Title: EVALUATION OF STATUS OF ERIG USE FOR POST-EXPOSURE PROPHYLAXIS OF RABIES

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Keywords ERIG use, IDRV use, post exposure prophylaxis of rabies

Abstract To Evaluate status of Equine rabies immunologlobulin (ERIG) use in Category III animal bite cases

Original Article

EVALUATION OF STATUS OF ERIG USE FOR POST-EXPOSURE PROPHYLAXIS OF RABIES

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ABSTRACT

Objective: To evaluate status of Equine rabies immunoglobulin (ERIG) use in Category III animal bite cases.

Design and Setting: Hospital based study was conducted at Anti Rabies Vaccination OPD of a Government Tertiary health care centre at Mumbai, Maharashtra. 4 years data from year 2011 to 2014 was collected for ERIG use. Intra-dermal rabies vaccine (IDRV) data was used for comparison. Percentage of ERIG use along with yearly and monthly ERIG use was calculated.

Results: ERIG use ranged from 5.4 to 39.1% over 4 years with the average of 18.4%. Month wise data showed absolute no use of ERIG towards end of a year while IDRV use was constant throughout a year.

Conclusion: Use of ERIG remains extremely poor in category III animal bite cases.

Key words: ERIG use, IDRV use, post-exposure prophylaxis of rabies

INTRODUCTION

Rabies has terrified man since antiquity. The fear is by no means unfounded since the disease is invariably fatal and perhaps the most painful and horrible of all communicable diseases in which the sick person is tormented at the same time with thirst and fear of water (hydrophobia). Fortunately, animal bites, if managed appropriately and timely; the disease is preventable to a large extent. In this regard the post-exposure treatment of animal bite cases is of prime importance.[1]

Roughly 36% of the world's rabies deaths occur in India each year, most of those when children come into contact with infected dogs. World Health Organization (WHO) recommendations for post-exposure treatment divide rabies exposure into three categories: category I - least serious - when the victim has been touching or feeding infected animals, but shows no skin lesions; category II, when the victim has received minor scratches without bleeding or has been licked by an infected animal on broken skin; and category III, when the victim has received one or more bites, scratches or licks on broken skin which bled, or was trans dermal or has had other contact directly over intact mucous membrane with infected mucus.[2]

Rabies immunoglobulin (RIG) should be given along with anti-rabies vaccine for all category III exposures, irrespective of the interval between exposure and beginning of treatment. Human rabies immunoglobulin (HRIG) or Equine rabies immunoglobulin (ERIG) may be used.[3]

HRIG is the preferred product, however, it is in short supply and more expensive. Where it is not available or affordable, ERIG should be used. Most of the new ERIG preparations are potent, highly purified, safe and considerably less expensive than HRIG.[4]

In Mumbai, yearly average 5 to 6 rabies deaths occur as per Brihanmumbai Municipal Corporation (BMC) data. Considering all these facts, current study was conducted to know the status of ERIG use in category III animal bite cases.

METHODOLOGY:

It is a hospital based study conducted at Anti Rabies Vaccination (ARV) OPD of a government tertiary health care centre at Mumbai, Maharashtra.

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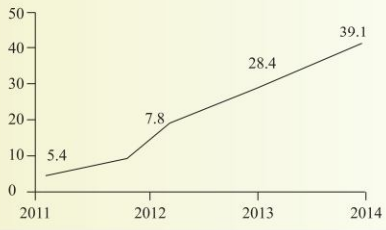
TABLE 1
IDRV Vs ERIG: 2011-2014

Year	IDRV use (No. of cases)	Category III Animal bite cases	ERIG use (No. of cases) cases)	Percentage of of ERIG use
2011	2132	1269	69	5.4
2012	2414	1363	106	7.8
2013	2332	1142	324	28.4
2014	2792	942	368	39.1
Total	9670	4716	867	18.4

Figure 1:
Year wise Percentage of ERIG use



This centre is the first ARV clinic in Maharashtra to implement Intra-dermal rabies vaccination (IDRV). ID regimen followed in this clinic is Updated Thai Red Cross (TRC) schedule. For ID administration, PCECV (Purified Chick Embryo cell vaccine) and PVCV (Purified Vero cell rabies vaccine) are used. Adherence to ID regimen is fairly good, above 90% in patients being managed at this centre.

In the current study, 4 years data for ERIG use was analysed from year 2011 to 2014. For comparison, same 4 years data for IDRV use was also studied. As per guidelines, IDRV is used in both category II and III animal bite cases while ERIG is indicated for category III only.[1] Hence data was collected for IDRV use, category III cases and ERIG use separately. 9670 animal bite cases which were prescribed full Post-Exposure Prophylaxis (PEP) schedule comprised the study population.

Year wise use of ERIG was studied in terms of percentage. Month wise ERIG use was also compared for the whole study duration.

RESULTS:

Out of 9760 enrolled cases, year wise distribution of cases was similar i.e. 2132, 2414, 2332 and 2792 cases in year 2011, 2012, 2013 and 2014 respectively. None of the case was denied for treatment with IDRV. These cases include both category II and III.

TABLE 2
Month wise use of IDRV Vs ERIG: 2011-2014

Month	IDRV use	ERIG use
January	229	28
February	207	24
March	286	31
April	298	79
May	231	62
June	265	73
July	232	40
August	197	23
September	205	8
October	193	-
November	201	
December	248	-

Table 1 shows year wise data of IDRV use, category III animal bite cases and ERIG use along with percentage of ERIG use.

Table 2 shows that towards the end of year, there was absolute no use of ERIG; while use of IDRV is uniformly constant over the year.

DISCUSSION:

As rabies is fatal, there are no contraindications to post-exposure prophylaxis, and it should be given as indicated by the nature of the exposure.[5] Though WHO recommends use of rabies immunoglobulin with the first dose of vaccine for category III, its use is being overlooked in current practice.

In current study, extremely poor use of ERIG was observed. The average ERIG use over 4 years of study duration was just 18.4%. This shows that this health centre missed around 4/5th of the cases to provide complete protection against the deadly disease, rabies.

Year wise data showed improvement in ERIG use with 39.1% in 2014 as the highest utilization, which is not even the half of the cases. Worldwide countless patients who should receive HRIG or ERIG are being treated with vaccine alone.[6] One of

the Indian studies observed that, 1621 patients were advised ERIG due to the nature of the animal bites, but only 286 (17.6%) patients of them who could afford the treatment, received it.[7]

Month wise variations in ERIG use is a clear indication of recurrent supply issues of ERIG. ERIG and HRIG are in short supply worldwide. Production of HRIG hinges on the availability of human donors who have been immunized against rabies and requires an expensive screening and production process. Production of ERIG requires a constant supply of serum from horses that have been immunized against rabies.[6] Considering the high cost of HRIG, developing countries use ERIG. Literature shows that reasons for poor usage of ERIG are poor supply, high cost as compared to IDRV and lack of clarity on a skin sensitivity test (SST). The incidence of adverse events after the use of modern ERIG is low (0.8–6.0%), and most reactions are minor.[8] Various studies such as Sudarshan MK et al.[9] and Behera TR et al.[10] have proved ERIG to be safe for clinical use. WHO clearly states that skin tests are not recommended before administration of equine rabies immunoglobulin, as such tests poorly predict severe adverse events and should not be the basis for not giving equine immunoglobulin if it is needed.[5] In spite of it; health care providers seem to be hesitant to use ERIG without SST.

The ultimate result of all these factors is observed in current study in the form of extremely poor utilization of ERIG in needy patients.

CONCLUSION:

It is highly needed to pay attention towards issues pertaining to ERIG use as the ERIG usage among category III animal bite cases is very poor.

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