

Title: UNDERSTANDING THE DYNAMICS OF ANIMAL BITES AND RABIES PROPHYLAXIS IN A RURAL COMMUNITY - AN EXPLORATIVE STUDY

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Keywords

Abstract India is a hot bed of human rabies. About three fourth of this problem is in rural areas. Hence, this study was conducted to explore and understand the interface between animals and humans in three villages near Bangalore having a population of 6023. A prospective cohort surveillance of one year revealed a dog; other animal ratio of 1:2; dog:human ratio of 1:18 and dog:human bite ratio of 12:1.

Original Article

UNDERSTANDING THE DYNAMICS OF ANIMAL BITES AND RABIES PROPHYLAXIS IN A RURAL COMMUNITY – AN EXPLORATIVE STUDY*

N. R. Ramesh Masthi*, M. K. Sudarshan*

Abstract

India is a 'hot bed' of human rabies. About three fourth of this problem is in rural areas. Hence, this study was conducted to explore and understand the interface between animals and humans in three villages near Bangalore having a population of 6,023. A prospective cohort surveillance of one year revealed a dog: other animal ratio of 1:2; dog: human ratio of 1: 18 & dog: human bite ratio of 12:1. The annual incidence of animal bites in humans was 2.5%; majority of these were in adults (70%), males (66%) and category II (81%) exposures. The rabies post-exposure prophylaxis was not satisfactory as 41% of dog bite victims had not washed the bite wounds with soap & water; 45% had not received anti-rabies vaccination & none received rabies immunoglobulins.

It was observed that there were 1080 human population and 330 dogs in the villages. 27 people gave history of dog bite. Majority of the bite victims belonged to category –II. Nearly 1/4th bite cases did not wash the wounds with soap and water. A similar number did not take anti rabies vaccination. None of the bite cases had taken rabies immunoglobulins. Based on the above information a flow chart of dog bites and rabies prophylaxis in humans was constructed and described below.

Discussion:

We had observed that "other (than dog) animal" constituted a significant proportion of animal population in the villages. Non-biting animals were more than biting animals. Animals present were equal to humans in numbers. The dog to human ratio was higher than the national figures of 1:36.⁸ For every 12 dogs there was an occurrence of one human bite i.e. if there are 12 dogs in an area you can expect one dog bite in humans in one year. It must be noted here that the human population followed up was a sampled population and dog population was the total number present in the villages. Hence, the actual dog to human bite ratio and human to animal/dog ratio could be higher or lower and is dependent on the many factors including density of human and dog population in an area.

The annual incidence of animal/dog bite reported in the current study is higher than the Indian rabies survey (1.7%) and more than twice from another local survey (1.17%).^{2,9} We had observed that dog was the only animal responsible for the bite cases. The people were not aware that bites/exposures to rabies can also occur from other animals and this could be the probable reason on why only dog bite cases were reported. The main biting animal was dog in 91.5% of cases. Other animals (cow & calf) constituted 2.4% of exposure.⁸ Similarly more numbers of category-II bites observed could be due to the fact that information was obtained by household survey which was mainly dependent on oral history. There was no documentation or records/reports available with the bite cases. However, majority of the bites belonged to Category III in the other studies.^{2,9}

A single rabies death was reported in a large animal (calf) which was confirmed clinically by the veterinarian. Deaths of free roaming dogs were also observed. Probably, the dog being a non-commercial animal was not of much interest for confirmation of rabies by laboratory diagnosis or by the local veterinarians.

Conclusion : The ratio of dog & human population and dog & human bite was high. The rabies prophylaxis in humans was not satisfactory.

Limitation : The sample size is small and we cannot generalize the results.

Recommendation : There is a need for control of dog population and improving delivery of rabies prophylaxis in rural community.

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Introduction :

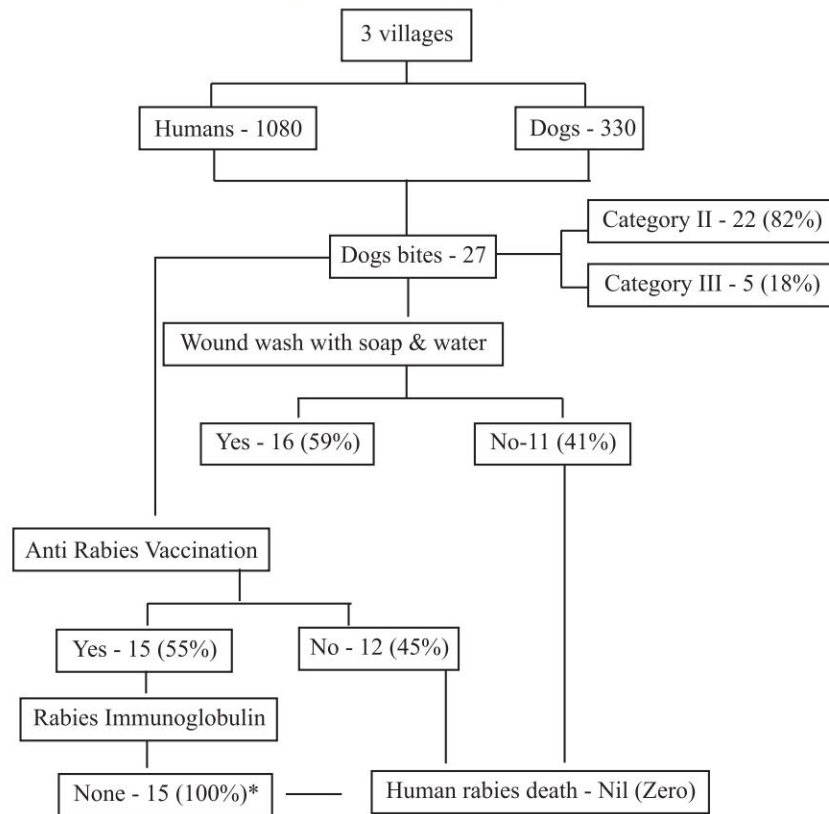
Dog bite fatality rates are higher in low- and middle-income countries as rabies is a problem in many of these countries, and there may be a lack of post-exposure treatment and appropriate access to health care.¹ India is a hot bed of human rabies as an estimated 17 million animal bites & 20,000 human rabies deaths occur annually. About 75 % of these human rabies deaths occur in rural areas.^{2,3,4} Rabies is a neglected disease and not yet a notifiable disease in India. According to National Centre for Disease Control (NCDC), Delhi only 5.4 million people in India receive post exposure prophylaxis.⁵ Therefore, the question one needs to ask is what happens to the animal bite cases after the bite and what are the realities in the field. There is a need to explore and understand the interface between animals

Table : I
Animal surveillance information

Characteristic	No. (%)
Total Animals	1088
Dogs	330 (30)
Others*	758 (70)
Human : Animal ratio	1 : 1
Dog : Other animal ratio	1 : 2
Dog : Human ratio	1 : 18
Biting animals : Non biting animals ratio	1 : 2
Dog : Human bite ratio	12 : 1
Incidence of animal rabies (in cow)	1

and humans in a rural population. Hence, in this background the present study was conducted with the following objectives - i) To describe the animal and

Table : I
Flow chart of dog bites and rabies prophylaxis in humans



human interface in a rural community. ii) To describe the post-exposure prophylaxis seeking behaviour of animal bite cases.

Subjects & Methods:

All humans and domestic animals residing in three randomly chosen villages coming under the rural field practice area of Kempegowda Institute of Medical Sciences (KIMS), Bangalore were included in this exploratory study. A prospective cohort surveillance of a sampled human population (using probability proportion to population sampling technique i.e. 20% of the households in the study area) for one year (2010-11) on animal bites and rabies prophylaxis was done. Information on dogs including domestic animals was collected through household survey done by veterinarians. The institution ethical committee clearance was obtained before the start of the study, which was part of a larger study popularly known as "Adopt a Village: A Rural Rabies Prevention Project".^{6,7,8}

Results:

A total of 1080 study subjects were followed up for one year. 27 cases of animal bites were reported in one year and the annual incidence of animal bite was 2.5%. 70% of the animal bite cases were in persons above 15 years of age. 67% of the animal bites occurred in males. Dog was the only biting animal in 100% of the cases.

Table -1 gives information about animal surveillance in the 3 villages. Dogs constituted about one third of the animals. The human to animal ratio was almost equal. Other animal (cow, buffalo, sheep, goat & cat) present

was more than twice the number of dogs in the villages. The dog to human ratio was high. The non biting animal to biting animal (dog & cat) ratio was more than double. Dog to human bite ratio was high. There was one case of animal rabies reported in the villages. None in the population knew about this rabies death in a large animal.

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