

**Title:**        **ROLE OF SKIN TESTING IN ADMINISTRATION OF EQUINE RABIES IMMUNOGLOBULIN IN CATEGORY III ANIMAL BITE CASES**

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**Keywords** Roll, Skin testing, Equine Immunoglobulin, Predicting anaphylaxis

**Abstract** Rabies Immunoglobulin (RIG) is a life saving drug in all category III exposures. Use of RIGs was as low as 2% in our country by medical profession for the fear of anaphylaxis. The skin testing may detect the rare case of IgE mediated (type I) hypersensitivity to equine serum protein. However, majority of reactions to ERIG result from complement activation and are not IgE mediated and will not be predicted by skin testing.

## Original Article

## Role of Skin Testing in Administration of Equine Rabies Immunoglobulin in Category III Animal Bite Cases

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**ABSTRACT**
**Introduction :**

Rabies Immunoglobulin (RIG) is a life saving drug in all category III exposures. Use of RIGs was as low as 2 % in our country by medical profession for the fear of anaphylaxis. The skin testing may detect the rare case of IgE mediated (type I) hypersensitivity to equine serum protein. However, majority of reactions to ERIG result from complement activation and are not IgE mediated and will not be predicted by skin testing. The recent WHO recommendation states that there are no scientific grounds for performing a skin test prior to administration of ERIG, because testing does not predict reactions and ERIG should be given whatever the result of the test.

**Objective:-**

To assess the role of skin testing in administration of ERIG in category III animal bite case.

**Material & methods:-**

1000 patients with category III animal bite attending the ARC OPD of S.C.B Medical College, Cuttack, during the period Jan 2009 to April 2011 was taken in to consideration as study subjects. All these patients were administered ERIG after skin testing. These patients were followed up for any allergic reaction. Detail history was elicited from those cases reported for allergic reaction.

**Observation:-**

Out of the 1000 patient reported with category III animal bite cases 70% were male and 30% were female. Most of them were in the age group 1-20 years. 97% cases skin test was negative & only in 3% of the cases skin test was positive. Out of the 97% patient with negative skin test three cases reported with allergic reaction however no anaphylaxis was encountered.

**Conclusion:-**

Skin testing in administration of ERIG in category III animal bite case is not mandatory and skin test does not predict anaphylaxis reaction

**Key words:-** Roll, Skin testing, Equine Immunoglobulin, Predicting anaphylaxis

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**INTRODUCTION**

Rabies Immunoglobulin (RIG) is a life saving drug in all category III exposures. WHO-APCRI Indian Rabies Survey (2004) revealed that the use of RIGs was as low as 2% in our country & one of the reasons for non use of RIGs by medical profession is the fear of anaphylaxis<sup>1</sup>. However anaphylaxis is quite rare with currently available RIG preparations, as they are highly purified following heat treatment, pepsin digestion and enzyme refinement with very low protein content (3%). In spite of high purity of ERIG 1-11% hypersensitivity are known to occur after preliminary skin test<sup>2</sup>. The skin test acts as a

window, which helps us to identify the possible immunological response that will be mounted by the immune system of an individual to an allergen. The skin testing may detect the rare case of IgE mediated (type I) hypersensitivity to equine serum protein. However, majority of reactions to ERIG result from complement activation and are not IgE mediated and will not be predicted by skin testing<sup>3</sup>. The recent WHO recommendation states that there are no scientific grounds for performing a skin test prior to administration of ERIG, because testing does not predict reactions and ERIG should be given whatever the result of the test.

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### Objective

To assess the role of skin testing in administration of ERIG in category III animal bite cases.

### Material & methods

1000 patients with category III animal bite attending the ARC OPD of S.C.B Medical College, Cuttack, during the period Jan 2009 to April 2011 was taken in to consideration as study subjects. All these patients were administered ERIG 40IU/KG body weight after skin testing. Detail history was elicited from those cases reporting for severe allergic reaction. Skin testing was done using insulin syringe with 31 gauge needle, 0.1 ml of normal saline was injected intradermally in the right forearm (control). Than 0.1 ml of 1:10 dilution (in sterile normal saline) of ERIG was given ID in the left forearm (as test dose). Both the injection produced weal of 3-5mm in size. After 20 minutes it was observed & a weal of more than 10 mm was taken as skin test positive. All 1000 cases were administered ERIG as it was available free of cost in the hospital. The patient were followed up for 7 days for any severe allergic reaction.

### Observation

Out of the 1000 patient reported with category III animal bite cases 70% were male and 30% were female. Most of them were in the age group 1-20 years. 97% cases skin test was negative & only in 3% of the cases skin test was positive. Out of the 97% patient with negative skin test three cases reported with allergic reaction.

All the three cases reported to the hospital with severe allergic reaction were skin test negative. The factor that was common to all the three cases with allergy was that all the three case was exposed to sun heat exertion after receiving the ERIG.

### Profile of patient reporting with allergic reaction

Profile	Case 1	Case 2	Case 3
Age	19	14	34
Occupation	Student	Student	Labourer
Food intake before IG Administered	Chapati & veg curry	Fried chops	Fish & rice
Activity after administering IG	Took a long drive back home	Went to play immediately after reaching home	Went back to work
Type of reaction	Sever itching, red Wheal over the body	Rashes all over the body with itching	Severe itching, Rash all over the body, coughing
Treatment Given	Avil Injection Corticosteroid	Avil Injection Corticosteroid	Avil Injection Corticosteroid

### Discussion

It is a well known fact that Rabies is hundred present fatal disease and hence post exposure prophylaxis becomes very important in all patients with category III exposurers and they need RIG. ERIG is definitely a cheaper option to HRIG but the fear of anaphylaxis reaction restricts its use in skin test positive cases. Out of the 1000 patients reporting with category III animal bites. In 97% cases skin test was negative & only in 3% of the cases were skin test positive. Out of the 97% patient with negative skin test only three cases reported with allergic reaction. Sudarshan M K & et al in a study at KIMS, Bangalore found positive reaction to skin test dose to ERIG in 6.1 % of patients<sup>4</sup>. In these cases although skin test was positive, the ERIG was administered due to non affordability of HRIG by the cases. The study revealed that even in these cases with positive skin reaction, ERIG can be safely administered with pre-medication with Anti-Histamine and there was no systemic anaphylaxis. In a similar study conducted by Ashwath Narayana D.H et.al found that out of 13.2% cases those were skin test positive for ERIG only 0.8% of the subjects had delayed systemic adverse drug reaction after full dose of ERIG. However 0.1% who was skin test negative developed immediate systemic reaction which subsided with treatment<sup>5</sup>. In a study conducted by T. Behara et al 129 cases with skin test positive were administered ERIG and none of the cases reported of having anaphylaxis reaction<sup>6</sup>. Thus the skin test does not predict the anaphylaxis reaction.

### Conclusion

Skin testing in administration of ERIG in category III animal bite case is not mandatory and skin test does not predict anaphylaxis reaction. Patient reported with skin test negative also report positive for allergic reaction. Since skin test has no roll in administer of ERIG The doctors treating category III animal bite cases can administer ERIG in full dose without the fear of anaphylaxis reaction even in skin test positive cases.

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