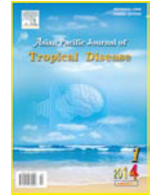


Contents lists available at [ScienceDirect](#)

Asian Pacific Journal of Tropical Disease

journal homepage: www.elsevier.com/locate/apjtd

Document heading

doi: 10.1016/S2222-1808(14)60495-3

© 2014 by the Asian Pacific Journal of Tropical Disease. All rights reserved.

Epidemiology and prevention of animal bite and human rabies in a rural community—One health experiment

Nugehally Raju Ramesh Masthi^{1*}, Doddabele Hanumanthappa Ashwath Narayana¹, Praveen Kulkarni¹, Gangaboraiah¹, Ashwin Belludi²

¹Department of Community Medicine, Kempegowda Institute of Medical Sciences, Bangalore, India

²Department of Neurovirology, National Institute of Mental Health and Neurosciences, Bangalore, India

PEER REVIEW

Peer reviewer

Dr. TV Sanjay, Associate Professor, Life Member-4, Association for Prevention and Control of Rabies in India, No 301, Sri Sai Ram Enclave, Uttarahally main road, Uttarahally, Bangalore-61, India.
Tel: +919448607041
E-mail: sanjoyth03@yahoo.co.in

Comments

This is a good study in which the authors have come out with a novel idea and demonstrate the success of the one health experiment.
Details on Page S490

ABSTRACT

Objective: To estimate the incidence of human rabies and animal bite/exposure; to describe the post exposure prophylaxis received by animal bite/exposure cases; to assess the safety and immunogenicity of rabies vaccine (purified chick embryo cell vaccine) administered as pre-exposure vaccination for school children and risk groups by intradermal route in the rural community and to demonstrate a decrease in the incidence of human rabies and animal bite/exposures through implementation of one health experiment.

Methods: This prospective interventional study was conducted over a period of 2 years (December 2009–November 2011) in a rural area near Bangalore, Karnataka, South India and consisted of six villages (project villages), three villages were identified as study villages with active interventions (Implementation of rabies awareness activities, post exposure prophylaxis, pre-exposure intradermal rabies vaccine) and three villages as control villages without any active interventions.

Results: A majority of the animal bite cases were category III exposures and all of them had received rabies immunoglobulin and anti-rabies vaccine as per WHO recommendation. A majority received 3 to 5 doses of vaccine. Three hundred and sixty eight subjects had received pre-exposure intradermal rabies vaccination thrice on days 0, 7 and 28 d.

Conclusions: No human rabies case was reported during the study period and there was 30% decrease in animal bite/exposure cases in study villages after the one health experiment project was implemented. Pre-exposure vaccination was safe and immunogenic.

KEYWORDS

Animal bite, Incidence, Post exposure prophylaxis, Intradermal rabies vaccine, Pre-exposure prophylaxis

1. Introduction

There are no global estimates of dog-bite incidence, however studies suggest that dog-bites account for tens of millions of injuries annually[1]. An estimated 55000 people die annually from rabies, and bites from rabid dogs account for the vast majority of these deaths[2]. About 20000 human rabies deaths and 17.4 million animal bite cases occur in India annually which corresponds to an incidence rate of 1.7%. Ninety five percent of human rabies deaths are due

to dog bites[2]. Majority of human rabies victims are from rural areas and belong to lower socio-economic status. Two thirds of Indian population live in rural areas and are at risk of dog bites and rabies[2].

However when one looks at the prevention and control measures available for human and animal rabies in the country, it was observed that the different stake holders like medical, veterinary and animal welfare activist all work independent of each other and have not integrated their work at any level of the organization setup.

*Corresponding author: Dr. N R Ramesh Masthi, 101,N D Pinnacle apartments, 13th main,12th cross,BTM-2nd stage,Bangalore-76
Email : ramesh.masthi@gmail.com
Tel: +91-9845759992

Foundation Project: Supported by Global Alliance for Rabies Control, Kansas, United States of America.

Article history:

Received 3 Dec 2013

Received in revised form 9 Dec, 2nd revised form 14 Dec, 3rd revised form 19 Dec 2013

Accepted 26 Dec 2013

Available online 28 Jan 2014

In this background, the medical, veterinary and animal welfare professionals in a joint effort had come together in a novel project for the prevention and control of rabies and demonstrate a decrease in incidence of animal bite in a rural community with the concept of one health experiment[2]. The objective of this paper is to estimate the incidence of human rabies and animal bite/exposures, to describe the post exposure prophylaxis received by animal bite/exposure cases, to assess the safety and immunogenicity of rabies vaccine (purified chick embryo cell vaccine) (PCECV) administered as pre-exposure vaccination for school children and risk groups by intradermal route in the rural community, and to demonstrate a decrease in the incidence of human rabies and animal bite/exposure through implementation of one health experiment.

2. Materials and methods

This prospective interventional study was conducted over a period of two years (01 December 2009 to 30 November 2011) in a rural area. The project area was situated 25 km away from Bangalore city, Karnataka, India and consisted of six villages (project villages), three villages were identified as study villages with active interventions (Implementation of rabies awareness activities, post exposure prophylaxis, pre-exposure intradermal rabies vaccine) and three villages as control villages without any active interventions. These villages were selected for the reasons that two human rabies death was reported in the last eight years and animal rabies was enzootic in this area. All the people residing in these villages were the study subjects.

For the purpose of estimation of animal bite/exposure incidence 20% of the population was selected in each village by probability proportionate to size sampling technique. The first household was selected randomly and subsequently every fifth household in the village was surveyed by systematic random sampling technique. The institution ethical clearance was obtained before the start of the project. Informed consent from vaccinees and parent/guardian of children was taken for administration of pre-exposure rabies vaccination.

From the households selected an baseline survey (Beginning of the project) information on animal bite/exposure in the study subjects was obtained from an adult responsible respondent in the family aged between 18 to 60 years using pre-tested structured questionnaire in local language (Kannada) by interview technique. Subsequently based on the results available from the base line survey a series of socio-culturally acceptable rabies and animal bite behavior change and communication materials were developed which included outdoor wall painting having messages on rabies and animal bite prevention, post exposure prophylaxis, *etc*; posters on rabies post-exposure prophylaxis (PEP), responsible pet ownership and how to avoid animal and dog bites, *etc*; rabies video (local language) transmission through local cable network, indoor annual

wall calendar having message on rabies and animal bite prevention was distributed to all the households; folk dance performance; public rallies on rabies and animal bite awareness; rabies and animal bite education through chart on snake and ladder game for school children; school book label having messages on rabies and animal bite prevention, drawing competitions on rabies prevention in schools. Also training and orientation of formal and informal village leaders, women self-help groups, medical and veterinary personnel, school teachers and village level volunteers (rabies volunteers) on rabies and animal bite prevention. Lastly the same households were revisited again on completion of one year and endline survey of animal bite/exposure was done[3].

Post exposure prophylaxis was provided free of cost to all the animal bite victims from study villages *viz.* anti-rabies vaccine (ARV) for category-II exposures and ARV and rabies immunoglobulins for category-III exposures as per WHO recommendation[4]. For the animal bite victims residing in control villages, there was no active interventions. However they did receive treatment from the existing facilities at the villages apart from treatment provided by the project staff when informed. Data collected in the project was analyzed statistically using SPSS version 16.0. The descriptive statistics *viz.* percentages are computed to describe the data. In the inferential statistics, chi square test was applied to know the significant difference between baseline and end line survey. The data was presented in the form of tables and graphs wherever necessary. Geometric mean concentration and geometric standard deviation with 95% confidence intervals were applied to estimate the immunogenicity of pre-exposure intradermal rabies vaccine (IDRV).

3. Results

The total population of study villages was 10220 and in control villages was 6023. The general characters of the population as per the survey conducted in the sample 20% of the population is majority 69% and 67% of the population was in the age group of 15 to 55 years in study villages and control villages. Fifty one percent were males, 75% and 70% were literates, 30.7% and 22.8% were coolies by occupation, 52.8% and 53.1% were currently married, 92.6% and 96.6% were Hindu by religion and 71% and 66% were living in nuclear families in study and control villages respectively. The average family size in study and control villages was 4.3 and 4.5 respectively.

The annual incidence of animal bite/exposure cases in base line survey (History of animal bite /exposure in the last one year) was 2.7% and 2.8% from study and control villages respectively (Table 1). Following the active interventions in study villages with various rabies awareness activities, the incidence of animal bite/exposure cases in study villages decreased to 1.9% at the end of one year when compared to the baseline incidence of 2.7% and was found to be statistically significant ($Z=2.05$, $P=0.039$). This implies that

Download English Version:

<https://daneshyari.com/en/article/3454478>

Download Persian Version:

<https://daneshyari.com/article/3454478>

[Daneshyari.com](https://daneshyari.com)