ORIGINAL RESEARCH ARTICLE

EPIDEMIOLOGICAL PROFILE OF ANIMAL BITES CASES IN THE ANTI RABIES CLINIC OF TERTIARY CARE HOSPITAL, J.L.N. MEDICAL COLLEGE, AJMER: A CROSS SECTIONAL STUDY

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Abstract

Background: Rabies is an acute viral disease, highly fatal most painful and dreadful of all communicable diseases transmitted to human and animals through saliva of animals during their bites. In India, Dog bite is the major responsible causes of human rabies and is accountable approximately for 95% of cases and every year approximately 20000 deaths are reported.3

Objective: To study the epidemiology of animal bite cases in the anti-rabies clinic of J.L.N. Medical College Hospital, Ajmer.

Study design: One-year hospital based cross sectional study.

Subjects: A total of 19444 (6203 new + 13241 old) beneficiaries of animal bites reported in the anti-rabies clinic of JLN Medical college hospital Ajmer from January 2018 to December 2018. All were considered in this institutional study.

Statistical analysis: Mixed method analysis.

Result: A total of 19444 (6203 new + 13241 old) beneficiaries of animal bite reported in this one-year study. Majority of the new cases were male 4447 (70%) and remaining were female 1756 (30%). 3934 (63%) cases were in the age group of 0-30 years, (2460) 39% of the beneficiaries were up to 15 year of age and 453 (7%) patients were senior citizen (above 60 year of age). Category II bite being the common 4414 (71%) and the most commonly affected site was Lower extremity & genital in 3481 (56.12%) of beneficiaries. Dog bite was responsible for 5616 (91%), cat bite 313(5.5%), monkey bite 156(2.51%), pig 28(0.45%) and others in 90(1.45%) of the animal bite cases. Street dog and pet dog were responsible in 4681(75.46%) and 1522(24.54%) of bite respectively.

Conclusions: This study supports that in majority of animal bites dog is responsible for 91% of cases. Also, male with lower extremities including genitalia was involved in more than 50% of animal bites cases under study at tertiary care hospital Ajmer. 4681(75.46%) of the animal bite cases were due to street dogs where fate is unknown while only 1522 (24.54%) of cases were bitten by pet dog. So, there is importance to immunize street dogs and pet dogs and also to control the dog population.

Keywords: Animal bite, dog bite, grade of bite, TCV (Tissue Culture Vaccine).

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Received : 16.12.2020 **Revised :** 30.12.2020
Accepted : 15.01.2021 **Published :** 28.01.2021

Introduction

Rabies is an acute viral disease that causes fatal encephalomyelitis in virtually all warm-blooded animal also her mans. The virus is found in wild and some domestic animals and is transmitted to other animals and humans through their saliva (following bites, scratches, licks on broken skin and mucous membrane). In India, dogs are responsible for about 95% human rabies, followed by cats (2%), jackals, mongoose and others (1%). Therefore, the disease is mainly transmitted by the bite of a rabid dog3. It has terrified man since antiquity. The fear is by no means unfounded since the disease is invariably highly fatal and perhaps the most painful and dreadful of all communicable disease in which the sick person is tormented at the same time with thirst and fear of water (Hydrophobia).

Rabies is one of the most dreaded and fatal disease in man and is a major public health problem in India where more than 95% of rabies is due to bites from dogs of which are majority are stray and ownerless. It occurs in all parts of the country with exception of Lakshadweep, Andaman & Nicobar Islands1. In a number of countries, human deaths from rabies are likely to be grossly under reported, particularly in the young age groups. At the global level, more than 15 million people receive rabies prophylaxis annually. It is estimated that in absence of

post -exposure prophylaxis, about 327,000 persons would die from rabies in Africa and Asia each year and of these 55000 deaths occur in rural area of these continents. In India alone 20,000 deaths (i.e., about 2 per lac population at risk) are estimated to occur annually2.

Although all age groups are susceptible, rabies is most common in children aged less than 15 years; on an average, 40% of post-exposure immunization are given to children aged 5-14 years, and the majority of those given post -exposure prophylaxis are males. Apart from mortality, there is also expenditure in terms of man, money and time, towards wound care and vaccination3. Rabies is a preventable disease and like AIDS its prevention is the only cure. However, for an effective prevention program it is important to understand the epidemiological behavior of the disease. In this context, the present study was carried out with the objective to know the epidemiological variables of animal bite cases which includes age, gender, site of bite, category and type of animal bite beneficiaries reported at tertiary care center, medical college hospital Ajmer.

Materials and Methods

The present longitudinal study was carried out at the ARC of the J.L.N. Medical College Hospital. A total number of 19444 (6203 new + 13241 old) cases of animal bite reported for treatment in the ARC during the period from 1st January ,2018 to 31st December 2018. Variables studied where sex, age, category, site of bite, type of animal bite, and the Treatment was given as per protocol.

Observation and Discussion

Table 1: Distribution of cases (new + old) animal bite cases according to gender and age group

	New			Old			Total		
Age group	Male (%)	Female (%)	Total (%)	Male (%)	Female (%)	Total(%)	Male (%)	Female (%)	Total (%)
0-5	449 (7.24%)	225 (3.63%)	674 (10.87%)	899 (6.79%)	165 (1.25%)	1064 (8.04%)	1348 (6.93%)	390 (2.01%)	1738 (8.94%)
5-10	1004 (16.19%)	265 (4.27%)	1269 (20.46%)	2033 (15.35%)	546 (4.12%)	2579 (19.47%)	3037 (15.62%)	811 (4.17%)	3848 (19.79%)
10-15	178 (2.87%)	161 (2.60%)	339 (5.47%)	805 (6.08%)	279 (2.11%)	1084 (8.19%)	983 (5.06%)	440 (2.26%)	1423 (7.32%)
15-20	711 (11. 46%)	152 (2.45%)	863 (13.91%)	662 (5.00%)	164 (1.24%)	826 (6.24%)	1373 (7.06%)	316 (1.63%)	1689 (8.69%)
20-30	562 (9.06%)	227 (3.66%)	789 (12.72%)	1345 (10.16%)	504 (3.81%)	1849 (13.96%)	1907 (9.81%)	731 (3.76%)	2638 (13.57%)
30-40	583 (9.40%)	323 (5.21%)	906 (14.61%)	1112 (8.40%)	466 (3.52%)	1578 (11.92%)	1695 (8.72%)	789 (4.06%)	2484 (12.78%)
40-50	254 (4.09%)	70 (1.13%)	324 (5.22%)	864 (6.53%)	363 (2.74%)	1227 (9.27%)	1118 (5.75%)	433 (2.23%)	1551 (7.98%)
50-60	404 (6.51%)	182 (2.93%)	586 (9.45%)	978 (7.39%)	513 (3.87%)	1491 (11.26%)	1382 (7.11%)	695 (3.57%)	2077 (10.68%) col.
>60	302 (4.87%)	151 (2.43%)	453 (7.30%)	818 (6.18%)	725 (5.48%)	1543 (11.65%)	1120 (5.76%)	876 (4.51%)	1996 (10.27%)
Total	4447 (71.69%)	1756 (28.31%)	6203 (100 %)	9516 (71.87%)	3725 (28.13%)	13241 (100%)	13963 (71.81%)	5481 (28.91%)	19444 (100%)

Figure 1: Animal bites cases (new + old) stratified by gender

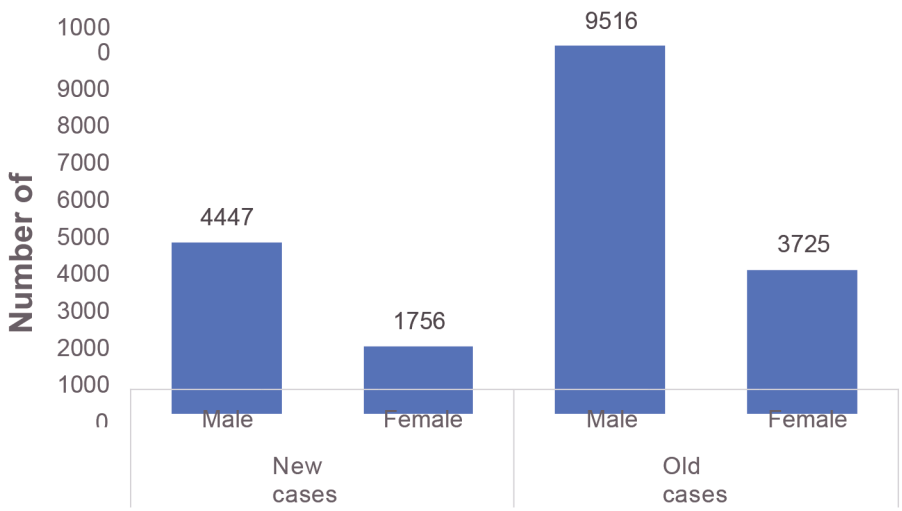

Table 2: Distribution of cases (new + old) animal bite cases according to gender and age (>15 and <15) years

	<15 yr		>15 yr		Total	
Gender	New	Old	New	Old	New	Old
Male	1765 (28.45%)	3737 (28.22%)	2682 (43.24%)	5779 (43.64%)	4447 (71.69%)	9516 (71.87%)
Female	695 (11.20%)	990 (7.48%)	1061 (17.10%)	2735 (20.66%)	1756 (28.31%)	3725 (28.13%)
Total	2460 (39.65%)	4727 (35.70%)	3743 (60.34%)	8514 (64.30%)	6203 (100%)	13241 (100%)

Table 3: Distribution of new cases according to the exposure caused by the type of animals

Year	Dog (%)	Monkey (%)	Cat (%)	Pig (%)	Others (%)	Total (%)
2018	5616 (90.54%)	156 (2.51%)	313 (5.05%)	28 (0.45%)	90 (1.45%)	6203 (100%)

Figure 2: Distribution of cases according to type of animals

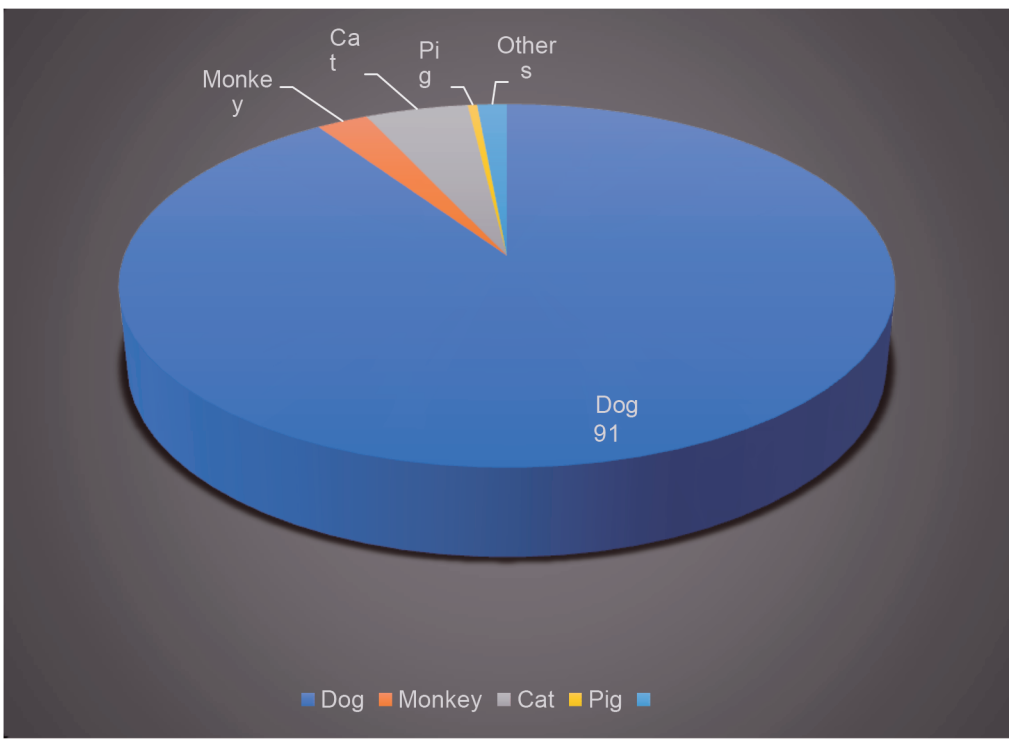

Table 4: Distribution of study subjects according to age group and site of bite

Age	Head & Neck	Lower Extremity & genital	Upper extremity	Abdomen back multiple site	Total (%)
0-10	234	1036	315	358	1943 (31.32%)
10-20	174	753	116	159	1202 (19.38%)
20-30	116	442	119	112	789 (12.72%)
30-40	44	468	228	166	906 (14.61%)
>40	58	782	421	102	1363 (21.97%)
Total	626 (10.09%)	3481 (56.12%)	1199 (19.33%)	897 (14.45%)	6203 (100.00%)

Table 5: Distribution of new cases according to category of bite

Category of Bite	No. of Cases	Percentage
Category I	287	4.63%
Category II	4414	71.16%
Category III	1502	24.21%
Total	6203	100.00%

Figure 3: Distribution of cases based on category of bite

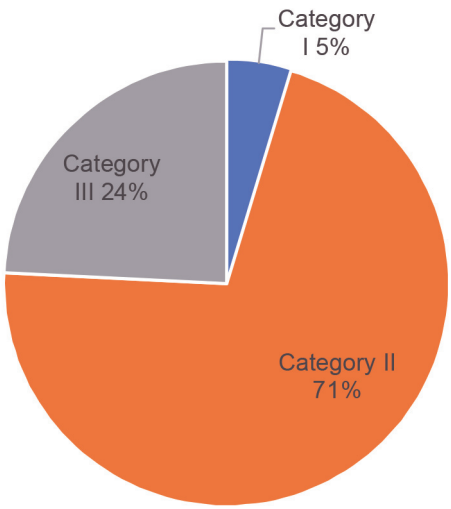

Table 6: Distribution of cases based on fate of animal

Fate of bite	No. of Cases	Percentage
Pet(known)	1522	24.54%
Street (Unknown)	4681	75.46%

Results

During the study period, 19444 (6203 new + 13241 old) animal bite beneficiaries were presented at the anti-Rabies clinic and were interviewed and treat was given to all. Of the total beneficiaries, males constituted 4447 (71.69%) and remaining 1756 (28.30%) were female (Table 1). This observation is attributed to the simple reason that male are more on streets and lanes (outdoors) and females are usually confined to indoor and hence less susceptible. Of the total new 6203 (Table 1) animal bite case maximum 1943 (31.32%) were in the age group of 0-10 year followed by 1202 (19.38%) in the age group of 10-20 year whereas 1695(23%) were in the age group of 20-40 year and only 453(7.3%) were senior citizen more than 60 year of the age (Table 1). Dog bite was responsible for 5616 (91%), cat bite for 313(5.5%), monkey bite for 156(2.51%), pig for 28(0.45%) and others for 90(1.45%) of the animal bite cases (Table 3). Commonest animal bite was reported from dogs 5616(91%) followed by cat, monkey, pig and other (Table 3). The most commonly affected site were Lower extremity & genitals 3481(56.12%) followed by upper extremity 1199(19.33%), abdomen and back 897(14.45%), head and neck 626(10.09%) (Table 4). In our study 4414(71.16%) of animal bite cases were reported in category II while 1502(24.21%) were from for category III (Table 5) all the beneficiaries were given prophylaxis as per national guideline by ministry of health and family welfare government of India for rabies prophylaxis 2016. Purified inactivated lympholized rabies vaccine in vero cell is being used by ID and IM rout along with immunoglobulin (HRIg / ERIg) (mainly reserved for category III bite). Street dog and pet dog were responsible in 4681(75.46%) and 1522 (24.54) of bite. (Table 6)

Discussion

In the present study 4447 (71.69%) males and 1756 (28.31%) females were exposed to animal bite and the male to female ratio was found to be 3.2:1. This may be due to the fact that men are more likely to go out their home for work as compared to female in this area. Similar finding was reported by Patil *et al.*13 and Shah *et al.*14 where the male and female were 73.94% and 76% respectively.

Majority of the study, 2460 (39.65%) of the beneficiary were in the age group of 0-15 year. Similar findings were observed by Singh and Singh6 and N. Agarwal and Reddajah9 were 40.06% and 31.47% respectively whereas Umringar *et al.*4 and Bedi *et al.*17 were observed 26.03% and 51.08% respectively. The possible reason for the children being exposed is their risky behaviour toward handling and playing with street and pet animal.

It was observed their most common site of bite was lower limb and genital 3481(56.12%) and also majority of beneficiary 4414(71.16%) were having category II bite. This is similar to the other study done by Agarwal and Reddajah9 were number of beneficiaries having category II bite was 80% whereas Khokhar *et al.*8 studied show that 83% of the beneficiaries were reported category III. Our study also showed that majority 5616(90.5%) were victim of dog bite. The finding is similar to the other study done by Bedi *et al.*17 and Gogtas *et al.*12 and national guidelines for rabies prophylaxis 20193 and Park K. textbook where 90.2% and 89.1%, 95% and 90% were dog bites respectively.

Present study also shows in majority of animal bites, it was street animal (unknown) 4681(75.46%) while pet (known) animal bites 1522(24.54%). The finding is similar to the study done by Bedi *et al.*17 and Marathe and Kumar16 where 73.09% and 88.9% street animal were recorded respectively.

Conclusion

Animal bites, especially dog bite still poses important public health problem in our country. These bites not only cause to increase morbidity and mortality but also loss of working days and cost of treatment. People at risk were mainly men and 15-45 yrs age group and in the majority of the bite victims had occupation involving outdoor activity. Although maximum number 4414(71.16%) of cases belonged to Category II and 1502(24.21%) category III bites. This indicates the importance of need of quality anti-rabies serum or HRIG and ERIG thereby increasing the cost of management of animal bite cases. There is also a need to control stray dog population and immunize dogs along with implement public health educational program to create awareness in the public regarding the dangers of animal bite and to avoid contact with the stray dogs, and for reporting promptly in case of any animal bite. Active surveillance activities must be carried out to know the actual burden of animal bite.

Limitation

Since the subjects included in the study were patients attending tertiary care centre and district hospital study findings cannot be generalized to the whole population at large. To get more insight for assessing burden and epidemiology of the animal bite, community-based studies are needed.

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