



## "STUDY OF CLINICAL PROFILE OF ACUTE RENAL FAILURE IN SNAKE BITE PATIENTS".

**Dr Sandeep Marcus  
Horo**

Senior Resident, Dept of Medicine, RIMS Ranchi.

**Dr Vikas Mardi**

Senior Resident, Dept of Medicine, RIMS Ranchi.

**Dr Shiv Shankar  
Munda\***

Senior Resident, Dept of Medicine, RIMS Ranchi. \*Corresponding Author

**Dr Gregory Minz**

Associate Professor, Dept of Medicine, RIMS Ranchi.

### ABSTRACT

Snake bite is significant avoidable and treatable health hazard. specially in farmers plantation workers leading to significant morbidity and mortality. Renal failure is common all poisoning from snakes mostly due to Viperidae species of snakes. The first sign of renal failure is oliguria and anuria This acute renal failure is largely a preventable complication. So, the patients with snake bite should be hospitalized and monitored for early detection of renal complications. Early treatment improves survival in these patients. This study is an attempt to analyze the clinical profile of snake bite patients and evaluation of outcome in Acute Renal Failure in them. This study will be a case control study conducted on 100 patients who are satisfying the inclusion & exclusion criteria. ARF occurred in 39% of snake bite patients with overall mortality of 3% and average hospital stay of  $5.62 \pm 1.57$  Snake bite patients developing coagulopathy are more prone to develop ARF. Snake bite patients presented with cellulitis as local manifestation are at increased risk to develop ARF. In ARF complicated cases, Dialysis & supporting therapy appears to be the mainstay of treatment. Clinical outcome depends on optimum ASV dosage which is variable, depending on the type of snake, type of envenomation, organ system involved & supportive care offered.

**KEYWORDS :** ARF, snake bite, clinical profile, hemodialysis

### INTRODUCTION

Snake bite poisoning is major health hazard since centuries. Snake bite is a significant concern, in rural populations of tropical and sub-tropical countries. It is also an occupational hazard mainly in farmers, plantation workers, herders and laborer leading to significant morbidity and mortality that remains mostly unreported. The inflicted bites are frequently accidental as when snakes are trodden upon or could result due to sleeping on floor and open style habitation. The most affected region in the world is South East Asia because of dense population and extensive agricultural practices.

Recent studies estimate somewhere between 1.2 million and 5.5 million snakebites worldwide each year, with 421,000 – 1.8 million envenomation and 20,000- 94,000 deaths<sup>1</sup>. India is reported to have the highest number of snake bites (81,000) and deaths (11,000) per year<sup>1</sup>.

The principal systemic effects of the envenomation are on the nervous system, kidneys, cardiovascular and blood coagulation and at local site. Renal failure complicates 5.5% to 26.0% of all poisoning from snakes. Most cases are due to the Viperidae species of snakes.<sup>2</sup>

The complications related to kidneys are observed in majority of patient with snake bite and is an important cause of morbidity and mortality. The first sign of renal failure is development of oliguria or anuria. This acute renal failure is largely a preventable complication. So, the patients with snake bite should be hospitalized and monitored for early detection of renal complications. Early treatment improves survival in these patients.

This study is an attempt to analyze the clinical profile of snake bite patients and evaluation of outcome in Acute Renal Failure in them.

### MATERIAL AND METHODS

This study will be a case control study conducted on 100 patients who are satisfying the inclusion & exclusion criteria.

Detailed history, physical examination and necessary investigations will be undertaken. The purpose of the study will be explained to the patient and informed consent obtained. Using non-invasive methods, acute kidney injury in snake bite patients who fulfil the inclusion criteria is assessed. Patients are classified into three stages of acute kidney injury proposed by Acute Kidney Injury Network, which defines AKI as an "abrupt (within 48 hours) absolute increase in the serum creatinine concentration of  $\geq 0.3\text{mg/dl}$  ( $26.4 \mu\text{moles/l}$ ) from baseline, a percentage increase in the serum creatinine concentration of  $\geq 50\%$  or oliguria of  $< 0.5 \text{ml/kg/hr}$ .  $> 6\text{hours}$ . The course of acute kidney injury in these three stages and need for renal replacement therapy is assessed.

### Inclusion Criteria:

1. A definitive history of snake bite.
2. The clinical picture was consistent with that of a snake bite, such as the presence of fang marks/ cellulitis/ coagulopathy/ neuromuscular paralysis;
3. Progressive elevation of serum creatinine  $> 0.3\text{mg/dl}$  from baseline, a percentage increase in the serum creatinine concentration of  $> 50\%$  or oliguria of less than  $0.5\text{ml/kg/hr}$ . for more than 6hrs.
4. Those who give their consent only.

### Exclusion Criteria:

1. Patients with pre-existing renal diseases with history of snake bite.
2. Patients with risk factors for developing renal disease with history of snake bite. (Diabetes, hypertension, connective tissue diseases, chronic infection

### RESULTS

**Table 1: Site Of Snake Bite**

Snake bite site	Number of patients	Percentage (%)
Lower limb	68	68%
Upper limb	27	27%
Other site	5	5%
Total	100	100%

**Table No-2: Local Manifestation Of Envenomation**

Local manifestation	Number of patients	Percentage (%)
Pain	99	99%
Swelling	88	88%
cellulitis	37	37%

**Table 3: WBCT In Minutes Of Patients Studied**

WBCT in minutes	number of patients	Percentage (%)
<20	35	35%
>20	65	65%
Total	100	100%

**Table No -4: Urine Output Of Snake Bite Patients**

Urine Output	No. of patients	Percentage (%)
Normal	61	61%
Oliguria	39	39%
Total	100	100%

**Table No 5: Outcome Of Patients With Snake Bite**

Outcome	No. of patients	Percentage (%)
Mortality	03	03%
Complete recovery	97	97
Total	100	100%

**Table No 6: Duration Of Stay In Ward For Snake Bite Patients Admitted**

Duration of stay in ward	Number of patients	Percentage (%)
1-3 days	8	8%
4-5 days	43	43%
6-8 days	46	46%
9 and above	3	3%
Total	100	100%

Mean:  $5.62 \pm 1.57$

## DISCUSSION

Most of the snake bites were observed in lower limb, followed by upper limb in Banerjee et al<sup>2</sup> including the present study. Signs of inflammation in the present study were 99% which is comparable with Athappan et al<sup>1</sup>. In the present study pain was noted in 99% of the cases, 81% cases showed swelling, similar to Mishra's series (100%) and Sarangi's series (84%). The incidence of ARF in Paul J, S Dasgupta study<sup>5</sup> was 43.27% and in Srilatha et al<sup>6</sup> was 34% but in our present study it is 39% which is comparable to them. This high incidence may be due to treatment delay of snakebite patients in our study area because they attended in hospital after long delay; and due to lack of awareness regarding the early medical treatment of snakebite patients in people of our study area because patients attained some local non-medical treatment before admission in hospital which delay early medical treatment; and mostly critically ill snakebite patients were referred to our tertiary health care hospital. 20% of snake bite patients were hemodialyzed for management of ARF where as 80% patients were conservatively managed. The same results were obtained in srilatha et al study. 21% patients developed hypotension where as 79% were normo-tensive. The same results were obtained during Tushar B. Patil et al<sup>7</sup> study. In our study the mortality was 3% where as 97 % patients recovered and were discharged after treatment which is comparable to Sharma N et al<sup>8</sup> study where mortality was 3.5%. In Suchitra N et al study also the mortality was 3%. The average stay of the patient was  $5.62 \pm 1.57$  days.

## CONCLUSION

Snake bite is an important and preventable cause of ARF. Common manifestations of poisonous snake bite include pain, cellulitis, abnormal coagulation profile and decreased urine output. Type of snake bite is one of the important factors in the development of Acute Renal Failure. ARF is commonly associated with Viperidae species. Overall mortality due to snakebite induced AKI is 3%. Lapse of time in presenting to the hospital and abnormal coagulation profile are the predictors

of poor outcome in snakebite induced acute kidney injury. Delay in time in presenting to the hospital is one of the valid predictors of poor outcome in snake bite induced Acute Renal Failure. Snake bite patients developing coagulopathy are more prone to develop ARF. Snake bite patients presented with cellulitis as local manifestation are at increased risk to develop ARF. In ARF complicated cases, Dialysis & supporting therapy appears to be the mainstay of treatment. Clinical outcome depends on optimum ASV dosage which is variable, depending on the type of snake, type of envenomation, organ system involved & supportive care offered.

## REFERENCES:

- Gupta, Yogendra. (2014). Snake Bite in India: Current Scenario of an Old Problem. *Journal of Clinical Toxicology*. 4. 10.4172/2161-0495.1000182.
- Kasturiratne A, Wickremasinghe AR, de Silva N, Gunawardena NK, Pathmeswaran A, Premaratna R, Savioli L, Laloo DG, de Silva HJ. The global burden of snakebite: a literature analysis and modelling based on regional estimates of envenoming and deaths. *PLoS Med*. 2008 Nov 4;5(11):e218. doi: 10.1371/journal.pmed.0050218. PMID: 18986210; PMCID: PMC2577696.
- Banerjee RN. Poisonous snakes of India, progress in, clinical medicine<sup>1</sup> in India. In: Ahuja MS, editor. 1st ed. 1987. pp. 136-177
- Athappan G, Balaji MV, Navaneethan U, Thirumalikulundsubramanian P. Acute renal failure in snake envenomation: a large prospective study. *Saudi J Kidney Dis Transpl*. 2008 May;19(3):404-10. PMID: 18445901.
- Paul J, Dasgupta S. Early prediction of acute kidney injury by clinical features of snakebite patients at the time of hospital admission. *N Am J Med Sci*. 2012;4(5):216-220. doi:10.4103/1947-2714.95903
- Srilatha v, Ranganatha JA, Shankar SR, Prasad G, Ravi Rt. Acute Renal failure in patients with Venomous snakebite. *Indian J Trop Medicine*. 1997;9
- Patil TB. Snake bite envenomation: A neglected public health problem in India. *Med J DY Patil Univ* 2013;6:123-125
- Sharma, Chandan & Badyal, Ashima & Kumar, Sanjeev. (2021). Clinical profile and outcome of snakebite poisoning in sub-district hospital Akhnoor. *International Journal of Advances in Medicine*. 8. 10.18203/2349-3933.ijam20211402.