Original Article

PROFILE OF ANIMAL BITE CASES ATTENDING URBAN HEALTH CENTRES IN SURAT CITY: A CROSS-SECTIONAL STUDY

Pradeep Umarigar[1], Gaurang Parmar[2], Prakash B Patel [3], R K Bansal[4]

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Author's Affiliation:
[1]DPH Student, [2]Resident, [3]Assistant Professor, [4]Professor & Head, Department of Community Medicine, Surat Municipal Institute Medical Education & Research (SMIMER), Surat

Correspondence:
Dr.Gaurang Parmar, Email: dr.gaurangparmar09@gmail.com

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ABSTRACT

Context: Exposure to dog bites is an important public health problem, these bites not only cause increase morbidity and mortality but also loss of work days and cost for treatment. Moreover, myths and practices amongst people prevent appropriate post exposure treatment.

Objectives: The survey was conducted with objectives to study the epidemiological characteristics of victims of animal bite injuries and health seeking behaviour of persons with animal bite.

Methodology: It was a cross-sectional study conducted among new cases of animal bites registered at Urban Health Centres of Surat city.

Results: Out of total 337 cases of animal bites majority (48%) belongs to 15-45 years of age-group and 79 % were male. Ninety four percent of cases were bitten by stray dog. Children less than 15 years of age were more likely to provoke a bite (P< 0.05).Category II bites were seen in 198(59 %) of cases. In 89.8% cases lower extremities were affected. Only two hundred forty cases had attended the ARV clinic within 24 hours of bite. Only 65 % of cases had done the wound washing.

Conclusion: Local treatment of the wound soon after a bite is an important step in the management of a case and this was lacking in most of the subjects. Efforts to eliminate the stray dogs are required.

Keywords: Animal bites, rabies, epidemiological, health seeking behaviour, Surat

INTRODUCTION

Animal bite, one of the common causes of physical injuries, is defined as bite or claw wound from an animal which is responsible for large number of morbidities and mortalities in humans, most importantly, highly fatal viral infection-rabies[1]. The virus is found in wild and some domestic animals, and is transmitted to other animals and human beings through their saliva (i.e. bites, scratches, licks on broken skin and mucous membrane)[2]. Human mortality from endemic canine rabies was estimated to be 55000 deaths /year[3] with 56% share from South East Asia Region[4].Every year approximately 1.1-1.5 million people receive post exposure treatment with rabies vaccine[3]. India alone accounts for 20,000 Deaths and 17.4 million animal bite cases annually[4]. In India rabies is reported throughout the year from all states except Lakshadweep and the Andaman & Nicobar Islands [5]. More than 99% of all human rabies deaths occur in the developing world[6] and lack of organized surveillance system is

responsible for absence of reliable data regarding rabies[7].In urban areas, the disease is mainly transmitted by dogs; being responsible for about 96% of animal bite cases[8]. Due to presence of various economic and political factors, multiple cultures, religious and social practices, multiples myths associated with rabies, and lack of accurate data, even though economic and effective control measures are available; the disease has not been brought under control[7,8].

This study was carried out with the objectives of to explore epidemiological factors associated with animal bites including dog bite cases reporting at Urban Health Centres (UHCs) of Surat city and also elucidating the factors influencing the post-exposure treatment.

MATERIALS & METHODS

The present cross-sectional study was conducted by the Community Medicine department of Surat Municipal Institute of Medical Education & Research (SMIMER), Surat (Gujarat) over a period of four months, June-September 2012 after taking approval from institutional ethical committee. Surat Municipal Corporation was providing anti-rabies treatment facility through more than 35 urban health centres (UHC) divided in six zones. One UHC from each zone with maximum number of animal bite cases were selected. All new cases of animal bite visiting at selected urban health centre during the study period were included in the study. Personnel interview of patient and clinical examination was done for each case after taking informed consent. A pre tested structure questioner was used to record data. Study variables included were age, sex, habitation of the patients, type of animal involved, profile of the involved animal like, stray/pet, provoked/unprovoked bite, site of bite, abnormal behavior shown by the animal, whether that animal was killed, category of exposure, time of reporting at health facility, treatment received prior to reporting at health facility etc. The collected data were analyzed using Epi info software.

RESULTS

During the study period a total number of 337 cases of animal bites were reported. Males constituted 267 (79.3%) cases. The male female ratio was 3.81:1. Majority of the victims 191 (56.7%) were in the age group of 15-45 years.

Table 1: Age-group and gender wise distribution of animal bite cases

Age-group	Female	Male	Total
0 to 5	11 (3.3)	14 (4.2)	33 (7.5)
6 to 14	17 (5.0)	56 (16.6)	73 (21.6)
15 to 45	31 (9.2)	160 (47.5)	191 (56.7)
46 to 60	9 (2.7)	30 (8.9)	39 (11.6)
> 60	2 (0.5)	7 (2.1)	9 (2.6)
Total	70 (20.7)	267 (79.3)	337 (100)

Figure in parenthesis indicate percentage

Table 2: Occupational travel history (n=291*)

Occupational category	Subject (%)
Occupation with extensive travel#	19 (6.5)
Occupation with minimum travel$	159 (54.6)
Occupation with least or no travel	113 (38.9)

*15 cases were below 5 years of age and history not given by 31 cases; #These included Salesman, driver, vendor, beggar etc ;$These included workers in diamond, textile, machine industry, labourer etc

In 178(62.1 %) cases, bite victims given occupation travel history.

317 (94.1%) cases involved dog as biting animal.309 (93.3%) cases of animal bites were attributed to stray animals and 27(8 %) were due to pets while wild animals constituted a small proportion 1(0.3%).The municipal licensing and ARV coverage of pet dogs were very poor 2(7.4%) and 4 (15%) respectively.

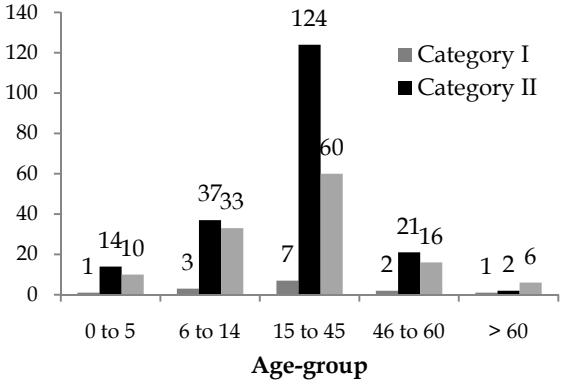

Figure 1: Classification of exposure in different age group

Bites were unprovoked in 218 (64.7 %) cases. Out of 46 (13.6 %) provoked bite cases 20 were in children below 15 years of age group as compared to those involved more than 15 years

of age and difference was statistically significant($p<0.05$). In 335(99.4%) cases bites were occurred within city. Lower limb was the most common site (84.3 %) among all age group. Most common time of bite (29%) was evening between 4 to 8 pm.

Class II exposure was most common. In 248 (73.6%) cases biting animal was alive till the time of seeking treatment. 2 (0.5%) animals were dead or killed by people while fate of 87 (25.8%) animals was not known.

Out of 337, 12 cases had not history of wound cleaning by any means. Out of 325, 148 (70%) had cleaning history after 1 hour. 113(34.8%) had cleaned the wound neither with running water nor with water & soap.

Table 3: Duration between bite & wound cleaning with running water or water with soap (n=212)

Duration between bite and wound cleaning	Frequency	Percent
< 1 hour	64	30.2
1 to 6 hours	29	13.7
7 to 24 hours	80	37.7
> 24 hours	39	18.4

Mean duration to reach health facility is 21.5 minutes. 76 (25.8%) had not taken ARV within 24 hours. 6 cases had taken their first dose of ARV after 7 days period.

Table 4: Educational status and duration between bite & first dose of ARV (n=295*)

Educational status	< 24 hours (%)(n=219)	> 24 hours (%)(n=76**)
Illiterate	24 (11.0)	12 (15.8)
Literate	195 (89.0)	64(84.2)
Just literate	5 (2.5)	1 (1.6)
Primary(up to 5th)	79 (40.5)	23 (36.0)
Middle(up to 8th)	22 (11.4)	5 (7.8)
Secondary (up to 10th)	62 (31.7)	25 (39.0)
Higher-secondary (up to 12th)	15 (7.7)	5 (7.8)
Graduation & above	12 (6.2)	5 (7.8)

* Education status was missing in 30 cases while duration history was missing in 10 cases while both educational status and duration history was missing in 2 cases.
**Total cases coming after 24 hours were 84 but education status of 4 cases were missing.

Total 228 (67%) of animal bite cases had taken pre-treatment before coming to health facility which includes 145(63.6%) cases of home treatment alone, 52 (22.7%) treatment from medical practitioner either qualified or unqualified and 31(13.7%) had both home as well as medical practitioner.

Table 5: Reasons for coming late (after 24 hours) for first dose of ARV (n=78@)

Reason for coming late (after 24 hours)	Frequency (%)
Ignorance regarding rabies prognosis	39 (50.0)
No knowledge about the availability of health facility	14 (18.0)
Staying away from treatment facility	5 (6.4)
Outside city	4 (5.2)
Go to private	3 (3.8)
Lack of time	3 (3.8)
No one to accompany	3 (3.8)
Not inform parents about bite	3 (3.8)
Ignorance regarding rabies	2 (2.6)
Lack of money	2 (2.6)

@ 6 cases had not given any reason.

Medical practitioners had not given TT injection in 28 (34%) cases and not clean the wound with soap & water or water /saline alone in 36 (44%) cases.

Table 6: Categories of home treatment (n=176) (multiple answers)

Category of home treatment	Frequency (%)
Only water	63 (35.8)
Soap & water	55 (31.2)
Chili powder	27 (15.3)
Local antiseptics	20 (11.4)
Lime and salt	17 (9.6)
Turmeric	8 (4.5)
Snuff	6 (3.4)
Others$	11 (6.2)

$Others include lemon water, herbs, talcum powder, bandage, jaggery etc.

At concern urban health centre, wound was not washed in 111(33%) cases while in 49(14.5%) cases washing was not done with running tape water or running water with soap.

Occlusive dressing was done in 3(- 1%) cases while suturing was done in 1(0.3%) case. Out of 125 cases with class III exposure 121(97%) were neither given nor referred to higher center to take Anti-rabies serum(ARS) meanwhile only 3 were given ARS and 1 was referred to higher centre. All cases were given anti rabies vaccine

through intradermal route. Out of 35 cases with previous history of animal bite, 22(63%) had taken pretreatment for current exposure which includes 17(48%) cases of home treatment.

DISCUSSION

Animal bites, especially dog bites still poses public health problem in urban area of our country. In our study, victims of animal bite were males in 79 % cases which were quite similar to other studies [8-14]. Predominantly of cases belongs to 15-45 years of age group (48 %) which was also demonstrated by Behera et al (2006)[11]. Different studies evolves different age-group as predominance Jyoti et al[10] (below 15 years), Behera et al (2004)[12] (below 10 years), Venu shah et al[9] below 25 years and Icchapujani et al (2001)[7](2-18 years). And these findings were in contrast to our studies were we found only 11.5% cases of 0-14 years. Occupation travel history was noted in 62.1 % of bite victims, which was not demonstrated in previous studies.

Biting animal includes dogs, rats, cats and monkey with dog as dominant animal involved in 94 % of cases, similar to other studies[8-14]. Our study shown , animal bites were attributed to stray animals, pets and wild animals in 93.3 %, 8 % and 0.3% respectively which were quit similar to findings of Icchapujani et al(2001)[7] and Behera et al[11]. The municipal licensing and ARV coverage of pet dogs were very poor 7.4% and 15% respectively similar to study by Sudarshan M.K(2003)[13].

In our study 64.7 % bites were unprovoked which was match with the study by Behera et al (2006)[11] and Icchapujani et al(2001)[7] in which they found unprovoked bites in 56.6% & 64.3 % cases respectively. Provoked bites were found in 13.6 % cases which include 44% of victims below 15 years of age group as compared to56% of those involved more than 15 years of age and difference was statistically significant($p<0.05$). In majority (99.4%) of cases bites were occurred within city.

Lower limb was the most common site (84.3 %) similar to other studies [8,9,11,13,14] and found among all age-group exposed to animal bite. Multiple site bites had been noted 1.7 % cases. Bites over trunk, head & neck and multiple bites were seen more in age group of 6-14 years while upper limb bite were more commonly seen in 15-45 years of age group. Bites between 4 and 8 pm(evening) was noted in 29 % cases similar to study by Venu shah et al (2011)[10] in which she described 38.8% of bites between 4 and 8 pm.

Majority (59 %) cases had class II exposure according to WHO guidelines in contrast to other studies where class III was most common[8,9,11,14]. In all age group class II exposure was highest except in more than 60 years of age-group where class III exposure was highest. Lower limb was most common site of bite in all categories. Upper limb and trunk bites found more commonly in category II exposure while head & neck and multiple bite cases found more in category III exposure. Biting animal was alive in 73.6% cases till the time of seeking treatment. Fate of 25.8% animals was not known while 0.5% animals were dead or killed by people.

In 70% cases, wound cleaning was done after 1 hour while 34.8% had cleaned the wound neither with running water nor with water & soap. Wound was not cleaned at all in 3.56% cases. According to availability of health facility and residence of animal bite cases, mean duration to reach health facility was 21.5 minutes, even though 25% cases had not received first dose of ARV within 24 hours after exposure. Surprisingly, 2 % cases had taken their first dose of ARV after 7 days of exposure. Considering education of people, 33 % illiterate and even 29% of graduate people had not taken first dose of ARV within 24 hours. Ignorance regarding availability of health facility and prognosis of rabies were major reasons for coming late (after 24 hours of exposure) to concern health centre. Before coming to health facility 67% of cases had taken pre-treatment which includes 77% of home treatment cases and 23 % by qualified or unqualified practitioner. Indigenous products like chili powder, lime and salt, turmeric, snuff, lemon water, herbs, talcum powder, bandage, jaggery were applied by victims in 37% of home treatment cases, which was also demonstrated in other studies [8,9,11-14].Medical practitioners had not given TT injection in 34% cases and not clean the wound with soap & water or water/saline alone in 44% cases. All of these were matters of great concern for post exposure management of animal bite cases.

At concern urban health centre, wound was not washed in 33% cases while in 14.5% cases washing was not done with running tape water or running water with soap. Occlusive dressing was done in 3 cases while suturing was done in

1 case, which were matters of great concern. Majority (97 %) of class III exposure were neither given ARS at concern health facility nor referred to higher center to take Anti-rabies serum(ARS). Only 3 were given ARS and 1 was referred to higher centre. All cases were given anti rabies vaccine through intradermal route.

Even 63% victims of previous bite history had not taken treatment directly from health facility but taken pretreatment for current exposure which includes 48% of home treatment cases. No history regarding vaccine reaction had been noted.

CONCLUSION

In conclusion, the dogs were the main biting animal (stray dogs), affecting mostly the adult and children. Municipal licensing and immunization of pet animals were very poor. The majority bite victims had occupation involving extensive or minimal travel. Lower limb was most common site and CAT II exposure was most common. The bite victims did not do proper wound care. The indigenous treatment was quite prevalent even among educated people.

REFERENCES

1. Eslamifar A, Ramezani A, Razzaghi- Abyaneh M, Fallahian V, Mashayekhi P, Hazrati M et al. Animal Bites in Tehran, Iran. Arch Iranian Med 2008; 11(2): 200-2
2. Operational guidelines for rabies prophylaxis and intra-dermal rabies vaccination in kerala, 2009. Available at http://rabies.org.in/rabies/wp-content /uploads/2009/11 / Operational-Guidelines-for-Rabies-Prophylaxis-and-Intra-Dermal-Rabies-Vaccination-in-Kerala.pdf .Accessed on October 23rd, 2012.
3. World Health Organization. WHO technical report series 931: WHO expert consultation on rabies; first report.Geneva Switzerland: WHO; 2005. p13.
4. World Health Organization, Regional Office for South East Asia. Prevention and control of rabies in South-East Asia Region 2004, New Delhi. SEA-Rabies; 2004.
5. APCRI guidelines for rabies prophylaxis. Available at http://rabies.org.in/rabies/wp-content/uploads/2009/11/APCRI-Guidelines-for-Rabies-Prophylaxis.pdf. Accessed on November 22nd, 2012.
6. WHO Expert Consultation on Rabies: first report (2004). Available at http://whqlibdoc. who.int/trs/ WHO_TRS_931_eng.pdf .Accessed on November 22nd, 2012.
7. Ichhpujani R.L et al: Rabies in humans in India. 4th International Symposium on rabies control in Asia. Symposium proceedings Merieux Foundation & WHO. Ed. Betty Dodet & F. X. Meslin, 2001, Hanoi, Vietnam. John Libbey, Eurotext, London
8. Epidemiology of Animal Bites and Rabies cases in India - A Multicentric study.

   Ichhpujani RL, Chhabra Mala, Mittal Veena, Singh J, Bhardwaj M,Bhattacharya D, Pattanaik SK, Balakrishnan N, Reddy AK, Sampath G, Gandhi N, Nagar SS, Lal Shiv, J. Commun. Dis. 2008; 40(1): 27-36
9. Venu Shah, D V Bala, Jatin Thakker, Arohi Dalal, Urvin Shah, Sandip Chauhan, Kapil Govani. Epidemiological determinants of animal bite cases attending the anti-rabies clinic at V S General Hospital, Ahmedabad. Healthline 2012; 3(1):66-68
10. Jyoti, Goel Manish Kumar, Vashisht BM, Khanna Pardeep. Pattern and Burden of Animal Bite Cases in A Tertiary Care Hospital In Haryana. J.Commun. Dis.2010; 42(3): 215-218.
11. TR Behera, D M Satapathy, RM Tripathy, A Sahu. Profile of animal bite cases attending the ARC of M.K.C.G. Medical College, Berhampur (Orissa). Available at rabies.org.in/ rabies-journal/rabies-09-2/OrgArticle.htm. Accessed on October 22nd, 2012.
12. TR Behera, D M Satapathy, A Sahu. A study of attitude of cases towards animal bite treatment. Available at rabies.org.in/ rabies-journal/rabies-09-1/OrgArticle2.htm. Accessed on October 22nd, 2012.
13. MK Sudarshan, BJ Mahendra, SN Madhusudana, DH Aswath Narayana, Abdul Raheman, NSN Rao, FX Meslin, Derek Lobo, K.Ravikumar, Gangaboraiah. Epidemiology of Animal Bites cases in India: Results of WHO sponsored National Multi-Centric Rabies study. J. Commun. Dis. 2006; 38 (1): 32-39
14. Anita Khokhar, G.S.Meena, Malti Mehra. Profile of animal bite cases attending M.C.D dispensary at Alipur,Delhi. Indian Journal of Community Medicine 2003; 28(4):157-160.