

## Original Research Article

# Role of hydrocortisone and pheniramine as prophylaxis against adverse drug reaction to snake antivenom

Arjimand Yaqoob<sup>1\*</sup>, Showkat A. Mufti<sup>2</sup>, Sharika Ashraf<sup>3</sup>

<sup>1</sup>Department of Neurology, <sup>2</sup>Department of Emergency Medicine, SKIMS, Srinagar, Jammu and Kashmir, India

<sup>3</sup>Department of Zoology, Kashmir University Srinagar, Jammu and Kashmir, India

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### \*Correspondence:

Dr. Arjimand Yaqoob,

E-mail: drarjimandyaqoob@gmail.com

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## ABSTRACT

**Background:** Antivenom remains the primary treatment for any patient with serious snake envenomation and in most patients should be used whenever indicated. Reactions to most antivenom preparations are common. Evidence does not support routine pre-treatment with either antihistamines or corticosteroids.

**Methods:** This hospital based retrospective and prospective comparative study was conducted at Sher-i-Kashmir Institute of Medical Sciences, Srinagar. In our study 108 patients were studied. Patients in group A received premedication with injection hydrocortisone 100 mg and injection pheniramine 25 mg intravenous (IV) stat before anti-snake venom (ASV). Patients in group B did not receive any premedication. Adverse reactions to ASV was compared in two groups.

**Results:** Out of 108 patients, 105 (97.22%) required ASV. Fifty-nine were retrospective cases (group A) who had received premedication with hydrocortisone and pheniramine. Forty-six patients were studied prospectively, who received ASV (group B) with no premedication. In group A, no patient developed adverse reaction to ASV. 3 patients (6.52%) in group B developed adverse reaction to ASV.

**Conclusions:** Premedication with hydrocortisone and pheniramine do not prevent adverse reactions to ASV significantly. Adverse reactions to ASV were low in our study to comment fully on role of premedication to prevent these reactions.

**Keywords:** Snakebite, Anti-snake venom, Acute kidney injury, Intra cranial hemorrhage

## INTRODUCTION

Snakebites account for significant morbidity and mortality worldwide, especially in Southeast Asia, Sub-Saharan Africa and Latin America.<sup>1</sup> According to the World Health Organization (WHO), more than 5 million snakebites occur worldwide each year, resulting in 2.5 million envenomations and 81,000 to 138,000 deaths.<sup>2</sup> Because most venomous snakebites occur in developing countries with poorly developed health reporting systems and because many deaths occur before medical care can be provided, these numbers are likely underestimates.<sup>3</sup> Despite limited evidence and no placebo controlled trials

of antivenom for most snake species, antivenom remains the primary treatment for any patient with serious snake envenomation and, should be used whenever indicated.<sup>4-6</sup> Reactions to most antivenom are common and may be divided into three types: early allergic reactions, pyrogenic reactions, and late allergic reactions (serum sickness). The rate of early and late allergic reactions varies with different antivenom preparations and depends upon the method of purification, the total foreign protein load and the composition of the antivenom (whole immunoglobulin compared with fab fragments).<sup>7</sup> Limited evidence suggests that the use of prophylactic subcutaneous epinephrine prior to the administration of intravenous (IV) antivenom

in such settings is beneficial.<sup>8</sup> Evidence does not support routine pretreatment with either antihistamines or corticosteroids.<sup>9,10</sup>

This study was carried to know the role of premedication (hydrocortisone and pheniramine) against adverse reactions to snake antivenom.

## METHODS

This hospital based retrospective and prospective comparative study was conducted at Sher-i-Kashmir Institute of Medical Sciences Srinagar, Jammu and Kashmir, India, a multispeciality teaching hospital having clinics for various medical and surgical specialities. Study was conducted from August 2013 to July 2015 for a period of 2 years. All Snake bite patients admitted in department of emergency medicine, other specialities and critical care medicine, were taken in this study over a period of two years. 108 patients were admitted and studied out of which 105 patients received antivenom. Polyvalent anti snake venom (ASV) was used as IV infusion wherever indicated. All retrospective cases (group A) had received premedication. Data was collected from snake bite case record sheets retrieved from medical record section for retrospective cases. For prospective cases (group B) data was collected from patients during hospital stay. Patients of group B did not receive any premedication prior to ASV. Data was entered into standardised intake forms. Patients in group A received premedication with injection hydrocortisone 100 mg and injection pheniramine 25 mg IV stat before ASV. Patients in group B did not receive any premedication. Adverse reactions to ASV and mortality was compared in two groups. Study was approved by an institutional ethics committee under ethical clearance no SIMS 1131/IEC-SKIMS/2016 dated 23 January 2014. The statistical package for the social sciences (SPSS) software 20.0, IBM Corp, New York, USA) was used for statistical analysis. The standard statistical tests like Chi-square and the Fischer test was used to analyse the data of categorical pattern. A p value <0.05 was considered statistically significant.

## RESULTS

A total 108 cases of snake bite patients were studied over period of thirty-six months. Out of 108 patients, 105 (97.22%) required ASV. Fifty-nine were retrospective cases (group A) who had received premedication with hydrocortisone and pheniramine were studied. Forty-six patients were studied prospectively, who received ASV (group B) did not receive any premedication. Three (6.52%) patients in group B developed adverse reaction to ASV. Adverse reactions were minor – rashes and itching. None of the patients developed life threatening reaction. In group A, no patient developed adverse reaction to ASV.

Mortality in our study was 2.8%. All three patients who died had not received any premedication. Two patients had

acute kidney injury (AKI) and one died due to intra cranial hemorrhage (ICH).

## DISCUSSION

In our study of 108 patients, ASV was used in 105 patients. Adverse reactions to ASV occurred in 3 (2.8%) patients, which was low as compared to other studies. Halesha et al reported adverse reaction to ASV in 12.7% of patients.<sup>11</sup> In study by Wanje et al 6.2% of patients developed adverse reaction to ASV.<sup>12</sup>

**Table 1: Comparison of adverse reaction to ASV in patients receiving premedication versus patients not receiving premedication.**

Group	Adverse reaction to ASV		P value
	Present	Absent	
Group A	0	59	0.81
Group B	3	43	

Patients in group A had no adverse reaction to ASV and 3 patients (6.52%) in group B developed adverse reaction to ASV (Table 1). Two groups were compared and there was no statistical significance to premedication use with adverse reaction to ASV. In a trial of 52 Sri Lankan patients who received polyvalent antivenom, the frequency of early reactions was modestly reduced with the combination of an IV chlorpheniramine bolus and hydrocortisone infusion when compared with placebo or hydrocortisone alone.<sup>9</sup>

In a trial of 101 Brazilian children and adults receiving antivenom for snakebite, the frequency of allergic reactions was approximately 25% regardless of whether patients received intravenous promethazine or placebo.<sup>10</sup> Our findings concurred with other earlier studies.<sup>9,13</sup> Mortality in group B was high 6.5% as compared to no deaths in group A, but among three patients who died, 2 patients had AKI on presentation and one had ICH before ASV was started.

In our study only 3 patients developed adverse reaction out of 105 patients who received ASV (2.85%). Adverse reactions to ASV in our study were low, 2.85% only, hence a limitation in comparison of 2 groups.

## CONCLUSION

Premedication with hydrocortisone and pheniramine do not prevent adverse reactions to ASV significantly. Adverse reactions to ASV were low in our study to comment fully on role of premedication to prevent these reactions.

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