



Epidemiology of Animal Bite Cases Reported to Anti-Rabies Vaccination Clinic, at a Tertiary Care Hospital, in Tribal Area

KEYWORDS

Animal bite, site of bite, pretreatment practice, pet

* Avinash Borkar

Assistant Professor, Department of Community Medicine, Shri Vasantrao Naik, Govt. Medical College, Yeotmal, Maharashtra, India. * Corresponding Author

Namita Deshmukh

Assistant Professor, Department of Community Medicine, Govt. Medical College, Akola, Maharashtra, India.

Gautam Khakse

Associate Professor, Department of Community Medicine, Shri Vasantrao Naik, Govt. Medical College, Yeotmal, Maharashtra, India.

ABSTRACT

This paper discusses epidemiological characteristics of animal bites and the attitude & practices among the study population. Record based cross-sectional study was conducted on 1550 cases of animal bites that reported in the anti-rabies clinic of Medical College during period of 1st April 2013 to 31st March 2014. Most common animal bite was dog (94.45%). The incidence of animal bite was higher in ≤ 10 years (24.14%), in males (71.23%) & in urban population (55.10%). Lower limb was the most common (71.03%) biting site and majority (53.61%) had Category II bites. Around 29.46% of cases did nothing as pre-treatment management of wound. In months of winter, more animal bite cases were reported. Around 50% bites were by pet dogs and cats. Among these only 19.78% of owners had vaccinated the animal. There is need to create the awareness in community about proper management of wound and vaccination of the pets.

Introduction

Rabies, a disease of antiquity continues to be a major public health problem in India. It is 100% fatal yet 100% preventable with immediate local wound management and post exposure prophylaxis. It is estimated that the South East Asia Region accounts for approximately 60% of human deaths due to rabies in the world.¹ An estimated 55,000 human rabies death occur every year globally, of which estimated 20,000 human rabies death occur annually in India which constitute 40% of the rabies death in world.¹ This may not be exact, as the disease is underreported.

The disease is transmitted to humans through contact, mainly bites and scratches with infected animals, both domestic and wild.² The pet animals (dogs, cats) are principle reservoir of rabies and plays important role in transmission of disease as people are not serious regarding their vaccination.⁴

There are many myth and false beliefs associated with the wound management. This includes application of oil, turmeric, salt, herb, lime and red chilly on wound inflicted by rabid animal. These vary from region to region, and they determine the post exposure treatment seeking behavior of animal bite victims.⁵ Unquestionably the level of knowledge and concern of the community about animal bite injuries play an important role in dealing with this problem. As no accurate data regarding the magnitude of animal bite is available and very few studies been conducted in the area; the present study was carried out with the objectives of knowing the profile of animal bite cases, the monthly trend of animal bites and attitude & practices adopted by the patients after exposure to animal bites.

Material & methods

The present cross-sectional study was carried out in the Anti-Rabies Clinic under the Community Medicine Department of Shri Vasantrao Naik, Govt. Medical College, a tertiary care hospital, Yeotmal (Maharashtra) during the period of 1st April 2013 to 31st March 2014.

All the new cases of animal bite reported during the period were included in the study. Records of 1550 cases of animal bites reported for treatment in this clinic during the study period were studied and analyzed. The variables studied are sex, age, residence, sites of bite, time of reporting, seasonal variation, vaccination status of pets & measures taken after bite.

Classification of exposure was done as per WHO classification. A bite was considered as provoked, if it is resulted from the subject initiating the interaction with the animal such as playing with dog, or annoying the dog during his meal. Statistical tools used are percentages and proportions.

Results

A total of 1550 victims of animal bite reported at the ARV clinic during the study period. Of these majority of the animal bite cases were males (71.23%) compared to females (28.77%). Animal bites occurred in all age groups but children were more vulnerable to it. A quarter of animal bites (24.14%) occurred in children upto 10 years of age followed by age group of 21 to 30 years (16.45%) and least in persons over 60 years of age (4.00%). Around 55.10% animal bite victims were from urban area while remaining 44.90% from rural area. (Table 1)

Table 1: Socio-demographic characteristics of study subjects

Socio-demographic Characteristics	Male No. (%) N=1104	Female No. (%) N=446	Total No. (%) N=1550
Age (years)			
< 10	265 (24.00)	109 (24.44)	374 (24.14)
10-20	168 (15.22)	60 (13.45)	228 (14.71)
21-30	187 (16.94)	68 (15.25)	255 (16.45)
31-40	190 (17.21)	61 (13.68)	251 (16.19)

41-50	143 (12.95)	59 (13.23)	202 (13.03)
51-60	113 (10.24)	65 (14.57)	178 (11.48)
>60	38 (3.44)	24 (5.38)	62 (4.00)
Residence			
Rural	512 (46.38)	184 (41.26)	696 (44.90)
Urban	592 (53.62)	262 (58.74)	854 (55.10)

Dog was the most common (94.45%) biting animal followed by cat (2.38%). Patients with bite of monkey, pig, bear, cow, horse, rabbit, and mongoose were also reported. Lower limb was most common biting site in majority cases 1101 (71.03%) followed by upper limb (19.68%), trunk (4.26%) and head and face region (2.77%). Multiple sites were reported in 35 (2.26%) of cases. (Table 2) Majority, i.e. 831 (53.61%) had Category II bite followed by Category III 693 (44.71%) and Category I 26 (1.67%). (Fig 1) Out of 1550, unprovoked bite was seen in majority of cases, i. e. 819 (54.56%) however 682 (45.44%) cases reported from provoked bite. (Table 2) In case of children (< 10 years) provoked bites were significantly more than adolescents and adults (p=0.0099, X²=6.65, df=1)

Among 1501 dogs and cats, 738 (49.17%) were belonging to someone (pet) and 763 (50.83%) were ownerless. Out of 738 pet dogs and cats, only 146 (19.78%) were vaccinated and 592 (80.22%) were unvaccinated. (Table 2)

Maximum i.e. 36.65% of cases were reported within 24 hours of bite followed by 36.32% within 24 to 48 hours. But around 88 (5.68%) cases reported after 5 days of bite, few of them reported after 1 month also. (Table 3)

Table 2: Factors related to animal bite in study subjects

Factor	Number	Percentage
Type of animal (N=1550)		
Dog	1464	94.45
Cat	37	2.38
Pig	19	1.23
Monkey	16	1.03
Others*	14	0.91
Site of Bite (N=1550)		
Head, Neck & Face	43	2.77
Upper limbs	305	19.68
Trunk & Back	66	4.26
Lower limbs	1101	71.03
Multiple sites	35	2.26
Provocation status (N=1501)		
Provoked	682	45.44
Non provoked	819	54.56
Ownership of Dogs and Cats(N=1501)		
No (Street/stray)	763	50.83
Yes (Pet)	738	49.17
Status of vaccination in case of pet animals (N=738)		
Yes	146	19.78
No	592	80.22

*bear, cow, horse, rabbit, mongoose

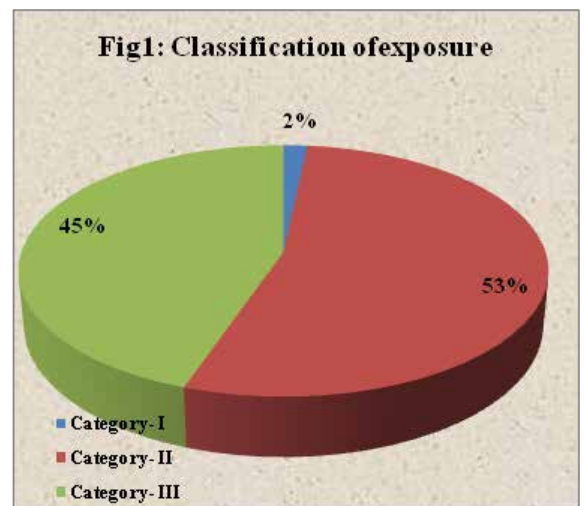
Table 3: Time of reporting to ARV clinic after animal bite

Time	Number (N=1550)	Percentage
<24 hrs	568	36.65
24-48 hrs	563	36.32
3 rd day	216	13.94
4 th day	63	4.06
5 th day	52	3.35
>5 days	88	5.68

Table 4: Immediate treatment of animal bite in study subjects

Factor first aids	Number (N=1550)	Percentage
Washed with water only	365	23.56
Washed with soap & water	77	4.98
Antiseptic	107	6.90
Turmeric powder	227	14.66
Oil	308	19.88
Others* (Lime ,Salt)	08	0.53
None	458	29.46

First aid treatment was received by 70.54% subjects while 458 (29.46%) victims did no management before coming to ARV Clinic. Washing wound with water was practiced by 23.56% of patients while soap and water used by only 77 (4.98%) victims. Other first aid treatment practices were application of oil (19.88%), turmeric powder (14.66%), antiseptics (6.90%), and lime and salt, by 8 patients. (Table 4) As far as season is concerned, the highest number of cases was reported in the months of winter, i.e. November, December, January & February i.e. 596 (38.00%).



Discussion

In this study males were exposed more (71.23%) to animal bites than females. This finding may be due to the fact that men were more likely to go out of their homes for work as compared to females.^{3,7,8,9} One fourth cases of animal bites (24.14%) occurred in children upto 10 years of age and nearly half of the cases occurred in persons of economically productive age group. The incidence of

animal bites decreased with increasing age. Tiwari et al¹⁰, Shetty RA et al¹¹ and Gadekar Rambhau⁶ also found similar trend. Children's small size may encourage a dog to act dominantly towards them. 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 attack¹⁰. Many children's lack of judgement about how to deal with a dog, and their inability to fend off an attack, may put them at additional risk.¹²

In the study, 55.10% of the victims were from urban and remaining 44.90% from rural areas. This may be as many cases reported to Primary Health Centers where Anti-rabies vaccination was available. More animal bites from rural areas were reported by Modi¹³ and Behera et al⁸ while Sampath G¹⁴ found more cases from urban area.

53.61% of the animal bites were of category II followed by category III (44.71%).^{10,13} Overall lower limbs were the main site of bite as these are most easily approachable part of the body for an animal.^{5,6,9,10}

In India 96% of the rabies is due to bite from dogs which are mostly stray and ownerless¹. Dog as a major biting animal (94.45%) was found in the present study and other studies also agree with this finding.^{10,15,16,17} Among 1501 dogs and cats, 49.17% were pet and 50.83% were from street. Tiwari et al¹⁰ and Khokhar et al¹⁸ reported that 69.7% and 73.8% of animal bites were due to street dogs respectively. Striking finding of the study was only 19.78% pets were vaccinated.

In our study, the reporting time to the clinic varied from within 24 hrs to 2 month and majority (73%) reported within two days.^{8,11} also found similar findings. However, around 6% patients reported after 5 days of bite which shows casual attitude of patient towards animal bite.

Local wound treatment that is immediate flushing and washing the wounds, scratches and adjoining areas with plenty of soap and water, preferably under a running tap for at least 5 minutes, irrigation with virucidal agents can reduce the chances of developing rabies by up to 80%.¹

In the present study around 30% cases did not receive any kind of first aid treatment. Among those who received first aid treatment 23.56% used water, 4.98% used soap and water while 6.90% applied antiseptic creams over wound. However, remaining around 36% of patients had done the first aid in the form of application of oil, salt, lime and turmeric powder which has no value as a first aid or even these practices may damage the nerve ending and favours the virus entry in nerves.^{5,6,8,18} The present study and studies conducted by Gadekar Rambhau⁶, Behara et al⁸ and Khokhar et al¹⁸ found that washing the local wound with water and soap as a first aid treatment were practiced to a lesser extent.

In our study there is a seasonal variation of animal bite cases being highest (38%) during the winter i.e. October, November, December & January followed by summer (34%).^{8,9} This may be due to the fact that during winter the female dogs are lactating and in fear of hurting their puppies they might be biting the humans

Conclusion

The dog is the main biting animal affecting most of the victim mostly children and for working population. The pretreatment management of wound was not proper so community should be made aware of local wound management and use of modern antiserum, tissue culture vaccine as post exposure prophylaxis. Again people should be encouraged to vaccinate their pets.

REFERENCE

1. Park K. Rabies. In: Park's Textbook of Preventive and Social Medicine. (2013); 22nd edition; Bansaridas Bhanot publication, Jabalpur (India) 251-7. | 2. Nitheshkumar, B.Kiranmai. A Study of Awareness and practices on Dog bites among rural women, Hyderabad, India. J Pharm Biomed Sci. 2012 November; 24 (24); 121-4. | 3. Mohd Junaid, Tabrez Ahmad, Gumashta R, Deoke A R. Epidemiological Study Of Dog Bite Victims In Anti Rabies Clinic Of A Tertiary Care Hospital. International Journal of Biological and Health Sciences. 2012; 1(1):12-6. | 4. Basin SL, Rupprecht CE, Bleck TP. Rhabdoviruses. In: Mandell GL, Bennett, Dolin R, editor. Principle and Practice of Infectious diseases. New York : Churchill Livingstone; 2010. P 2249-58. | 5. Sanjay Wagh, Mohan Raut, Sampada Rajurkar, Santoshi S Wagh & Diwakar Sharam (2013). Profile of animal bite in Vidarbha region of Maharashtra, India. J Pharm Biomed Sci. 2013 July; 32(32): 1381-5. | 6. Gadekar Rambhau, Dhekale Dilip N. Profile of Animal Bite Cases in Nanded District of Maharashtra State, India. Indian Journal of Fundamental and Applied Life Sciences 2011. 1 (3), 188-93. | 7. Vyas Sheetal, Gupta Kinnari, Bhatt Gneyaa, Tiwari Hemant. Animal Bite Management Practices. A Study At Three Municipal Corporation Hospital Ahamadabad: National Journal of Community Medicine 2010; 1(2): 75-8. | 8. 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). APCRI Journal. 2008; 9(2). | 9. Hanspal JS, Bhandari D and Nagar S (2007). A review of attendance of animal bite cases in the anti-rabies clinic of G.G.S. Hospital, Jamnagar (Gujarat). APCRI Journal [Online] | 10. Tiwari R, Marathe N, and Srivastava D. A retrospective analysis of the patients attending anti rabies clinic at J.A. Group of Hospitals, Gwalior. 2009; APCRI Journal 11 (1) 24-6. | 11. Shetty RA, Chaturvedi S, Singh Z. Profile of animal bite cases in Pune. J Commun Dis. 2005 Mar; 37(1):66-72. | 12. Jeffrey J Sacks, Marcie-jo Kresnow and Barbara Houston (1996). Dog bite: how big a problem? Injury Prevention 252-4. | 13. Modi BK. A review of attendance trend of animal bite cases in the private antirabies clinic, at Kukarwada town in North Gujarat. 2009; APCRI Journal 10 (2) 27-8. | 14. Sampath G. Post Exposure treatment - Patients & practices. APCRI Journal 2004 - 2005; 1&2 (7): 30-3. | 15. Mohanti M, Giri PP, Sahu M, Mishra K and Mohapatra B. A study on the profile of animal bite cases attending the antirabies vaccination OPD in SCB Medical College and Hospital, Cuttack, Orissa. 2009; APCRI Journal 10 (2) 22-4. | 16. Ichhpujani RL et al. Epidemiology of Animal Bites and Rabies cases in India. A Multicentric study. J Commun Dis. 40 (1) 2008; 27-36 | 17. Venu Shah, D.V Bala, Jatin Takkar, Urvin Shah, Sandip Chauhan, Kapil Gosavi. Epidemiological determinat of Animal Bite Case Attending Anterabies Clinics at V S General Hospital Ahamadabad. healthline 2012; 3(1): 66-8. | 18. Khokhar A, Meena GS and Mehra M. Profile of dog bite cases attending M.C.D. Dispensary at Alipur, Delhi. Indian Journal of Community Medicine 28 (4) 157-9. |