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A Study of Snake Bite in Rural Population

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Abstract

Background: Snakebite is a common medical emergency and an occupational hazard in most parts of India, with farming, as a major source of employment.

Methods: A cross sectional observational study on 50 patients admitted with symptoms, signs and definitive evidence of snake bite. One healthy volunteer was taken who was matched with respect to age and sex with the case as a control. Clinical features following snakebite was analysed even if the initial evaluation by CT and BT remained normal.

Results: Males showed a higher incidence (65%) compared to females (35%). Most of our snakebite (55%) cases occurred during the period of May to September. Most of the snakebite occurred in the day time between 6 am to 6 pm.

Conclusion: Most of our patients were farmers who were bitten while working in the fields. This finding confirms the fact that most of the snakebites in India are occupational hazards in rural area.

Keywords: WHO, CT and BT

Introduction

Snakebite is a common medical emergency and an occupational hazard in most parts of India, with farming, as a major source of employment. Early in

2009, snake-bite was finally included in the WHO's list of neglected tropical diseases confirming the experience in many parts of this region that snakebite is a common occupational hazard of farmers, plantation workers and others, resulting in tens of thousands of deaths each year and many cases of chronic physical handicap. Much is now known about the species of venomous snakes responsible for these bites, the nature of their venoms and the clinical effects of envenoming in human patients. Various studies have shown that nearly 15,000 to 25,000 people die annually in India due to snake envenomation1, whereas the world mortality is estimated to be 30,000 to 40,000 per annum. Snakebite is responsible for 2.8 to 5.3% of the mortality of the total hospital admissions in different states of India as compared to 20 Death per year in USA or even lower mortality of one death every 3-5 years in Europe. The mortality in India is due to climatic factors, rural predominance of the population and their agricultural dependence. For this reason, India is known as land of Exotic Snakebites[1]

Materials and methods

We conducted our cross-sectional study on patients admitted with symptoms, signs and definite evidence of snakebite. We considered following observation as definite evidences of snakebite. The presence of fang marks.

Inital laboratory evaluation by performing clotting time, bleeding time, at bedside. If they prolonged, we took it as evidence of envenomation with coagulation disorder. We also took evidence of envenomation by observing a local reaction confined to the site of bite with evidence of rapid extention of swelling and cellulities involving more than one joint. We took one healthy volunteer who was matched with respect to age and sex with the case as a control. We have analysed clinical features following snakebite even if the initial evaluation by CT and BT remained normal. This is because, from literature we gathered that the spectrum of venom toxicity following snakebite varies from haemototoxicity to neurotoxicity. Sometimes even combined manifestation of haematotoxicity and neurotoxicity is seen.

We assessed patients admitted in the emergency ward with evidences of snkaebites by performing clinical examination as per the inclusion criteria. We considered all patients who came with a history of poisonous snakebite for the detailed clinical examination and evaluation of coagulation disorder. We compared results of all the tests with controls. We evaluated the results statistically later. We recorded the clinical features following snakebite in a prefixed proforma. These pre fixed proformas contained almost all the possible clinical feature in snakebite case. We evaluated these filled up proforma statistically later.

Results

Table 1: Age and Sex Distribution

	Male	Female
18-30	8	7
31-45	15	7
46-78	8	5

			Groups		Total
			Test	Ctrl	
Ages	18-30	Count	15	15	30
		% Within Groups	30.0 %	30.0 %	30.0%
	31-45	Count	22	22	44
		% Within Groups	44.0 %	44.0 %	44.0%
	46-78	Count	13	13	26
		% Within Groups	26.0 %	26.0 %	26.0%
Total		Count	50	50	100
		% Within Groups	100 %	100 %	100 %

Table 2: Seasonal Distribution

		Frequency	Valid percent	Cumulative percent
Valid	Jan-April	12	24.0	24.0
	May- sept	28	56.0	80.0
	Oct- Dec	10	20.0	100.0
	Total	50	100.0	

Table 3: Time of Bite

		Frequency	Valid Percent	Cumulative Percent
Valid	Day	35	70.0	70.0
	Night	15	30.0	100.0
	Total	50	100.0	

Table 4: Time of Admission

		Frequency	Valid Percent	Cumulative Percent
Valid	<6 hr	41	82.0	82.0
	6-24 hr	7	14.0	96.0
	>24 hr	2	4.0	100.0
	Total	50	100.0	

Table 6: Complications

		Frequency	Valid Percent	Cumulative Percent
Valid	Minor comp	41	82.0	82.0
	ARF	7	14.0	96.0
	DVT	1	2.0	98.0
	Death	1	2.0	100.0
	Total	50	100.0	

Discussion

The seasonal incidence in this study is similar to that of reported by Ahuja2 and Singh (1954) and Gupta et al (1960)3. The maximum incidence of snakebites in summer months in tropical and sub-tropical climates appear to be universal. In our study there was essentially no difference in the clinical picture of the patients bitten by Russel s Viper and of those bitten by Echis carinatus. This result is similar to that of the study reported by Bhat RN from Jammu in 19734.

The only effective and relevant treatment of snakebite poisoning to be advocated in a hospital, is the administration of anti snakevenom. As signs of systemic poisoning are not always clinically evident and as a patient with a nonclotting blood is potentially in danger of developing haemorrhagic syndrome, it's not our practice to delay the

administration of ASV as has been suggested by Reid5. We agree with bhat s this conclusion in administering ASV. Immediately after admission when systemic poisoning is detected by finding defective coagulation ASV should be administered. Delay in the administration of ASV will delay the reversal of coagulation defect and is liable to endanger a patient s life by otherwise preventable haemorrhage.

In our study we observed that most of the patient (82%) came to hospital within six hour and received treatment and we observed very less complication compared to other studies with long duration between bite and admission to hospital. We strongly recommend creating public awareness regarding treatment of snakebite to reduce the complication.

Conclusion

All most all our patients were farmers. Most of our patients were males (65 %). This is probably because, more males are involved in farming as compared to females. Most of our patients belonged to the age group of 18-45 years (74%). This is probably because most of the farmers working in the fields (including female) belonged to the age group of 18-45 years. We found that living condition in rural areas, their living habits, working and walking bare footed and their occupation were to obvious reasons for their high incidence of snakebite in the rural population. Rainy season is the period of activity for snakes, when busy agricultural work, coincidentally doubles the risk. Most of the snakebites occurred in the day time (6am to 6pm) (69%). This probably because most of the victims couldn't visualize the snake which they stamped while working in a field during daytime. Nocturnal bites were more venomous than bites by day time. This may be due to their clear vision at night. The incidence of snakebite is significantly high especially in rural population for whom this can be called an occupational hazard. Though there seems to be an increasing awareness amongst the rural population about the first aid measures, the importance of early hospitalization and the usefulness of antisnake venom in the management, there is still a lot to be proved as we had 82% patient came within 6 hour of snakebite.

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