled cobra (Naja naja), common krait (Bungarus caeruleus), saw-scaled viper (Echis carinatus) and Russell's viper (Daboia russelii).[4] The most common poisonous snake among them is common krait.[5] Viperine vasculotoxic snake bite is a cause of severe morbidity and mortality in our country. The bleeding diathesis by viperine envenomation can be successfully reversed with anti-snake venom.

The foothills of Kumaon region of Uttarakhand comprises of Terai and Bhabar region which have forestry and agricultural belt. On account of this nature of terrain of this belt and people having agriculture and forest based operation, there is great interaction between man and snake. As such snakes

of different variety are commonly encountered in this part and there is a higher incidence of snake bite In 2009, snake bite was recognised for the first time by WHO as a tropical neglected disease.[6]

MATERIALS AND METHODS

Inclusion criteria -All patients of snake bite attending the department of medicine GMC Haldwani Exclusion criteria - Patient showing vague history of snake bite.

Demographic characteristics of the patients and the snake bite event such as age, gender, time of bite, site of bite, bite-to-hospital time were recorded. Symptoms and signs such as local swelling, nausea, vomiting, ptosis, tachycardia, hypotension, impending respiratory failure by single breath count (SBC), bite to injection time of anti-snake venom (ASV), ASV treatment before referral, total dose of anti-snake venom administered and duration of stay were documented. Most important investigation to be performed in vasculotoxic snake bite is 20 minute whole blood clotting time (20 minute WBCT) which helps in early detection of coagulopathy and subsequent acute renal failure. Complete blood count, liver function test, renal function tests, urine examination to rule out haematuria, coagulation profile (PT and INR) were also done. Primary outcome was defined in the form of survival or non-survival. Prognostic factors were compared in survived and non-survived groups.

RESULTS & DISCUSSION

1. **Age Group:** Total 103 patients were selected for study, out of which majority of them being in 15-40 yrs age group. Kularatne et al studied 210 patients with neurotoxic snake bite and majority of patients were in age group of 10 – 30 years (52%).[7] Sanjib et al studied 143 patients, mean age being 32 years in their study.[8]

In Rojnuckarin et al's study,[9] 271 patients with vasculotoxic bite were studied, the mean age group being 32.79±5.7 years in their study. Sharma et al studied 142 snake bite cases,[10] most being young patients with the mean age of 31.2 years.

Kalantri et al noted mean age of 32±13 years in their study in rural Maharashtra.[11]

Age Group(Years)	TOTAL No. (%)
15-20	34 (33.01)
21-30	30 (29.13)
31-40	21 (20.39)
41-50	10 (9.71)
51-60	4 (3.88)
>60	4 (3.88)
Total	103 (100)

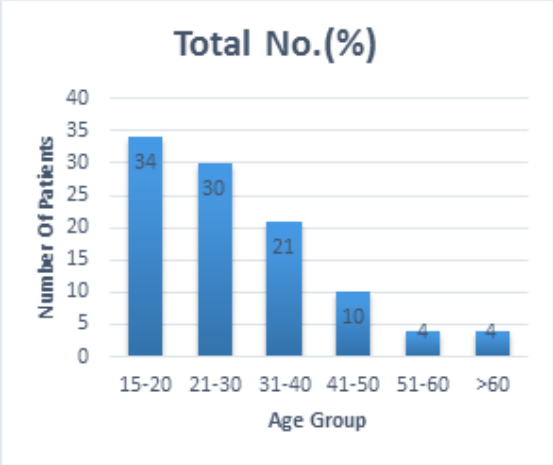


Figure 1: Age group distribution.

2. **Sex Distribution:** Out of 103 cases, 64 were male and 39 were female.

Sex	Frequency	Percentage
Male	64	62.1
Female	39	37.9
Total	103	100

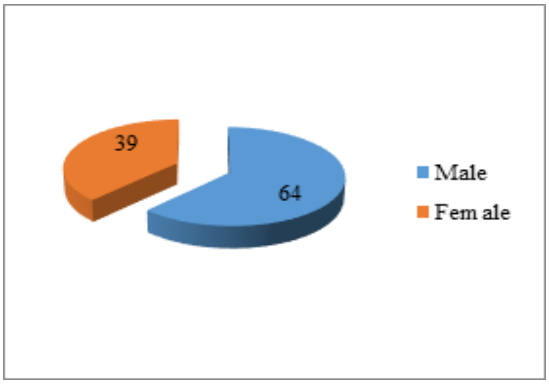


Figure 2: Sex distribution.

3. **Region:** Out of 103 patients, 59 were from hilly areas and 44 from plain area.

	Frequency	Percentage
Hilly	59	57.3
Plain	44	42.7
Total	103	100

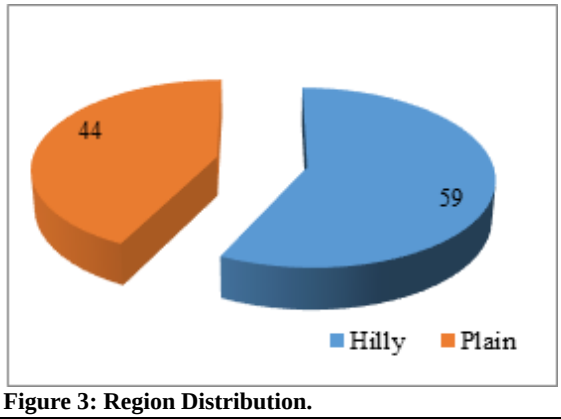
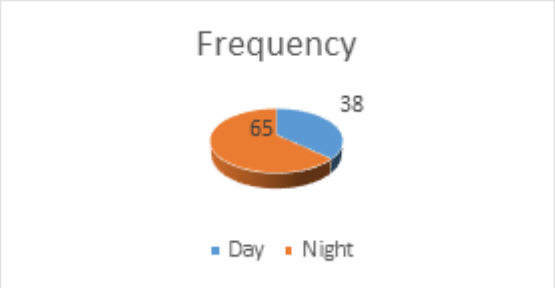


Figure 3: Region Distribution.

4. **Time of bite:** Out of 103 cases, 65 were at night time (7 p.m. to 7 a.m.) and 38 were in day time (7 a.m. to 7 p.m.).

Time of bite	Frequency	Percentage
Day	38	36.9
Night	65	63.1
Total	103	100



5. **Neurotoxic vs Vasculotoxic**; Out of 103 patients, 63 were neurotoxic, 9 were hematotoxic and 31 were non-toxic. Bawaskar et al found 68.45% snakebites to be vasculotoxic in their study done in Mahad region in Western Maharshtra.[12]

Diagnosis	Frequency	Percentage
Hematotoxic snake bite	9	8.7
Neurotoxic snake bite	63	61.2
Non- Toxic	31	30.1
Total	103	100

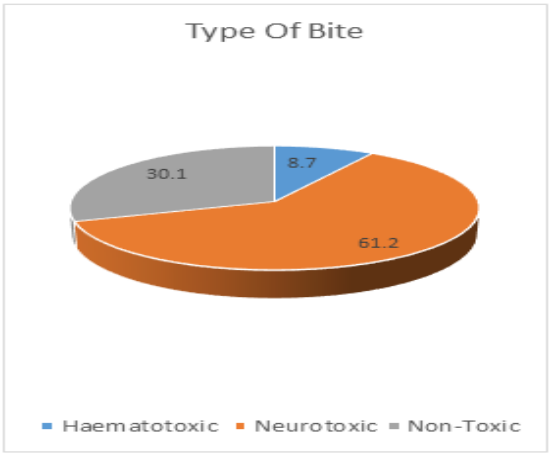


Figure 5- Type of Bite.

6. **Place of bite**: Out of 103 patients, 66 were outdoor and 37 were indoor.

	Frequency	Percentage
Indoor	37	35.92
Outdoor	66	64.08

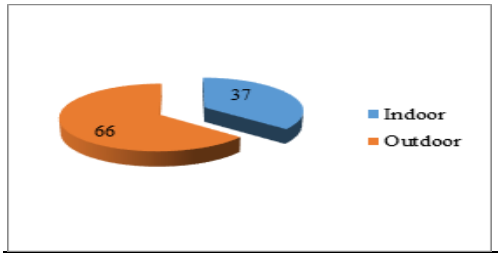


Figure 6: Place of Bite.

7. **Site of bite**: Out Of 103 bites, 61 cases were in 34 cases in upper limb, axial body 3 and 5 could not be determined.

Site Of Bite	Number of Patients	Number Of Death	Site specific percentage (%)
Upper Limb	34(33.01%)	1	2.94 %
Lower Limb	61(59.22%)	2	3.27 %
Axial Body	3(2.91%)	1	33.33 %
Not Known	5(4.85%)	0	0 %

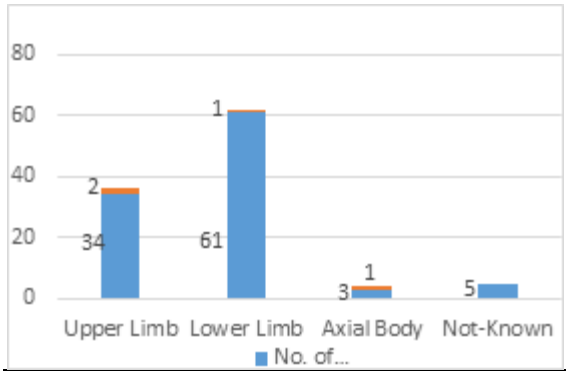


Figure 7: Site of Bite.

8. **Type of snake**: Krait was the most commonly identified snake among the bites, followed by cobra and saw scalled viper.

Name of Snake	Frequency	Percentage
Cobra	3	2.9
Krait	12	11.7
Saw scaled Viper	2	1.9
Not known	86	83.5
Total	103	100

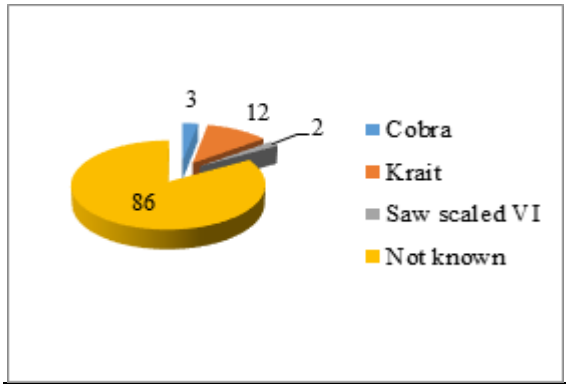


Figure 8: Type of Snake.

9. **Provoked/Unprovoked**: 62 out of 103 were unprovoked and rest were provoked.

	Frequency	Percentage
Unprovoked	62	60.19
Provoked	41	39.81

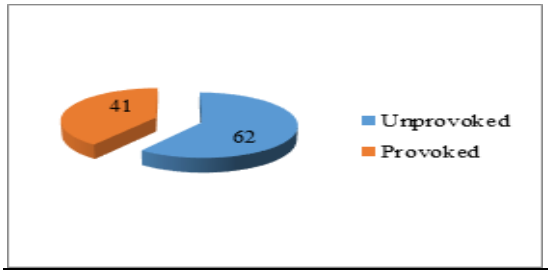


Figure 9: Provoked/ Unprovoked Bites.

10. **Symptoms**: Diplopia was the most common symptom in our study followed by dyspnoea and ptosis.

Symptoms	Frequency	Percentage
Swelling	18	17.5
Necrosis	9	8.7
Local bleeding	10	9.7
Pain	22	21.4
Dyspnoea	62	60.2
Nausea	38	36.9
Vomiting	25	24.3
Ptosis	60	58.3
Diplopia	54	71.8
Aspiration pneumonitis	16	15.5
Coagulopathy	8	7.8
Cellulitis	8	7.8
Oliguria	8	7.8

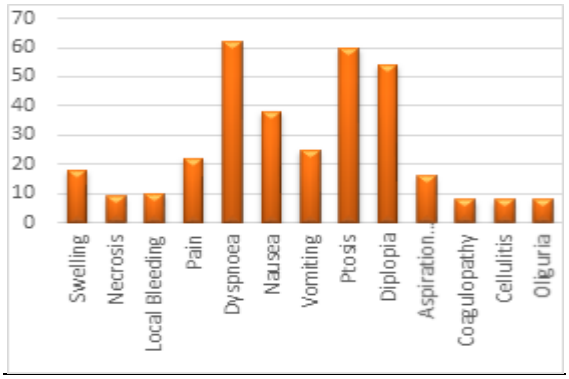


Figure 10: Symptoms.

11. **First aid given**: Tourniquet was the most common first aid given that is in 63 patients, ASV in 5 patients and there was no history of first aid given in 35 patients.

	Frequency	Percentage
ASV	5	4.854
Nil	35	33.98
Tourniquet	63	61.17

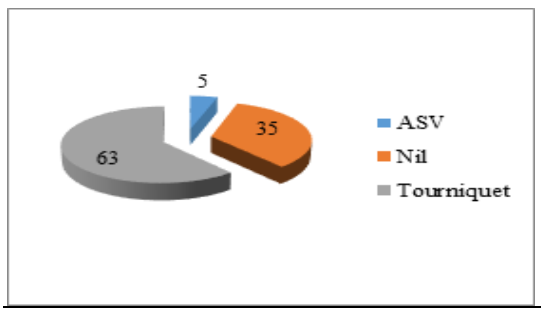


Figure 11: First Aid Given.

12. **Supportive treatment**: In 9 hematotoxic bites, 4 required dialysis and fasciotomy and Out of 64 neurotoxic snake bite cases, 29 required ventilator support.

Treatment	No. of Patient	%
Dialysis	4	3.9
Surgery(Fasciotomy)	4	3.9
Ventilatory support	29	28.2
Total	103	100

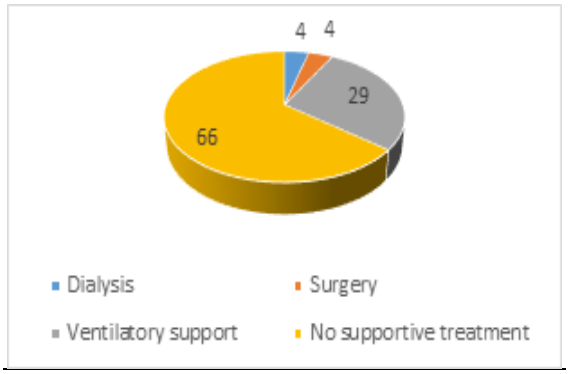


Figure 12: Supportive treatment given.

13. **Need of anti-snake venom**: The amount of ASV needed for management of snake bite in our studies were as follows.

ASV Needed	Frequency	Percentage
0	41	39.81
6	30	29.13
10	1	0.971
12	17	16.5
18	10	9.709
24	4	3.883
Total	103	100

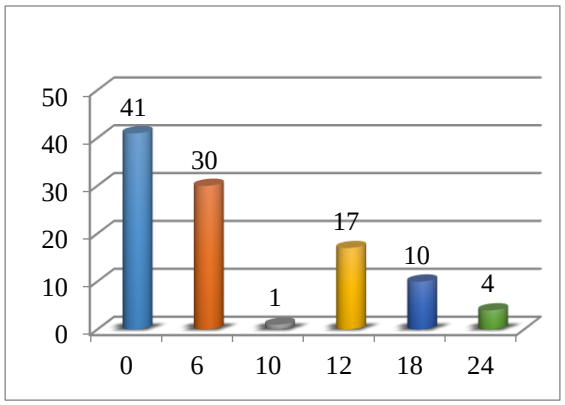


Figure 13: Need Of Anti-Snake Venom.

14. **Duration of ventilator support**: Most of the patients required 1-3 days ventilator support.

Duration (day)	Frequency	Percentage
1 day	6	20.69
2 day	12	41.38
3 day	9	31.03
4 day	1	3.45
6 day	1	3.45

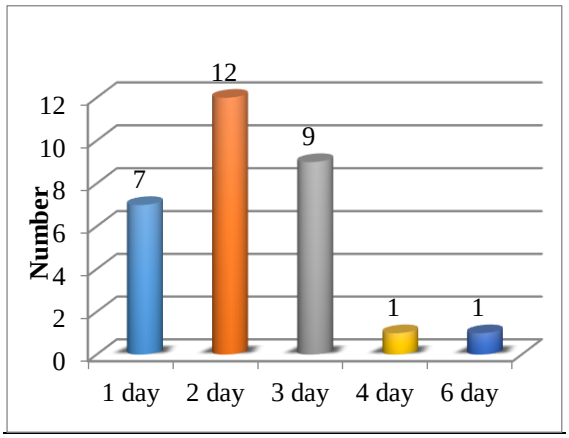


Figure 14: Duration of Ventilatory Support.

15. **Final outcome**: Out of 103 cases, 4 of them died and all were neurotoxic bites.

Outcome	Frequency	Percentage
Survived	59	93.7
Died	4	6.3

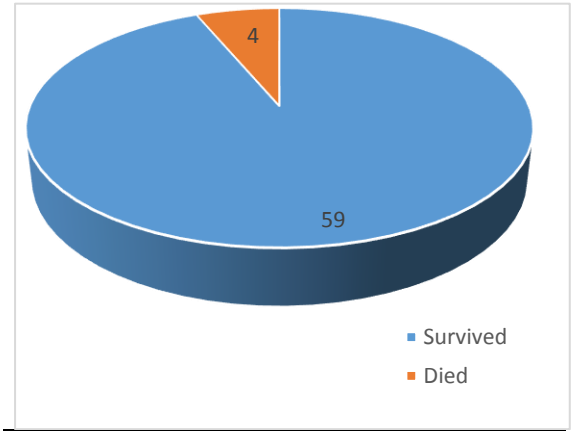


Figure 15: Final Outcome.

Limitations of the Study

As this study was conducted at a tertiary care reference centre, it did not reflect the true incidence of snake bite in the community. In fact the study was skewed towards the more severe cases as they were predominantly referred to this tertiary care reference centre

CONCLUSION

1. Among 103 snake bite studies, majority were in age group 15-40 years mean age being 29.92 years. 62.1 % of the patients were male.
2. Majority of snake bites were in night time(63.1%) and outdoors(62.08%).39.81% cases were provoked bites.
3. First aid received before reaching to our tertiatry case centre were tourniquet in 61.17%, asv IN 4.85% whereas no first aid were given in 33.98% of the patients.
4. 33% of our patients were bitten in upper limb, 59.22% iin lower limb AND 2.9% HAD BITE ON AXIAL BODY.
5. Our study showed a predominance of neurotoxic bites(61.2%) followed by vasculotoxic(8.7%) and non-poisonous bite(30.1%).
6. The most common identified snake was krait.
7. 26.2 % had swelling and necrosis at the local site, 9.7% had bleeding from the site of bite.60.2% had dyspnoea, 58.3% had ptosis, and diplopia was the most common symptom that was 70.8%.
8. 4 out of 103 patients studied died and all of them were neurotoxic bites.

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