



Original Research Article

Study of Pre-Treatment Practices and Some of the Epidemiological Factors Associated Among Dog Bite Cases Attending Outpatient Department in Tertiary Care Hospital

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ABSTRACT

Context: Rabies is a zoonotic disease of major public health importance. Post exposure prophylaxis including immediate wound washing, rabies immunoglobulin & vaccination is essential to prevent rabies deaths. Non-scientific pre-treatment practice of dog bite wound gives rise to false sense of security against rabies. Hence, the need to ascertain the epidemiological factors associated among dog bite cases in order to plan and enhance management strategies.

Objectives: To study prevailing pre-treatment practices and some epidemiological factors associated with dog bite among study population.

Method: A cross-sectional study was carried out by interviewing 357 subjects who received anti-rabies immunization injection at outpatient department of tertiary care hospital in Mumbai by filling the structured, pretested performa. Chi-square test was used for statistical analysis with the help of SPSS software.

Results: Dog bite was most common among males (73.94%) and majority (57.70%) were observed in the age group of 16-45 years. Maximum cases were of Grade-III (61.6%) bite with common site was lower limbs (82.9%) and 58.26% belonged to poor socioeconomic class. Immediate pre-treatment of wound was practiced by 173(48.45%) subjects before visiting health care personnel, while 184 (52.54%) had not used any method. 86 (24.08%) had washed the wound with soap, water &/or disinfectant. Majority 87(24.3%) applied local remedies like Lime 33(37.93%) followed by Turmeric 21 (24.13%) and Chilly powder (16.09%).

Conclusion: Though rabies is preventable, people are not aware about right pre-treatment practices and there is a need to increase the public awareness in this context and to control stray dog population.

Keywords: Dog bite, epidemiological factors, pre-treatment practices, Rabies.

INTRODUCTION

Rabies is a major zoonotic disease of public health importance in India. It is known to be present in more than 150 countries and territories of all continents

except Antarctica. About 60, 000 people die of rabies every year, mostly in Asia and Africa. The main route of rabies transmission to humans is the bite of rabid dogs. Most importantly, the development of

clinical rabies in humans can be prevented through local treatment of wounds and timely immunization after exposure to the virus. This intervention is known as “post-exposure prophylaxis” (PEP). Most human deaths occur in the absence of PEP.^[1]

Four out of every ten people who die from rabies are children.^[2] The magnitude of the rabies problem and the level of rabies control differ from country to country. It accounts more than 16,450 deaths annually in India.^[3] The cases occur throughout the year, in all parts of the country with the exception of water locked islands of Lakshadweep & Andaman & Nicobar. Estimates suggest that 15 million animal bites occur annually.^[4] Dogs inflict more than 95% of bites.^[5] Every day a number of people fall victims to dog bite.^[6] It is considered responsible for 99% of rabies cases.^[7] The data on animal bites in the country is scanty, unreliable due to poor surveillance or reporting system. About 2.1 million people are known to receive post exposure treatment annually.^[5]

The District Surveillance System Project Maharashtra data year 2010-12 shows 2000 dog bite cases per year on an average approximately 2 dog bites/1000 population/year.^[8] This underestimates the real problem as data from private sector and from metros like Mumbai, Pune is lacking & also does not include all kinds of animal bites. In India the annual number of persons days lost because of animal bites is 38 million & cost of post exposure treatment is \$25million.^[4] Despite the tremendous progress in the fields of preventive medicine & vaccination, rabies is widely prevalent in India causing morbidity, mortality, emotional damage, loss of workers days and cost for treatment.^[9] Post exposure prophylaxis including immediate wound washing, rabies immunoglobulin & vaccination is essential to prevent rabies deaths. The profile of dog bites varies from

country to country and region to region within country. History among dog bite cases reveals that people practice different pre treatment methods which are not useful & scientific. Hence, the need to ascertain the epidemiological factors associated among dog bite cases and to understand pre-treatment practices in order to plan and enhance management strategies.

Objectives:

- To study prevailing pre-treatment practices.
- To study some epidemiological factors associated with dog bite among study population.

METHODOLOGY

A cross-sectional study was carried out from 1st September to 31st October 2012 by interviewing 357 subjects who received anti-rabies immunization at the outpatient department of tertiary care hospital, Mumbai. The structured, pretested oral questionnaire was used to elicit required information pertaining to the epidemiology of dog bite after taking valid informed consent.

A detailed history was obtained regarding age, sex, site of bite, type of dog, severity of wound according to WHO classification, socio-economic status as per modified B.G. Prasad classification, interval between dog bite & vaccination and pre-treatment practices. Proportion & chi-square test was used for statistical analysis with the help SPSS software.

RESULTS

Dog bite was most common among males (73.94%) and male: female ratio was observed 3:1. Majority (57.70%) were observed in the age group of 16-45 years (Table-1).

Table 1: Age and Sex wise distribution of dog bite cases.

Age Groups	Male	Female	Total No. (%)
<5 yrs	13	8	21 (5.8)
5-15 yrs	61	22	83 (23.2)
16-30 yrs	98	15	113(31.7)
31-45 yrs	64	29	93 (26)
46-60 yrs	15	11	26 (7.2)
>60 yrs	13	8	21 (5.8)
Total	264 (73.94%)	93 (26.06%)	357 (100%)

Maximum cases were of Grade-III 220 (61.6%) bite. The most common site was lower limbs 296 (82.9%). Majority 268 (75%) of bites were from stray dogs. 102 (28.57%) cases had recurrent history of dog bite. Provocative bites were observed in 113 (31.7%) subjects and it was equal among both sexes (Table-2).

Table 2: Profile of dog bite cases.

Profile	No. of cases (%)
Severity of Bite	
Grade II	137 (38.37)
Grade III	220 (61.6)
Site of Bite	
Lower limbs	296 (82.9)
Upper limbs	44 (12.3)
Trunk	11 (3.1)
Face	6 (1.7)
Ownership of Dog	
Domestic	89 (24.9)
Stray	268 (75)
Previous history of dog bite	
Yes	102 (28.6)
No	255 (71.4)
Whether the bite was provoked	
Yes	113 (31.7)
No	244 (68.3)

About 86 (24.08%) subjects had washed the wound with soap, water &/or disinfectant, whereas 87 (24.3%) had applied local remedies. Thus immediate pre-treatment of wound was practiced by 173 (48.45%) subjects before visiting health care personnel. While 184 (51.54%) had not used any kind of pre treatment method (Chart-1).

Out of 87 subjects, 33(37.93%) had applied Lime followed by Turmeric 21 (24.13%), Chilly powder 14 (16.09%), Kerosene 9 (10.34%), other oil 4 (4.59%), Balm 22 (2.29%), Tobacco, Salt, wine, mud (1.14% each) (Table-3).

There was no statistical difference between sex and pre treatment practices ($\chi^2=2.2$, $p>0.05$, not significant) (Table-4).

Chart 1: Distribution of pre-treatment practices.

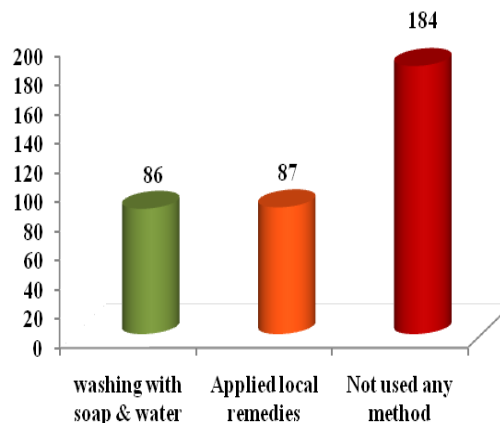


Table 3: Distribution as per application of local remedies used for pre-treatment.

Local remedies	Number (%)
Lime	33 (37.93)
Turmeric	21 (24.13)
Chilly powder	14 (16.09)
Kerosene	9 (10.34)
Oil	04 (4.59)
Balm	02 (2.29)
Tobacco-powder	01 (1.14)
Salt	01 (1.14)
Wine	01 (1.14)
Mud	01 (1.14)
Total	87 (100%)

Maximum number of subject i.e. 230 (58.4%) belonged to poor socioeconomic class according to modified B G Prasad classification (Table-5). There was statistically significant difference between socioeconomic class & pre-treatment practices. ($\chi^2=7.9$, $p<0.05$, Significant) Higher the socioeconomic class, greater is the practice of correct pre-treatment method of wound washing. There is more awareness among higher socioeconomic class (Table-6).

Majority 168 (47.1%) of dog bite cases came on the same day of dog bite for

receiving post exposure prophylaxis (Table-7).

Table 4: Relation of Sex and Pre-treatment practices.

Sex	No pre-treatment	Washing with Soap & water	Application of Local remedies	Total	p-value
Male	136	68	60	264	X ² =2.2 p>0.05
Female	48	18	27	93	
Total	184	86	87	357	

Table 6: Relation of Socioeconomic status & Pre-treatment practices.

Socio economic Status	No. pre-treatment	Washing with Soap & water	Application of Local remedies	Total	p-value
Middle class & above	68	38	21	127	X ² =7.9 p< 0.05
Poor & below	116	48	66	230	
Total	184	86	87	357	

Table 5: Distribution of dog bite cases according to socio economic status.

Socio economic Status	No. (%)
Upper high	01 (0.3)
High	11 (3.1)
Upper middle	18 (5.1)
Low middle	97 (27)
Poor	208 (58.4)
BPL	22 (6.2)
Total	357 (100%)

Table 7: Distribution of dog bite cases regarding their lag time.

Lag time	No. of Cases (%)
Same Day	168 (47.1)
1 day	121 (33.9)
2 days	33 (9.24)
3 to 7 days	28 (7.8)
>7days (upto 20 days)	07 (1.96)
Total	357(100%)

DISCUSSION

In the present study, dog bite were more common in males and male to female ratio was observed 3:1, this could be the fact that male has to go out for work as compared with women in this area. Similarly a study done by Arvind kumar^[10] revealed that human rabies cases are more in males. In another studies done by Goel S^[11] and Marhal Fathalla Thabit,^[6] reported that male to female ratio were 2:1 and 7.7:1 respectively, while Sudarshan MK^[5] in his study reported that dog bite were more common (64%) in males.

Most common site of dog bite was lower limb (82.9%) in the present study which were similar to the findings of Vyas S.^[4] & Shetty RA et.al.^[12]

Provocative bites were 31.7% in the present study which was similar to the finding of Ichhpujani RL^[13] (35.7%) in their multi centric study.

Majority cases in the present study had category III which is in compatible with Vyas S^[4] but Rasanias SK et.al.^[14] in their study found that category II were more commonly.

In a study conducted by Goel S^[11] revealed that majority of dog bites were in the age group of 6 to 15 years, while Shetty RA et al.^[12] also depicts more than half of animal bite victims were children of age less than 14 yrs. A study by Bhargava A et al.^[15] found that dog bites are more common with age group 15- 45 years as they considered to be most agile group. This is compatible with our study.

In a study done by Vyas S^[4] reported that pre-treatment of wound was carried out by 72% of cases after animal bite and the washing of wound with soap and plenty of water was done only by 17 (7.9%) of those cases who practiced pre-treatment. Another study done by Shetty RA et al.^[12] also reported that the wound was washed with soap and water in only 3.6% of cases. A high proportion of bite victims did not wash their wounds with soap and water (39.5%) as reported by Sudarshan MK which were compatible with our study 86 (24.08%).

A study conducted by Vyas S^[4] found that 50% had applied tobacco snuff followed by 13.0% chilly powder, turmeric in 7.9% and miscellaneous things like garlic, kerosene, lime, bandage, soframycin, ghee, wheat flour etc. in 21.2% of cases, while in our study 86 (24.08%) had washed the wound with soap, water &/or disinfectant 87 (24.3%) applied local remedies like lime 33(37.93%) followed by application of turmeric 21 (24.13%), chilly powder 14 (16.09%), kerosene 9 (10.24%), other oil 4 (4.59%), balm 2(2.29%), tobacco 1(1.14%), salt(1.14%), wine(1.14%) and mud 1(1.14%).

A study by Bhargava A. et al.^[15] reported different practices including use of traditional remedies such as application of chilly paste are prevalent for wound treatment. Another study done by Rozario M^[16] reported that about 60% of people resort to indigenous treatment, with local applications to the wound (36.8%) and indigenous remedies (45.3%) being popular.

Victim of dog bite injury reported within first 3 days of post exposure according to Marhal Fathalla Thabit,^[6] while in our study most of the cases reported on the same day, ensuring the awareness regarding importance of post exposure prophylaxis and fear of rabies. Knowing that rabies is once contracted is 100% fatal, number of cases reporting within 24 hrs for medical help was 168 (47%) which was unsatisfactory. A study by Khokar A^[17] had reported this figure to be 37.03%.

CONCLUSION

Though rabies is preventable, still people are not aware about right pre-treatment practices and there is definite need to increase the public awareness in this context. At risk population should be made aware of dangers of inadequately managed dog bites through public health educational programmes. These should include proper

pre-treatment of wound such as washing wound with plenty of water & soap, followed by complete post exposure vaccination with modern tissue culture vaccine & administration of man rabies immunoglobulin locally (if needed). There is a need to control stray dog population and catch suspected rabid, stray dogs.

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