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Original Research Article

An epidemiology of animal bite cases attending tertiary care centre of Bangalore Medical College and Research Institute, Bengaluru: a retrospective study

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ABSTRACT

Background: Rabies is a viral zoonosis. In up to 99% of cases, domestic dogs are responsible for rabies virus transmission to humans. About 30% of the victims of dog bites are children under the age of 15. Ironically, all these problems are preventable by effective vaccination. However, for an effective prevention programme, it is important to understand the epidemiology of animal bite cases. The objective of the study was to assess the epidemiological pattern of animal bite cases attending anti-rabies clinic.
Methods: A record based retrospective study was conducted from April to May 2016 by reviewing the records of one year in anti-rabies clinic.
Results: In the study out of 2850 bite victims, 78% were males and about 21, 54% were in the age group of 20-29 years. 97% of cases were bitten by dog. Based on area wise distribution majority of the bite victims were from Bangalore west (49.5%), among them 23% was referred for Immunoglobulin. The study also showed that majority of paediatric cases were reported more during the month of April and May.
Conclusions: In our study we found that majority of cases were reported among the paediatric age group during summer vacations. Hence education should be given in the community as well in schools for primary prevention of animal bite.

Keywords: Rabies, Animal bite, Monthly distribution, Prevention

INTRODUCTION

Rabies is an infectious viral disease that is almost always fatal following the onset of clinical symptoms. In up to 99% of cases, domestic dogs are responsible for rabies virus transmission to humans. Rabies is transmitted to humans and other animals, through the saliva of infected animals and in rare cases it can also be transmitted via organ transplantation.[1]

Globally, ten in every thousands of people die each year from rabies. In India, estimates range between 18000 to 20000 human deaths from rabies each year.[2] Among them about 30% of the victims are children under the age of 15.[3]

Rabies is primarily a disease of terrestrial and airborne mammals, including dogs, wolves, foxes, jackals, cats, bobcats, lions, mongooses, skunks, badgers, bats, monkeys and humans. Dog is still the main reservoir of rabies in India.[4] Over the years, dog bite related injuries are considered a public health issue. Apart from the pain caused it may also lead to infection, disfigurement, incapacitation and even post-traumatic stress disorder.[5]

Post exposure treatment, which consists of local treatment of wound, followed by active and passive immunization should be initiated immediately depending on the category of wounds.[6] Animal bite adds not only to the mortality due to a disease like Rabies, but also to the resources, in terms of man, money, time towards wound care and vaccination.

Over the recent years, urbanisation and deforestation has an impact on habitants, there are more chances of man being exposed to mammals and in turn leading to increase in animal bite cases. They may also influence the epidemiology of rabies. Even though rabies being 100% fatal disease, it is also easily preventable. With an existing effective rabies prevention program, it is still very important to understand the trends in animal bite cases to improve the management of the same. With this perspective, the present study was undertaken to assess the epidemiological pattern of animal bite cases.

The objective of the study was to assess the epidemiological pattern of animal bite cases attending anti-rabies clinic, tertiary care centre.

METHODS

A record based retrospective study was conducted from April to May 2016 from registers maintained in anti-rabies clinic of tertiary care centre. A pre-structured questionnaire was framed to obtain the data. All the records of January to December 2015 were reviewed and detailed epidemiological information such as age, gender, area, time, type of animal and monthly distribution of animal bite cases was collected. The recorded category of wounds was noted. Data was entered in excel and analyzed using SPSS software. Appropriate statistical tests were used for analysis. Charts, tables and graphs are added wherever necessary.

RESULTS

A total of 2850 records were reviewed, of which 1291 were referred cases from surrounding areas.

Age wise distribution

In the study, out of 2850 cases 35% were among the age group of 0-19years, followed by 19.64% who were in the age group of 20-29 years as depicted in Table 1, which says that not only the paediatric age group, even the young adults are more prone for animal bite.

Gender wise distribution

76.28% of cases were males and 23.72% were females, details shown in Figure 1, probably males are more exposed to outer environment, hence increase chance of being animal bitten victims.

Table 1: Age wise distribution of animal bite cases.

Age	Total	Percentage
0-9	474	8.32%
10 to 19	548	9.61%
20-29	560	9.82%
30-39	452	7.93%
40-49	345	6.05%
50-59	268	4.70%
60-69	141	2.47%
70-79	48	0.84%
80-89	14	0.25%
Total	2850	100.00%

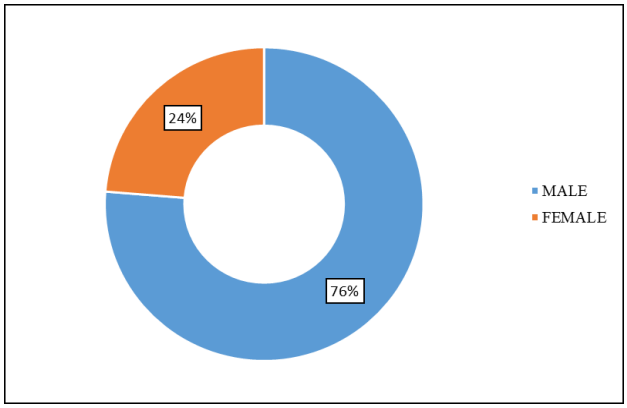

Figure 1: Depicting the gender distribution of cases.

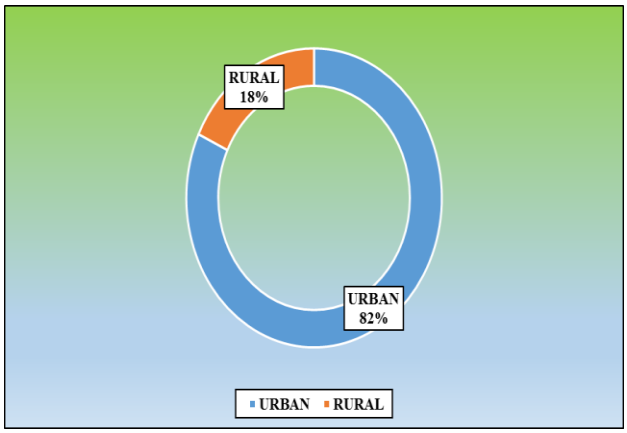

Figure 2: Area wise distribution of victims.

Area wise distribution

82.01% of cases were from urban as listed in Figure 2.

Time distribution

Majority of the cases 38.56% were bitten during evening hours, followed by 29.3% during the morning times. It means that majority of victims have been exposed to animals while travelling to and fro from work or school or at place of work as shown in Figure 3.

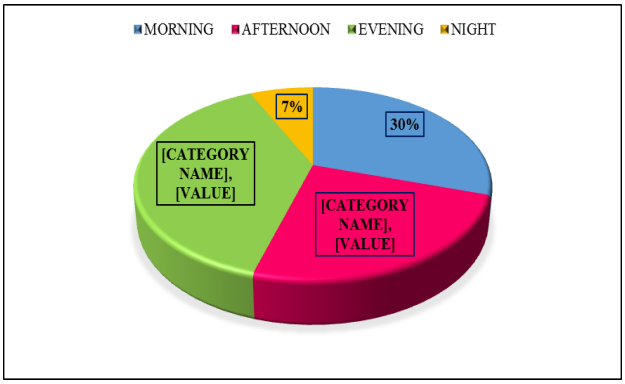

Figure 3: Time distribution of animal bites.

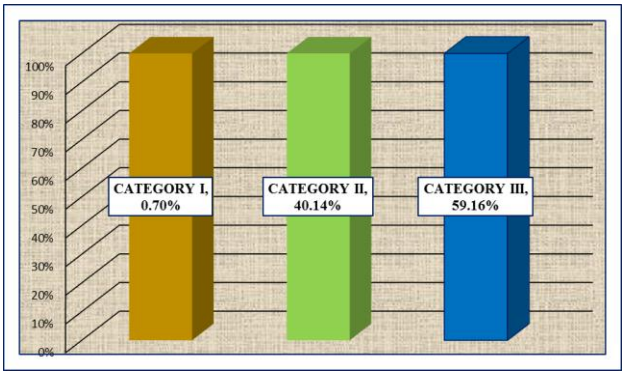

Figure 4: Wound categorized as per WHO guidelines.

Table 2: Cases bitten by various animals.

Animal	Total	Percentage
Dog	2723	95.54%
Cat	93	3.26%
Monkey	24	0.84%
Fox	2	0.07%
Horse	3	0.11%
Goat	1	0.04%
Bear	1	0.04%
Cow	2	0.07%
Rat	1	0.04%
Total	2850	100.00%

Type of animal and wound category

95.54% of cases were bitten by dog, one case bitten by bear while working in field. Among the bitten victims, 59.16% cases were Category III wounds as illustrated in Table 2 and Figure 4.

Monthly distribution of cases

The number of cases increased during the months of May and October which can be attributed to school vacation as majority of these cases were also seen among children as depicted in the Figure 5 and 6.

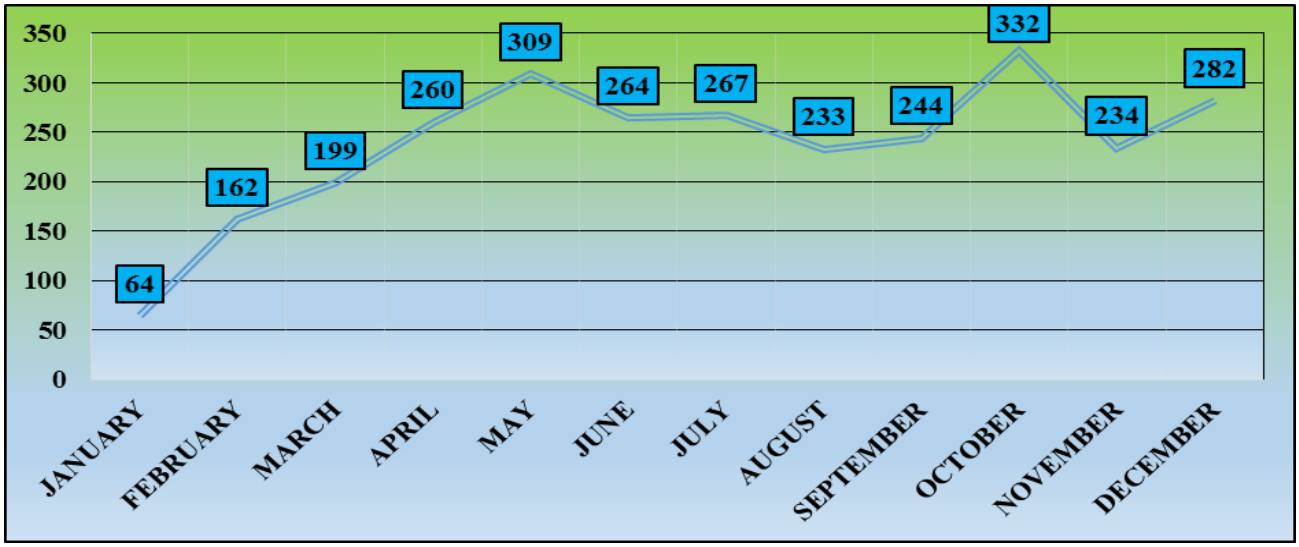

Figure 5: Monthly distribution of adult cases.

DISCUSSION

In the present study, out of 2850 cases, majority (35%) of cases were paediatric age group, followed by 19.64% were young adults. This study shows that not only the paediatric age group even the young adults are more prone for animal bite and majority were males, residing in urban area. Children are prone probably because most of the young age group are animal lovers and tendency to provoke and also have a less capacity to defend themselves. The study also reports that males are being more exposed than females, may be because males go outside for work and more chance of being exposed to animals or might be occupational exposure. Similarly, in the study conducted by Pavithra et al in north Karnataka, out of 310 cases, 40% of victims were in age group of less than 20

years and male constituted to about 71.9% cases with male female ratio 2.56:1.[6] A similar study done in Rajasthan by Acharya for a 3 year period, out of 10916 cases, 76.36% of victims were males and about 53.10% were residing in rural area because of involvement in outdoor activities and more prone for animal bite.[7]

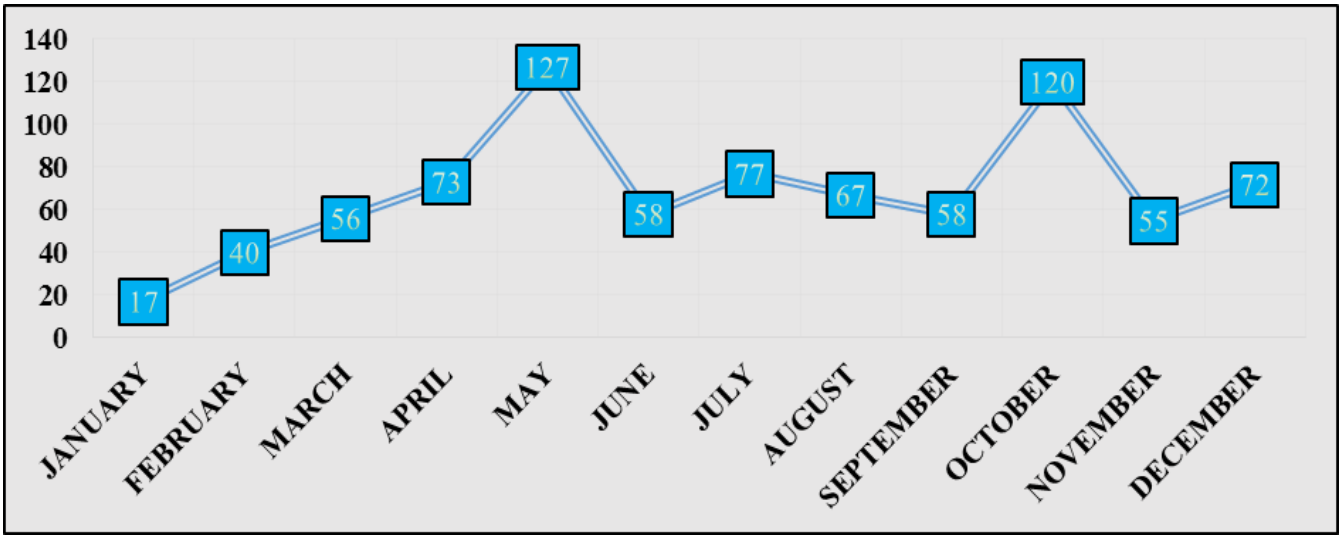

Figure 6: Monthly distribution of paediatric victims.

As per the study, 95.45% of cases were bitten by dog and majority were categorized as category III. Similar results were recorded in a study by Pavithra, stating dog was the most common (95.8%) biting animal.[6] Similarly, Singh et al, and Sudarshan et al, have also identified dogs as being the main animal responsible for human rabies deaths in India.[8,9]

In our state month of April, May and October are vacation period for school going children, In the study, majority of cases were reported in the month of May and October, which means that majority of the children are being exposed to animals at the time of vacations, probably because most of them remain outdoor, especially while playing and are being more prone for animal bite. Whereas in a study conducted by Borkar reported the seasonal variation of animal bite cases i.e. during the months of winter (November, December, January and February).[10] A study conducted in Rajasthan for a 3 year period, showed that majority of cases were reported in winter and summer.[7]

CONCLUSION

In the present study, most of the cases were paediatric age group and also young adults are being more exposed to animal bite. Also most of them are males, which show that most of them are bitten by dog during morning and evening hours while travelling to and fro from work or school. As per the monthly distribution, more cases were reported during school vacations that are in the month of May and October, probably because at the time of vacations most of the children go outside for playing and being animal lovers, have a tendency to provoke animals and being more prone to be bitten. So for an effective prevention of rabies there should be an increased awareness in schools as well as community with respect to animal bites, early wound management, vaccination to prevent the adverse impact of rabid animal bite. Municipal Corporation should also play a sincere role in removing food wastes from roads and control stray dog population to prevent deadly disease rabies.

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