

Incidence of Dog bite in a Community Hospital following Earthquake

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ABSTRACT

Dog bite accounts for most of the mammalian bites encountered in emergency department worldwide. Rabies is estimated to cause 55,000 human deaths annually. Most of these deaths occur in Asia and Africa, with rural populations and children most frequently affected. There have been very few reports of dog bites following natural disaster. This retrospective study was conducted one month after the April earthquake to see the incidence of dog bite and compared with the incidence with last one year. Age and sex of the patient was also recorded along with whether the dog was a pet or stray. The study shows clear increase in the incidence of dog bite following the earthquake. Most of the victims were females, and children were more affected than adults.

Keywords: Dog bite, Earthquake, Natural disaster,

INTRODUCTION

Worldwide, rabies is estimated to cause 55,000 human deaths annually. Most of these deaths occur in Asia and Africa, with rural populations and children most frequently affected. In many resource-limited countries, canine rabies continues to be a threat to humans. A variety of animal reservoirs have been identified in different countries. Because many animal bites are never reported, determining the exact incidence of bite wounds is difficult. In 2012, there were approximately 70 million pet dogs and 74 million pet cats in the US. Recent reports estimate 4.5 million dog bites per year and in 2008 this resulted in approximately 316,000 emergency department visits. Substantially, more dog bites occur than cat bites. These two species account for the majority of mammalian (nonhuman) bite wounds encountered in the emergency department.¹ Surveillance data from 2012 identified 6162 confirmed animal cases of rabies in the United States. Only 8% of these cases were in domestic animals, including 257 cases in cats, 84 in dogs, and 115 in cattle. In North American wildlife reservoirs, including bats, raccoons, skunks, and foxes, the infection is endemic, with involvement of one or more rabies virus variants in each reservoir species. Rabies is a fatal zoonotic disease and big threat for Nepalese people. More than 35000 people take post exposure treatment in suspicious or rabid animals bite per annum and about 100 people die annually due to rabies.² There have been several studies regarding human, canine and environmental factor associated with dog-bite.³ A study done after the Fukushima nuclear accident showed the median monthly incidence proportion during the

pre-disaster period and the highest monthly incidence proportion during the post-disaster period was 0.21 and 6.50 per 100 visits, respectively. The weekly incidence proportion peaked at 3 weeks after the earthquake and nuclear disaster and thereafter decreased to the baseline level⁴.

MATERIALS AND METHODS

This is a retrospective, descriptive cross-sectional study done in Stupa Community Hospital, Boudha. Stupa community Hospital is 100 bedded, located in the middle of town. Boudha is located near of one of worst affected areas of the 2015 earthquake, Kapan. All cases of dog-bite following one month of the earthquake were enrolled in the study. Emergency department records were reviewed and entered in MS- Excel. The previous years' data were collected from record book for the trends in dog bite. Data were analyzed by using MS-Excel.

RESULT

During the period of April-June 2015 a total of 38 cases were recorded. In comparison with the previous year's (2014) record, maximum cases of dog bites were observed in the month of October (23 in number). The included month's record was higher by 16 % compared to the highest record of the previous year (in the month of October). When compared, it was more by 292% in April, 2015. This clearly shows that there is an increase in the incidence of dog-bite following the earthquake.

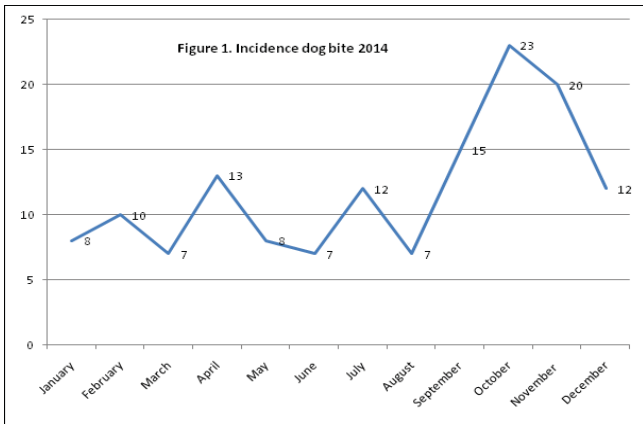


Fig 1: Incidence dog bite 2014.

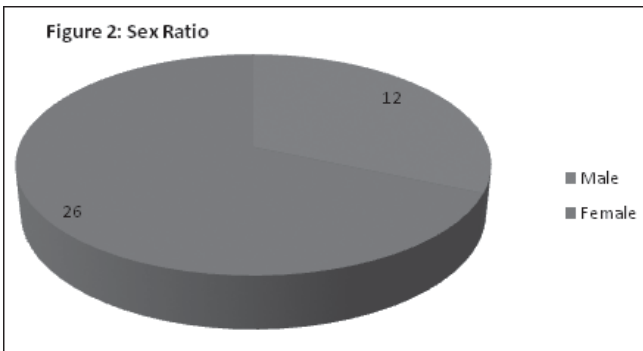


Fig 2: Sex Ratio

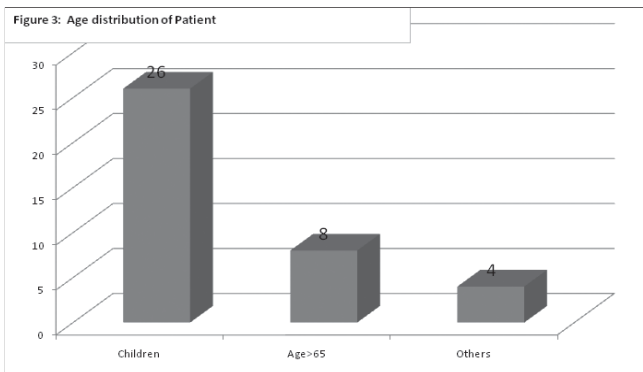


Fig 3: Age distribution of Patient

Most of the bites are caused by stray dogs. The record shows that only about 10% of the bite is inflicted by pet dogs. Around 90% of the culprit dogs were stray dogs.

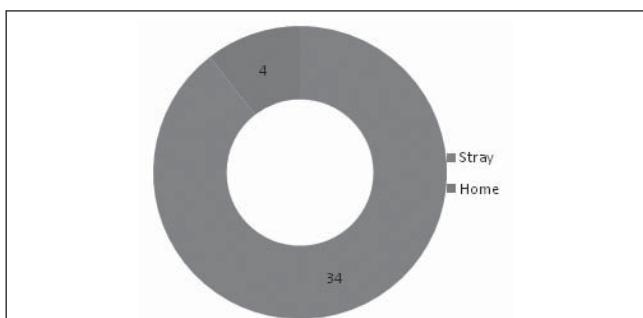


Fig 4: Type of Dog

DISCUSSION

Dog bite causes various kinds of physical injuries, mental trauma and lethal rabies. Dogs are the major vectors of rabies and 95% cases of rabies were recorded from dog bite globally.⁵ Some Asian countries such as Thailand, Philippines and Sri Lanka, have been able to reduce human rabies deaths to a great extent due to implementation of vaccine, awareness, control of dog population and health legislation, but India, neighboring Pakistan and Bangladesh report thousands of human deaths every year. There is little information on the incidence of dog bites and mortality due to rabies because of a lack of systematic reporting and a lack of measurement of the quality and completeness of reported data.⁶ Incidence of dog bite in Nepal is not exactly known but more than 35000 people take post exposure treatment in suspicious or rabid animal bites per annum and about 100 people die annually due to rabies. Incidence of dog bite is not uniform throughout the year.² A study done in India shows most cases of dog bite occurs in pre-monsoon 40.8%, monsoon 26.7% and post monsoon 32.5%.⁷ In this study, the date from 2014 shows maximum number of cases (23) occurring in the month of October (post monsoon). Minimum number of cases occurring in the month of March, June and August, each having 7 cases. In the month comprising of the earthquake they were 38 in number, which is 165% more compared to the maximum occurrence in the year 2014 and 542% more than minimum occurrence. This shows that there is clear increase in the incidence of dog bite immediately post earthquake. A study done in United States of America following a natural disaster (hurricane) shows the top three traumas chief complaints included: (1) nail puncture wounds, (2) lacerations; and (3) dog/cat bites. The overall incidence of animal bites was 22% of all the trauma complaints. Of the animal bites seen, dog bites accounted for 55%, cat bites, 40%, and snake bites, 5%.⁸

The approach to dogs in developing countries differs largely from the developed world. Dogs are usually kept as pets and well looked after in the developed world whereas only a small proportion of dog population is well looked after in developing world. WHO has established five different categories to further clarify the different populations of urban dogs: 1. Restricted dogs, fully supervised by man, 2. Family dogs, semi-independent and fully restricted by man, 3. Neighborhood dogs, semi-restricted and semi-dependent, 4. Unrestricted dogs, semi-dependent and unrestricted, 5. Feral dogs, independent and unrestricted. Categories 3-5 would be described as street dogs from a European point of view. The semi- to unrestricted dogs is also commonly used as guard dogs. On the downside, free roaming dogs serve

as an important reservoir with regard to the spread and transmission of rabies and other diseases, and might also be perceived as dangerous by the public⁹. In our case 89 % of people have been bitten by stray dogs. And only about 10% of them are bitten by pet dogs. Most of the victims were female 68% compared to 32% of male. This fact is contrary to other studies where no animal bites caused by misplaced dogs and cats biting strangers were seen and males were more likely to have experienced dog bites than female. This has been presented in a number of epidemiological studies on dog bite characteristics¹⁰.¹¹. Gender and age have both been shown to serve as two important risk factors for dog bites and children are more at risk than adults¹². It has been suggested that children have limited experience and are more likely to have substandard knowledge of safe interaction with dogs in combination with a higher level of curiosity than adults, thus becoming more vulnerable to being bitten by dogs. It has been argued that boys being more likely to display risk behavior, as shown in this study suggest this could be due to boys being more willing to take risks in a supervised environment to impress peers and teachers¹³. The high risk behavior mainly accounts for pet dog bite than the bite by stray dogs. Since most of these studies were done in the western world where there is strict control of stray dogs, might be one of the causes of these findings. Studies on the human factors are consistent regarding two demographical characteristics (gender and age) of dog bite victims. Other demographical characteristics of dog bite victims have been elucidated and proven to be conclusive from a global perspective. Coming from a low income background and rural areas is a well-known risk factor for dog bites¹⁴. This is believed to depend on a higher density of dogs as well as a higher number of unsupervised free-roaming dogs, and thus increased exposure to dogs for residents in the area. A multi-centric study on children in rural China could not show a positive correlation between dog ownership and dog bite incidence among children, but there was a significant association between having owned a dog previously and bite incidence.¹⁵ The dog bite incidence also appeared to have a positive association with displaying unsafe behavior when engaging with dogs.

There has been substantial rise in dog bites in following the disastrous earthquake in April in Kathmandu. Children appear to be the venerable group. Awareness regarding this might prevent dog-bite and related complication following disaster, if any in future.

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