

STUDY OF TREATMENT STRATEGIES AND OUTCOME OF SNAKE BITE IN CHILDREN AT A TERTIARY CARE HOSPITALDr. Deepa S. Phirke*¹ and Dr. Nazparveen L. A.²¹Professor & HOD, Department of Paediatrics, Government Medical College, Miraj, Maharashtra, India.²Junior Resident, Department of Paediatrics, Government Medical College, Miraj, Maharashtra, India.

*Corresponding Author: Dr. Deepa. S. Phirke

Professor & HOD, Department of Paediatrics, Government Medical College, Miraj, Maharashtra, India.

Article Received on 08/10/2017

Article Revised on 29/10/2017

Article Accepted on 19/11/2017

ABSTRACT

Introduction: Snake bite is a common medical emergency especially in tropical and sub-tropical countries. The estimated deaths in India due to snake bites is about one in one lakh population.^[2] Snake venom composition differs from species to species and leads to a diversified clinical manifestation and outcome due to snake bite (Ophitoxemia). Children are more prone for complications due to physiological vulnerability. Hence there is a need to study the outcome of Ophitoxemia in children. **Materials and Methods-** It is an prospective observational study conducted in a tertiary care hospital. All paediatric patients with snake bite were included. Details of time, Month, Site and type of snake bite, Clinical manifestations, complications and treatment received were noted. The data was analysed. **Results-** Out of total 48 cases in study, 93.75% had pain and 87.5% had anxiety. 58.33% had non poisonous snake bite. 50% cases did not require ASV. Respiratory failure was detected in 6.25% cases, all of which required Mechanical ventilation. Acute renal failure and DIC was observed in 1 (2.08%) case each. Out of 8 (16.66%) neuro paralytic snake bites, all required neostigmine-atropine regime, 3 required Mechanical ventilation. Out of 12 (25%) vasculotoxic snake bites, only 3 cases required blood products. The mortality rate was 6.25%, all of which had neuroparalytic snake bite. **Discussion-** The commonest clinical feature was pain followed by anxiety. Majority of the patients had non poisonous snake bite hence most of them did not require ASV. Respiratory failure was the commonest complication observed which required mechanical ventilation. Mortality was mainly due to neuroparalytic snake bites with respiratory failure. **Conclusion-** Mortality was more in patients with poisonous snake bite with complications. Thus such patients should be treated aggressively with ASV and supportive treatment right from the beginning, to reduce the mortality.

KEYWORDS: Snake bite, Poisonous, Non-poisonous, Neuroparalytic, Vasculotoxic, Ophitoxemia.**INTRODUCTION**

Snake bite is a common medical emergency especially in tropical and sub-tropical countries.^[1] Snakes are poisonous and non poisonous. Among the 52 poisonous species in India, majority of bites are mainly due to 5 species; King Cobra, Common Cobra, Russell's Viper, Saw-scaled Viper and Krait. The snake venom is composed of mixture of enzymatic and non enzymatic compounds. Neuro toxins and Hemolysins are the most important constituents of snake venom that cause different clinical manifestations in the victim.^[2] The composition of snake venom varies from species to species. The clinical manifestations has a wide spectrum from asymptomatic to death due to severe systemic manifestations.^[3,4]

Most of the asymptomatic cases are due to non poisonous snake bite. Manifestations due to snake venom is termed as Ophitoxemia. The local manifestations include-Pain, swelling, bleeding, cellulitis or gangrene.

The systematic manifestations may vary from anxiety to Neuro paralytic features like Ptosis, Respiratory failure and coma or haematological features of coagulopathy presenting as bleeding, acute renal failure etc.^[5] The mortality in children is higher as compared to adult as amount of toxin absorbed per Kg body weight is more.^[6] Exertion, number and depth of snake bite decides the severity of envenomation and ophitoxemia.

Anti snake venoms (ASV) is the main stay of treatment in snake bite. ASV may be species specific (Monovalent) or General (Polyvalent). For mild ophitoxemia like local manifestations-50 ml ASV (5 vial), for moderate manifestations like coagulopathy, bradycardia-100ml (10Vials) and for severe cases with rapidly progressing features like neuro-paralysis, coma, DIC-150 ml ASV (15vials) are advised.^[7] Supportive treatment in the form of blood, Fresh frozen plasma, neostigmine, mechanical ventilation or peritoneal dialysis are advised as per the type and severity of snake bite.^[8,9,10,11]

MATERIALS AND METHODS

It is an prospective cross sectional study conducted in pediatric intensive care unit(PICU) of a tertiary care hospital. All the cases with snake bites were included in this study. Unknown bites were excluded. Snake bite was confirmed with history, Presence of fang marks and identification of snake whenever possible. Detail history of the time, site, duration, Clinical manifestations were taken. The cases were further categorised as poisonous and non poisonous snake bite depending on identification of dead snake if brought, presence or absence of manifestations like neuromyolysis or haematological involvement or severe local signs. ASV was given to patients depending on mild, moderate or severe manifestations. Supportive treatment was given as per the type of snake bite; neuromyolytic or hematotoxic/vasculotoxic snake bite. The morbidity in the form of complications like acute renal failure, Respiratory failure, DIC were analysed and promptly treated.

The data was further analysed statistically to analyse the outcome in all the snake bite cases in the form of morbidity and mortality.

RESULTS

Table no 1: Distribution of cases according to clinical features.

Clinical features	No of cases	Percentage
Pain	45	93.75
Anxiety	42	87.5
Tingling	20	41
Fang marks	28	58
Swelling	18	37.5
Local bleeding	2	4.16
Cellulitis	12	25
Ptosis	8	16
Respiratory difficulty	8	16
Drowsiness	3	6.25
Petechiae	5	10.41
Hematuria	4	8.33
Oliguria	1	2.08
Bleeding from other sites	1	2.08
Vomiting	12	25

Table no 2: Distribution of cases according to type of snake bite.

Type of Snake bite	No of cases	Percentage
Neuromyolytic	8	16.66
Vasculotoxic	12	25
Non poisonous	28	58.33
Total	48	

Table no 3: Complications associated with Snake bite.

Complications	No of cases	Percentage
Respiratory Failure	3	6.25
Acute Renal Failure	1	2.08
DIC*	1	2.08

*Disseminated intravascular coagulation

Table no 4: Amount of ASV* used in snake bite cases.

ASV vials	No of cases	Percentage
00	24	50
1-10	14	29
10-20	5	10.41
20-30	5	10.41
30-40	0	0
>40		

*ASV-Anti Snake Venom

Table no 5: Supportive treatment given in snake bite cases.

Supportive treatment	Number of cases (n)	Percentage (%)
Neostigmine-Atropine regime	8	16.66
Mechanical Ventilation	3	6.25
Blood products	3	6.25
Tetanus toxoid	48	100
Peritoneal dialysis	1	2.08

Table no 6: outcome of cases of Snake bite.

No of cases	Recovered n(%)	Deaths n(%)
48	45(93.75%)	3(6.25%)

DISCUSSION

Total 48 patients with snake bite were enrolled in this study. Amongst the varied clinical features, Pain(93.75%) followed by anxiety(87.5%) were the commonest. As per Koirala et al.^[12] commonest clinical features were local swelling (77%) and local pain(74%). While Paudel et al.^[13] has reported local pain(100%) in all cases and pain in abdomen in 53.3% cases, while Kshirsagar et al.^[14] has reported local swelling in all cases.

In this study, Majority of snake bite cases (58.33%) were due to non poisonous snakes. According to Koirala et al the majority of snake bite cases were vasculotoxic (77%) followed by non-poisonous(21%). The commonest complication observed was respiratory failure in neuromyolytic snake bites, all of which required mechanical ventilation. Acute renal failure was seen in only 1(2.08%) patient which required peritoneal dialysis. This incidence was similar to other studies, such as Kulkarni M.L (1.4%) et al.^[15]

Approximately 50% cases did not receive ASV in this study as majority of patients had non poisonous snake

bite. Those who required 20-30 ASV were having neuroparalytic and vasculotoxic snake bites with severe manifestations. Koirala et al has reported 44% and Paudel et al 24.37% cases receiving ASV. Thus majority of cases do not require ASV.

In our study as most of the cases were non poisonous, did not require any treatment except for some symptomatic relief. Cases with neuroparalytic snake bites (16.66%) required neostigmine –atropine regime, while 6.25% requiring mechanical ventilation. This finding was similar to B. Adhisivam et al.^[16] who reported 8% cases snake bites requiring mechanical ventilation. The use of neostigmine is controversial and needs to be studied further. Only 6.25% cases required Blood products in vasculotoxic snake bite with severe bleeding. Koirala et al has reported 51 % cases receiving blood as majority of their cases were vasculotoxic. 33 cases of 633 were reported to receive blood products by M L Kulkarni et al.

The mortality in our study was 6.25 % all of which were neurotoxic snake bites who required mechanical ventilation. The mortality in Koirala et al, M L kulkarni et al was 2.5 %. B. Adhisivam et al has reported a mortality of 18 %. A varied difference in the mortality rate is probably due to different clinic –epidemiological data and type of snake bites.

CONCLUSION

Majority of patients with snake bite just require supportive treatment. Mortality was more in patients with poisonous snake bite with complications. Thus such patients should be treated aggressively with ASV and supportive treatment right from the beginning, to reduce the mortality. A variable clinical presentation and outcome of patients with snake bite varies probably due to difference in local epidemiological conditions and type of snake bites.

REFERENCES

1. Warell DA. Animal poisons, In: Manson's Tropical Diseases, 19th ed, 19th edn. Eds Manson Bahr PEC, Bell Dr. London, Bailliere Tindall, 1987; 855-98.
2. Fayer J. Snake poisoning in India, Med Times Gaz, 1873; 1: 601.
3. Banerjee RN-Poisonous snakes of India, their venoms, symptomatology and treatment of envenomation. Ahuja MMS-Progress in Clinical medicine in India, New Delhi, Arnold Heinman, 1978; 136-79.
4. Bawaskar HS, Bawaskar PH-Envenoming by common Krait and Asian cobra: Clinic manifestation and their management in a rural setting. Wilderness Environ Med, 2004; 15(4): 257-66.
5. Enwere GC, OBU HA, Jobareth A-Snake bites in children in the Gambia-Ann Trop Paediatr, 2000 Jun; 20(2): 121.
6. Kliegman RM, Jenson HB, eBE; Nelson Textbook of paediatrics; 18th ed-Philadelphia: W.B.a Co, 2007; 2932-35.
7. Paul V. K. Animal and insect bites. Singh M(Ed). Medical emergencies in children. 2nd ed. New Delhi; Sagar Publications, 1993.
8. I.D.Simpson. The Pediatric management of snake bite: The national Protocol. Indian Pediatr, 2017; 44(3): 173-6.
9. Warell DA, EHO/SEARO guidelines for the clinical management of snake bites in south east Asian deregion. South East Asian J Trop Med Publ Hlth, 1999; 30: 1-83.
10. Das SC .Neurotoxic snake bite dramatic recovery following neostigmine therapy. JAPI, Vol-24.
11. Dubey GK. Neostigmine in treatment of snake bite JAPI, 1981; 29(3): 229.
12. Koirala DP, Gauchan E, Banset S, Adhikari S, BK G, Clinical Features, Management and outcome of Snake Bite in children in Manipal Teaching Hospital. Nepal Journal of Medical Sciences, 2013; 2(2): 119-24.
13. K. M. Paudel-Clinico-epidemiological profile and outcome of poisonous snake bites in children using the WHO treatment protocol in Western Nepal- Journal of Nobel Medical College, 4(7): 21-5.
14. V. K. Kshirsagar-Clinical profile of Snake bite in children in Rural India-Iran J Pediatr, 2013 Dec; 23(6): 632-6.
15. Kulkarni ML, Anees S. Snake venom poisoning: experience with 633 cases. Ind, Pediatr, 1994; 31(10): 1239-43.
16. B Adhisivam, S.Mahadevan, e bite Envenomation in I in India: rural emergency, Indian Paediatrics, 2006; 43: 553-554.