


Original Research Article

Relative incidence of changes in blood pressure in Viper bites

S. Natarajan*

Associate Professor, Department of Medicine, KMCH Medical College, Coimbatore, Tamil Nadu, India

*Corresponding author email: drnatarajan.s@gmail.com

	International Archives of Integrated Medicine, Vol. 7, Issue 6, June, 2020.	
	Available online at http://iaimjournal.com/	
	ISSN: 2394-0026 (P)	ISSN: 2394-0034 (O)
	Received on: 06-06-2020	Accepted on: 12-06-2020
	Source of support: Nil	Conflict of interest: None declared.
How to cite this article: S. Natarajan. Relative incidence of changes in blood pressure in Viper bites. IAIM, 2020; 7(6): 36-38.		

Abstract

Background: Various blood pressure readings are encountered in patients with snake bite. Some patients have hypertension and some have normal blood pressure and the remaining few have hypotension. This is due to vasomotor changes induced by snake bite.

Material and methods: 48 patients of snake bite who presented to us with renal failure were studied and their blood pressure readings were taken into account for this study and the inference was drawn with serial blood pressure recordings till discharge. The blood pressure recorded at the time of study was taken for categorizing the patient into hypotensive, normotensive or hypertensive group. Both genders were included and were classified into age groups to study the relative incidence of blood pressure. The people with history of snake bite with cellulitis, bleeding diathesis and renal failure was only included which forms the classical triad and hallmarks the bite is probably due to viper.

Results: In this study, hypertension was noted in 58.33% of cases and normotension was found in 31.23% and remaining 10.4% had hypotension (shock) at the time of admission.

Conclusion: In this study, most of the patients had presented with high blood pressure and some with normal blood pressure and 10.4% had shock.

Key words

Snake bite, Hypertension, Vasculotoxin, Autonomic disturbance, Shock.

Introduction

It is globally estimated that 5.4-5.5 million people are bitten by snake every year. It leads to 4,00,000 amputations due to gangrene, uncontrolled sepsis and 1,25,000 deaths. The

problem is so underrated that it was only added to WHO list of neglected tropical diseases in April 2009 [1]. The snake venom is composed of a complex collection of toxins, enzymes and non-toxic substances. Components of venom have been historically classified as cytotoxins

producing liquefaction necrosis of local tissues leading to cellulitis, gangrene and local tissue damage. The neurotoxin in short produces neurologic dysfunctions by blocking the neuro transmitters and impulse conduction. There are certain vasculotoxins which can lead to vasomotor paralysis leading to vasodilatation and hypotension. Some component of the toxin can stimulate and increase vascular tone producing hypertensive response. These factors may represent hypertensive or hypotensive effect in viper bites. The hemotoxins lead to bleeding diathesis. Nephrotoxins affect the kidneys by producing acute cortical or tubular necrosis resulting in deterioration of renal functions requiring the need for dialysis support in salvaging the outcome. Hypertension was found in 6.7% and hypotension in 16.7% in one study [2]. At this point some people doubted the rennin and angiotensin ii played an important role in contributing to changes in blood pressure in cases of snake bites and used ACE inhibitors to control the blood pressure [3]. Venom contains toxic enzymes which reduces blood pressure. It is interestingly noted the blood pressure reduces with the usage of polyvalent anti snake venom serum as it neutralizes the circulating toxins in the body.

Materials and methods

48 patients of snake bite who presented to us with renal failure were studied and their blood pressure readings were taken into account for this study and the inference was drawn with serial blood pressure recordings till discharge. The blood pressure recorded at the time of study was taken for categorizing the patient into hypotensive, normotensive or hypertensive group. Both genders were included and were classified into age groups to study the relative incidence of blood pressure. The people with history of snake bite with cellulitis, bleeding diathesis and renal failure was only included which forms the classical triad and hallmarks the bite is probably due to viper.

Results

Among the 48 patients who were bitten by snake and developed renal failure was studied and analyzed. 58.33% of patients had high blood pressure and 31.25% had a recording of normal blood pressure at the time of admission. About 10.4% had shock. This study included both male and female patients and the age group ranged between 20-75 years. In this about 45.83% of males had hypertension and 54.16% of females had high blood pressure recording.

The relative age presented with hypertension were 25% between age group of 20-30, 28.5% between 31-40, 14.2 between 41-50 years and 32.1% were more than 51 years. The incidence of hypertension after snake bite was 58.33% and normal blood pressure was recorded in 31.25% and the remaining 10.4% had shock at the time of admission after being bitten by a snake (**Table – 1**).

Table – 1: Age wise distribution of hypertensive cases.

Age (Years)	group	No. of patients	%
20-30		7	25%
31-40		8	28.5%
41-50		4	14.2%
>50		9	32.1%

Discussion

The incidence of hypertension was noted in 58.33% of patients. The snake venom composed of complex collection of toxins, enzymes and non-toxic substances which have been historically classified as cytotoxins, neurotoxins and hematotoxins. Toxic substances also function to lower blood pressure, destroy red blood cells and inhibit muscle control. Neurotoxins are chemical substances that are poisonous to nervous system by blocking neurotransmitters. 10.4% of patients presented with shock. The neurotoxic envenomation producing autonomic disturbance is reported in elapid snake bites [4]. The patients received nitroglycerine drip to control blood pressure in severe hypertension is also reported. Interestingly it is noticed that blood pressure

reduced with use of anti-snake venom serum in all the patients [5]. In one study hypertension was reported in 6.7% and hypotension in 16.7%. The hypotension or shock is probably due to toxic effects of snake venom components or accompanying septicemia. *Vipera Berus Berus* envenomation produces systemic symptoms including early anaphylaxis such as tachycardia, dizziness, hypotension, shock and gastro intestinal symptoms. One patient had hypertension of 180/120. Hypertension without neurotoxic symptoms was observed in patients envenomed by western Russel's Viper [6]. There is no previous study exactly to tell the incidence of blood pressure changes in viper bite. But it is reported in cases of elapid bite because of autonomic disturbance due to neurotoxic substances in the venom [4]. Some cases reported even had the requirement of nitroglycerine drip to control blood pressure. Interestingly it is reported that blood pressure improves with the use of polyvalent anti-snake venom serum [5].

Conclusion

In this study, most of the patients had presented with high blood pressure and some with normal blood pressure and 10.4% had shock.

References

1. David William, Jose Mariya, et al. The global snakebite initiative: An antidote for snake bite. *The Lancet*, 2010; 375(9708): 89-91.
2. F Gubensek, D stet, V Turk, D Labez. Fractimation of *vipera ammolytes* venom and seasonal variation of its components. *Toxicon*, 1974; 12(2): 167-168.
3. Nayak KC, et al. Profile of cardiac complications in snake bite. *Indian Heart Jour.*, 1990; 42(3): 185-188.
4. Ritesh Agarwal, Ashutosh N Agarwal, Deeraj Gupta. Elapid snake bite as a cause of severe hypertension. *The J. of Emergency Medicine*, 2006; 30(3): 319-20.
5. Ramachandran Meenakshisundaram. Severe hypertension in elapid envenomation. *J. of cardiovascular disease research*, 2013; 4(1): 65-67.
6. M Patlok. From vipers venom to drug design treating hypertension. *The FASEB J*, 2004; 18(3): 421.