Research Article

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20160918

Epidemiological study of patients attending anti-rabies vaccination clinic of tertiary care hospital of Southern Maharashtra, India

Alka C. Kaware¹*, Hemlata M. Rokade², Mangulikar SK²

Received: 28 January 2016 Accepted: 03 March 2016

*Correspondence:

Dr. Alka C. Kaware,

Email: alkakwr1@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Epidemiology of animal bite is imperative for policy making, planning and effective implementation of prevention and control programme at local, state and national level. The objective was to study the epidemiology of patients attending anti-rabies vaccination clinic and to study treatment seeking behavior of patients attending anti-rabies vaccination clinic.

Methods: A hospital based cross-sectional study was conducted in patients attending anti-rabies vaccination clinic of a tertiary care hospital in Solapur during January to December 2013. Detail history regarding socio-demographic profile, type of bites including site, duration, category of exposure, wound toilet, treatment, etc. was inquired.

Results: Out of total 7371 patients screened, 71.75% were males and 28.25% were females. Maximum patients i.e. 52.31% were educated up to high school and 4.71% were illiterate. Majority of the patients i.e. 83.63% were from urban areas. Dog was the most common (93%) biting animal and 34.72% animal bites were of category III. 70.99% injuries were of superficial type and 29.01% were deep wounds. Maximum number i.e. 44.35% bites were on lower limb, 30.86% were on upper limb, 16.8% on head, neck, face and 7.99% on trunk. Around 40.54% patients did nothing as pre-treatment management of wound. Anti-rabies vaccine was administered to 99.35% of cases and rabies immunoglobulin to 35.26% cases.

Conclusion: Our study findings suggests that the majority of the patients were from urban set up inflicted upon by animal bites with poor knowledge regarding wound care and seeking early treatment.

Keywords: Epidemiology, Animal bite, Washing of wound, Antirabies vaccination

INTRODUCTION

Rabies is a highly fatal viral disease of the central nervous system, caused by Lyassa virus type 1. It is primarily a zoonotic disease of warm blooded animals, particularly dogs, cats, jackals and wolves. It occurs in more than 150 countries and territories. Rabies in dogs is the source of 99% of human infection and possesses a potential threat to more than 3.3 billion people. According to WHO report, worldwide human deaths from endemic canine rabies were estimated 55000 deaths in a year. In India, it is estimated that, around 20,565 to 30,000 persons die of rabies, with incidence of 1.7 per 100,000 population. The annual animal bite load is

estimated to be 17.4 million (1.7%) and 46.9% takes antirabies vaccination.³ In India, various cultural practices are followed after dog bite. The application of soil, chilli paste, oil etc. Is common but unnecessary and damaging the tissue further.⁴ Multiple myths are associated with the disease, which vary from region to region, and they determine the post exposure treatment seeking behaviour of animal bite victims.⁵ With this background, the present study was carried out to know epidemiological profile of dog bite patients attending antirabies vaccination clinic attached to tertiary care centre and to know some cultural practices associated with dog bite victims.

¹Department of Community Medicine, Indira Gandhi Government Medical College, Nagpur, India

²Department of Community Medicine, Government Medical College, Solapur, India

The objective of the study was to study the epidemiology of patients attending anti-rabies vaccination clinic and to study treatment seeking behaviour of patients attending anti-rabies vaccination clinic.

METHODS

The present hospital based cross sectional study was carried out among patients attending anti-rabies vaccination clinic (ARV) of a tertiary care centre of Maharashtra during 1st January to 31st December 2013. All the new cases of animal bite reported during the period were included in the study. During the study period, a total of 7371 new animal bite cases attended the anti-rabies clinic.

After explaining the purpose of study and obtaining verbal informed consent from the patients, all patients were interviewed with the aid of preformed structured questionnaire. Data was collected in ARV clinic up to the end of study period. All the patients were subjected to sociodemographic profile and detailed history about type of bites including site, duration, category of exposure, wound toilet, treatment including both active and passive immunization was taken. Also history regarding health seeking behaviour of animal bite patients like application of oils, salt, lime and turmeric paste on the wound was inquired. All the cases of animal bite were classified as per guidelines given by World Health Organization (WHO). Statistical analysis was done using percentage.

RESULTS

A total of 7371 patients of animal bite reported at the ARV clinic during study period. Of these, majority were males (71.75%) compared to females (28.25%). Majority of the patients (46.75%) were in the age group of 15-45 years followed by 5-14 years age group (21.49%) and least in patients over 60 years of age (7.22%). Around 83.63% patients were from urban area while remaining 16.37% from rural area. Maximum patients i.e. 52.31% were educated up to high school and 4.71% were illiterate (Table 1).

of patients Distribution according to wound characteristics has been shown in table 4. Patients were categorized as per WHO classification of animal bite, it was seen that 63.71% animal bites were of category II exposure; 34.72% belonged to category III animal exposure and only 1.57% belonged to category I exposure. As far as types of injuries are concerned 70.99% injuries were of superficial in nature (i.e. licks, abrasion) and 29.01% were deep wounds (lacerated, contusions) with 83% being unprovoked and 17% were provoked. In our study, the commonest site of animal bite was found to be lower limb in 44.35%, upper limb in 30.86%, head, neck face (HNF) in 16.80% and trunk in only 7.99% of cases of animal bites.

Table 1: Sociodemographic profile of animal bite cases (n=7371).

	Number	Percentage
Age group (years)		
<5	685	09.29
5-14	1584	21.49
15-45	3446	46.75
45-60	1124	15.25
>60	532	07.22
Sex		
Male	5289	71.75
Female	2082	28.25
Residence		
Urban	6164	83.63
Rural	1207	16.37
Education		
Illiterate	347	04.71
Primary	958	13.00
Middle school	1621	21.99
High school	3856	52.31
Graduation/postgraduate	589	07.99

Table 2: Time interval between animal bite and attending the ARV clinic.

Time period	Number	Percentage
Within 24 hours	3002	40.73
1-3 days	2779	37.70
4-10 days	1232	16.71
>10 days	358	04.86
Total	7371	100

Table 2 shows that, maximum i.e. 40.73% of cases were reported within 24 hours of bite followed by 37.70% within 1 to 3 days. But around 4.86% cases reported after 10 days of bite.

Table 3 shows that, dog was the most common (93%) biting animal followed by cat (3.22%). Patients with bite of monkey, pig and fox were also reported (3.78%).

Table 3: Distribution of cases as per type of animal.

Animal	Number	Percentage
Dog	6855	93.00
Cat	237	03.22
Others (Monkeys, Pig, Fox)	279	03.78
Total	7371	100

Out of total patients attending ARV clinic, 2599 (35.26%) were advised for ARS of which only 69.33% of patients had taken ARS (Table 5). The proportion of taking ARS was more in urban population (57.75%) than rural (11.58%) population.

Table 4: Distribution of patients according to wound characteristics (n =7371).

Wound characteristics	Number	Percentage
Category of bite		
Category I	116	1.57
Category II	4696	63.71
Category III	2559	34.72
Type of wound		
Superficial (licks, abrasions)	5233	70.99
Deep (lacerated, contusions)	2138	29.01
Site of bite		
Head, neck, face	1238	16.80
Trunk	589	07.99
Upper limb	2275	30.86
Lower limb	3269	44.35

Table 5: Association between residence of patients and ARS taken.

Residence of patients	ARS Taken	ARS not taken	Total (%)
Rural	301	560	861 (33.13)
Urban	1501	237	1738(66.87)
Total	1802(69.33%)	797(30.67%)	2599 (100)

Table 6: Distribution of patients according to wound management.

Character	Number	Percentage	
Local application before visiting ARV clinic			
Lime	1745	23.67	
Water only	1076	14.60	
Cleaning with soap and water	620	08.41	
Turmeric	575	07.80	
Antiseptic	294	03.99	
Others (salt, oil)	73	00.99	
None	2988	40.54	
Treatment given			
Injection TT	7323	99.35	
Anti-rabies vaccine (ARV)	7323	99.35	
Rabies immunoglobulin (RIG)	2599	35.26	
No need of ARV	48	00.65	

Distribution of patients according to wound management is shown in table 6. Wound toileting was done in 59.46% patients while 40.54% did not apply anything over the wound before coming to ARV clinic. Maximum patients i.e. 23.67% had given history of local application of lime, whereas 7.80% had applied turmeric over the wound. Wound was washed with only water in 14.60% patients, while 8.41% had given history of application of soap and water and only 3.99% had applied antiseptic on the wound. Considering treatment received at anti-rabies vaccination (ARV) clinic, out of total patients 99.35% had received injection tetanus toxoid (TT). Whereas

active immunization (Anti rabies vaccine) was administered to 99.35% of cases and passive immunization with Rabies Immunoglobulin (RIG)) was given to 35.26% patients.

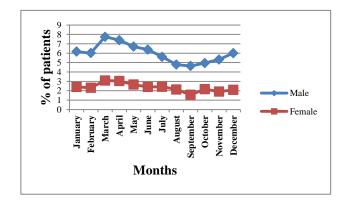


Figure 1: Month-wise distribution of patients.

Month-wise distribution of patients shows that animal bite cases were highest during summer i.e. March, April, May, and June (39.4%) followed by winter season (32.29%) (Figure 1).

DISCUSSION

The present study highlighted the epidemiology of animal bite cases reported to anti-rabies vaccination (ARV) clinic of a tertiary care hospital. In the present study, more number of males (71.75%) were victims of dog bites probably because of their mobile nature than females (28.25%). This finding is similar to the studies done by Ganasva A et al⁶ (71.7%), Trivedi A et al⁷ (76.19%) and Borkar A et al⁸ (71.22%). The most common age group of animal bite was 15-45 years of age (46.75%); these findings are similar to as stated in the study by Borkar A et al⁸ where nearly half of the cases occurred in persons of economically productive age group. One third cases of animal bites (30.78%) occurred in children up to 14 years of age; children do not recognize the angry or defensive behaviour of the dog and continue to play with them which the dog consider as the invasion of territory and may incite an attack. In our study 83.63% of the patients belonged to urban areas. This may be because many cases reported to Primary Health Centers where Anti-rabies vaccination was available and only serious cases were referred for antirabies serum. The present study findings were similar to studies done by Trivedi A et al (65.07%), Borkar A et al (55.10%) and Sukhsohale ND et al (90%).⁷⁻⁹

Although WHO guidelines 2008 have mentioned that post exposure prophylaxis should be started as early as possible after exposure to the potentially rabid animal, in our study, the reporting time to the clinic varied from within 24 hours to more than 10 days and majority (40.73%) reported within 24 hours. Trivedi A et al⁷ and Borkar A et al⁸ also found similar findings. However, around 4.86% patients reported after 10 days of bite

which shows casual attitude of patient towards animal bite.

In India, 96% of the rabies is due to bite from dogs. Dog as a major biting animal (93%) was found in the present study and other studies also agree with this finding. 6-8

63.71% of the animal bites were of category II followed by category III (34.72%) which is similar to the study done by Umarigar P et al. ¹⁰ We found maximum number of cases (44.35%) had been bitten on lower limbs. Our study findings are consistent with the findings of study done by Borkar A et al and Sukhsohale ND et al. ^{8,9} ARS was advised for category III patients (2599), but in our study only 69.33% patients had taken it. The reason was illiteracy and ignorance towards animal bite.

In the present study around 40.54% cases did not receive any kind of first aid treatment. Almost one-thirds of the patients performed harmful local traditional practices and applied locally available irritants like lime paste (23.67%) and/or turmeric (7.80%) on the wound area. A common perception is that local irritability produced by these substances would destroy the rabies virus in the wound site

The present study found that washing the local wound with water and soap (8.41%) as a first aid treatment were practiced to a lesser extent. A similar type of observation was found in studies by Ganasva A et al, Trivedi A et al, Borkar A et al and Sukhsohale ND et al. ⁶⁻⁹

In the present study, there is a seasonal variation of animal bite cases being highest during summer i.e. March, April, May, and June (39.4%) followed by winter season (32.29%). This is contrary to the study findings of Borkar A et al⁸ who found maximum number of cases in winter season.

CONCLUSION

Our study findings suggests that the majority of the patients were from urban set up inflicted upon by animal bites with poor knowledge regarding wound care and seeking early treatment. So the Community should be made aware of their role in immediate reporting of animal bites, importance of proper wound care, and necessity of taking anti-rabies vaccination. The study concludes that a large number of cases worth treating at the Municipal corporation hospitals in urban area and PHC in rural area are referred to tertiary care centre, increasing avoidable patient load at the tertiary care centre level. It is suggested that ARV and ARS should be made available at Municipal corporation hospitals in urban area and PHC in rural area, so that patients load at tertiary care centre will be reduced and counselling along with follow up of such patients should be done. Effective IEC (Information, Education and Communication)

activities can reduce not only false beliefs about the disease but also misconceptions about treatment, which should be carried out regularly at health facilities. Proper information should be given to people by using mass media and health education.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

- 1. Park K, Park's Textbook of Preventive & Social Medicine 23rd edition 276.
- 2. World Health Organization. WHO technical report series 931: WHO expert consultation on rabies; first report. Geneva Switzerland, WHO. 2005;13.
- 3. Kishor J, National Health Programs of India. 11th edition, New Delhi. Century Publications. 2014;441.
- 4. Sudarshan MK. Assessing burden of rabies in India. WHO sponsored national multicentric rabies survey, 2003;Indian Journal of Community Medicine. 2005;30(3):100-1.
- Wagh S, Raut M, Rajurkar S, Wagh SS, Sharam D. Profile of animal bite in Vidarbha region of Maharashtra, India. J Pharm Biomed Sci. 2013;32(32):1381-5.
- 6. Gansava A, Bariya B, Modi M, Shringarpure K. Perceptions and treatment seeking behaviour of dog bite patients attending regional tertiary care hospital of central Gujarat, India. Journal of Research in Medical and Dental Science. 2015;3(1):60-4.
- 7. Trivedi A, Arutagi V, Pal DK, Shukla PK. A cross sectional study of sociodemographic profile and treatment seeking behavior of cases of animal bite attending anti Rabies clinic at tertiary health care center in central India. International Journal of Advances in Medicine. 2015;2(1) 44-6.
- 8. Borkar A, Deshmukh N, Khakse G. Epidemiology of Animal Bite Cases Reported to Anti-Rabies Vaccination Clinic, at a Tertiary Care Hospital, in Tribal Area. Indian Journal of Applied Research. 2014;4(9):426-8.
- Sukhsohale ND, Deshmukh JD, Akre CV. Epidemiological study of patients attending antirabies vaccination clinic of tertiary care hospital. Indian Journal of Applied Research. 2014;4(1):409-10.
- 10. Umarigar P, Parmar G, Patel PB, Bansal RK. profile of animal bite cases attending urban health centres in Surat city: a cross-sectional study. National Journal of Community Medicine. 2012;3(4):631-5.

Cite this article as: Kaware AC, Hemlata MR, Mangulikar SK. Epidemiological study of patients attending anti-rabies vaccination clinic of tertiary care hospital of Southern Maharashtra, India. Int J Community Med Public Health 2016;3:865-8.