International Surgery Journal
Pattanayak S et al. Int Surg J. 2017 Oct;4(10):3470-3473
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20174518

Original Research Article

Epidemiological study of animal bite victims and admission in general surgery department, in Southern Odisha: a cross sectional institutional study

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Received: 10 August 2017
Accepted: 02 September 2017

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ABSTRACT

Background: Human rabies continues to be endemic in India and according to recent estimate 20,000 persons die of this disease every year. Hence this study was conducted to know the prevalence and pattern of animal bites during last one year and to determine the rate of admission in Department of Surgery.
Methods: This study was conducted in the casualty, Department of Community Medicine, Department of Surgery at M. K. C. G. Medical College, Odisha, India between 1st April 2016 - March 31st, 2017. It was a cross sectional study, where convenient sampling method was used. The sample size was 6242 subjects, above 1year age group selected randomly within last 1 year. The socio demographic characteristics, epidemiological and rate of admission in surgery department were studied.
Results: It was found that during last one year, out of 6242 animal bite cases, majority of them were bitten by dogs 4785 (76.66%). It was found that 5617 (90%) are category III bite, 548 (8.78%) are category II bites, 77 (1.23%) are category I bite. Parts of body bitten by animals were limbs 5828 (93.37%), face 312 (5%), back 52 (0.83%). Out of 6242 cases, 348 (5.5%) cases were admitted in General Surgery Department.
Conclusions: The prevalence of dog bite was found to be more and was of category III in nature and part of body affected were mostly limbs. Prevalence of bite was nearly equal among male and female. Around 5% of the total animal bite cases required admission in Department of Surgery.

Keywords: Animal bites, Department of surgery, Prevalence, Southern Odisha.

INTRODUCTION

Zoonosis is an infection or infectious disease of animals that are transmissible under natural conditions from vertebrate animals to man. There are many zoonotic diseases which are deadly to human like rabies, plague, etc. According to WHO survey conducted in 2002, the annual incidence of animal bite is 1.7% and the bites were more common in children (2.5%) and males (68%).[1] In India, about 98% of animal bites are caused by bite of dogs and cats. Bites of animals like monkeys, horses, donkeys and rats are about 1% prevalent. The rest of the animal bites are caused by bites of squirrels, bats and mongooses.[2] Likewise, majority of deaths (about 97%) due to animal bites are attributed to dog bites. Animal bites are neither notifiable nor reported in the routine surveillance system.[3] According to WHO, each year, 23,000-25,000 people die in the SEA Region due to rabies. These accounts for approximately 45% human deaths due to rabies worldwide.[4] Of the estimated 25,000 deaths due to rabies in SEAR, a majority are in India (around 19,000) and Bangladesh (2000). More than 2.5 million people undergo post-exposure prophylaxis after being bitten by rabid or suspected rabid animals causing

considerable morbidity and economic loss.[5] Disease is transmitted by saliva from infected animals to human being by licks on broken skin or mucous membrane, bites and scratches.[6] Human rabies is endemic in India and according to recent studies 20000 persons die of this disease every year.[7] The aim of the study was to estimate the prevalence and pattern of animal bites in southern Odisha and rate of admission in Surgery Department.

METHODS

This study was conducted at M.K.C.G. Medical College, Berhampur, Odisha, INDIA in casualty, Department of Community Medicine and General Surgery Department between 1st April 2016 to 31st March 2017. It was a cross sectional study where samples were taken randomly. Total 6242 cases were taken for study. Subjects above 1-year age group were selected randomly within last 1 year. The socio demographic characteristics, epidemiological and rate of admission in Surgery Department were studied. Those unwilling to participate were excluded from the study. Those included in the study were asked about the type of animal bite, site of bite, reason for bite, time taken to seek treatment, rate of admission in the Department of General Surgery.

RESULTS

Total 6242 victims of animal bite were included in the study. Males constituted 3103 (49.71%) and females 3139 (50.29%) of the total victims. 61.55% (3842) were residing in urban area where as 38.45% (2400) were from rural area (Table 1).

Dog bite 4785 (76.66%) was the most common animal bite reported followed by cat bite 694 (11.12%). Most of the victims are of category-III 5617 (90%), category-II constituted 548 victims (8.77%), category-I 77 (1.23%).

Table 1: Socio demographic information of animal bite victims (n=6242).

Socio demographic characteristic	Number	Percentage
Gender		
Male	3103	49.71%
Female	3139	50.29%
Residence		
Urban	3842	61.55%
Rural	2400	38.45%

Lower and upper extremity 5828 (93.37%) were most commonly affected site followed by head and neck region 312 (5%), abdomen back and other sites 102 (1.63%). Lower and upper extremity were the most common site affected among the age group between 25 to 45 years 2985 (47.82%) and head and neck is the most common site affected among age group 1 to 5 years 162 (2.59%) followed by age group >65 years 162 (1.63%) (Table3).

Table 2: Type of animals (n=6242).

Animal	No.	%
Dog	4785	76.66
Cat	694	11.12
Monkey	128	2.05
Human	305	4.89
Others (bear, jackal, wild pig, rat, ox)	330	5.29

Table 3: Distribution of study subjects according to age group and site of bite.

Age group (n=6242)	Head and neck N=312	Upper and lower extremity N=5828	Abdomen, back and other sites N=102
1-5 (n=236)	162 (40)	62 (2)	12 (3)
6-<25 (1709)	25 (2)	1679 (13)	5 (2)
25-<45 (3026)	10 (1)	2985 (62)	31 (15)
45-<65 (335)	13 (0)	305 (7)	17 (2)
>65 (936)	102 (3)	797 (5)	37 (13)

Table 4: Distribution of admitted patients according to age, type of animal bite and parts affected.

Age group (n=6242)	Admitted in department of General Surgery (parts affected)			Managed at OPD and casualty only	Animals involved in patients admitted in surgery department		
	Head and neck	Extremity	Other sites		Dog	Cat	Wild boar, jackal, others
1-5 (n=236)	10	2	3	221	12	3	0
6-<25 (1709)	2	13	2	1692	10	2	5
25-<45 (3026)	1	62	15	2948	20	1	57
45-<65 (335)	0	7	2	326	3	0	6
>65 (936)	3	5	13	915	4	0	17

In the age group of 1-5 year, 15 cases were admitted out of 236 cases of animal bite and 221 were managed at community medicine OPD and causality. 12 cases were due to dog bite and 3 cat bites out of 15 admitted cases. Head and neck was involved in 10 cases, extremity in 2 cases and 3 other sites. In patients >25 years and <65 years age, extremity was mostly involved and in patients >65 years age other body parts like back and trunk were involved. But in both age groups, types of animal responsible for admission were wild boar and jackal.

DISCUSSION

The present study reveals that there is almost equal rate of prevalence of animal bite among males and females. This is different from other studies which show males are more vulnerable for animal bite. Present study shows more victims of animal bite are from urban areas. This is different from other studies which show preponderance from rural areas. This may be due to peripheral location of health centres in other studies and another factor is that urban people are more health conscious. Most of the victims belong to age group 25-45 years. This is the productive age group who usually go outside for job and livelihood. Other studies show similar results. But some studies show children are more prone for animal bite. The most common site of bite were either upper or lower extremity and major victims were having category III bite as per WHO classification which is similar to other studies.[4,8,10,13,16,18]

In the younger age group, most common site involved is head, neck and extremity. Similar findings were shown by Singh et al.[14] Children were having bites on head neck and upper extremities due to short stature. Present study showed that the majority victims were of dog bites, which was similar with other studies.[5,9,13,16,19,20] In the present study, out of 6242 animal bite victims, 348 (5.58%) victims were admitted in Department of General Surgery. All the victims were of category III bite. In victims, less than 25 years age who got admitted, dog was the most common animal involved. In victims, more than 25-year age group, wild boar, bear, jackal were the most common animals involved.

As the subjects included in the study were victims who were attended at a tertiary care centre, its findings cannot be generalized to the whole population. To get more data for assessing burden and epidemiology of animal bite, community based studies are needed.

CONCLUSION

Animal bites particularly dog bite possesses public health problem in urban area. People at risk are in between 25 to 45 years age group. Majority of the bite victims are engaged in outdoor occupational activity. Out of total animal bite cases in the present study, 5.5% of the victims were admitted in Department of General Surgery. This indicates the requirement of huge volume of quality anti-rabies serum or HRIG there by increasing the cost of management of animal bite cases. There is a need to immunize the pet dogs and control the stray dog population in the urban area. Public educational health programmes are to be conducted in society to create awareness among people regarding the dangers of animal bite and avoid contact with stray dogs.

ACKNOWLEDGMENTS

The authors are thankful to the study subjects for their valuable cooperation.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Pattanayak S, Malla TK, Bara BK, Behera MK. Epidemiological study of animal bite victims and admission in general surgery department, in Southern Odisha: a cross sectional institutional study. Int Surg J 2017;4:3470-3.