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Research Article

Profile of Animal Bite Cases in Nanded District of Maharashtra State, India

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ABSTRACT

Rabies is a 100% fatal disease and it can be prevented by post exposure prophylaxis. India contributes the major share of animal bites as well as global deaths due to rabies. To study the profile and extent of use of traditional herbal treatment for animal bite cases the present cross sectional study was carried out. The study consists of 293 animal bite cases attending anti-rabies clinic of Dr. S. C. Govt. Medical College, Nanded in Maharashtra State enrolled by systemic random sampling method.

Majority of the study subjects were males from rural area and belonging to socioeconomic class IV and V. Incidence of animal bite was found to be decreased as age advances. A quarter of bites were occurred in children upto 10 years of age and statistically significant provoked bites occurred in children as compared to adolescents and adults. In 92.8% cases bitting animal was dog and most of them were ownerless. 60.7% subjects reported to the health institutes within 24-48 hours after bite. Majority of the bites were of category III and on lower limbs. First aid treatment was received in 47.1% cases and lime application on wound was practiced by 63% subjects. 89.4% subjects were heard about the Kundalwadi's traditional herbal medicine for treatment of dog bite cases and 24.2% had taken that medicine prior to attend anti-rabies clinic. The sources of information for herbal medicine were neighbours in 39.7% cases and family member in 32.8 % cases.

Key Words: Animal bite, stray animal, site of bite, traditional herbal medicine.

INTRODUCTION

Canine rabies continues to exist in 87 countries or territories of the world and these accounts for 99 percent of all human rabies cases. The human death toll worldwide is about 60,000. The disease is rare in developed countries. It is estimated that approximately 35,000 to 40,000 human deaths occur due to rabies each year in the countries of South East Asia Region.

India belongs to high incidence category of rabies in human and animals. In India rabies occurs in all parts of the country with exception of Lakshadweep, Andman and Nicobar islands. 30,000 deaths reported by national authorities may not be complete picture since these represent only the deaths reported from hospitals. It is estimated that the number of deaths due to rabies may be 10 times more than those reported (Park K, 2009).

Cases of animal bite contribute to a problem of considerable magnitude in terms of days lost from work in search of appropriate treatment, mortality and financial loss. Ironically, all these problems are preventable (Hanspal et al 2007). Studies had showed that younger age population were usually exposed to animal bites (Behera et al 2008). In Nanded district of Maharashtra State (India) there is a traditional herbal treatment centre for dog bite cases functioning since last 150 years. Until today on an average daily 25 to 30 dog bite victims from Marathwada region of Maharashtra State and nearby areas of Andhra Pradesh and Karnataka State are visiting this centre for treatment. In this context the present study was carried out with the objective to know the profile and extent of use of traditional herbal treatment for animal bite cases.

MATERIALS AND METHODS:

The present cross sectional study was carried out among patients attending anti-rabies clinic (ARC) of Dr. Shankarrao Chavan Govt. Medical College, Nanded of Maharashtra State, India during 1st January to 31st March 2009. During the study period a total of 1466 new animal cases attended the ARC of out-patient department (OPD) out of which 293 subjects were enrolled in the study by systematic random sampling method. Starting number was selected by simple random technique (by lottery method) as 2 out of numbers 1 to 5. Then every 5th number was selected from

the registration file of the ARC OPD upto 1466 thus getting 293 as study subjects. After explaining the purpose of the study consent was obtained from the patients and in case of minors from their parents. Data was collected on predesigned and pretested proforma. The variables studied were age, sex, residence, education, anatomical site of bite, reporting time and first aid treatment. Information of biting animal enquired as type of biting animal, ownership of animal (in case of dogs and cats), vaccination and provocation status. Socioeconomic status of study subjects was determined as per the B.G. Prasad's classification (Kulkarni and Baride 2002). All the cases of animal bite were classified as per guidelines given by World Health Organisation (WHO) (Park K, 2009). Information about Kundalwadi's traditional herbal medicine for dog bite treatment asked to them as whether they know it, taken and sources of information. Statistical analysis was done using percentage and chi square test.

RESULTS

In the present study majority of the animal bite cases were males (76.8%) compared to females. Animal bites occurred in all age groups but children were more vulnerable to it. A quarter of animal bites occurred in children upto 10 years of age followed by age group of 11 to 20 years (19.8%) and least in persons over 60 years of age. Nearly two thirds of animal bite victims were from socioeconomic class IV and V and from rural areas (Table 1). In case of children provoked bites were significantly more than adolescents and adults ($p< 0.001$) (Table 2).

Dog was the most common (92.8%) bitting animal followed by cat. Monkey and pig had bitten to 4 persons each. Only 13% animal bite cases reported to health centre within 24 hours, 60.7% within 24 to 48 hours and 19.1% within 3 to 4 days after bite. Two persons visited the hospital for treatment after one month of animal bite. Lower limbs were the main site of bite (79.2%) followed by upper limbs and head, neck and face. Seven persons were having more than one site of bite. Category of animal bite I, II and III were 1.7%, 5.8% and 92.5% respectively. Among 282 dogs and cats, 84 (29.8%) were belonging to someone and 198 (70.2%) were ownerless (Table 3). Out of 84 pet dogs and cats only 7 (8.3%) were vaccinated and 77 (91.7%) were unvaccinated. 53.9% subjects were having bites on parts which were covered by clothes. First aid treatment was received by 47.1% subjects. First aid that is washing wound with soap and water were practiced by only 5.1% cases. Lime application on the wound was most commonly practiced first aid treatment (63%). Other first aid treatment practices were application of antiseptics (4.3%), turmeric powder (20.3) and paste of bitter gourd leaf (8.7%). 89.4% subjects were heard about Kundalwadi's traditional herbal medicine for treatment of dog bite and 24.2% subjects had taken that medicine before attending anti-rabies clinic. Regarding the source of information about Kundalwadi's herbal medicine, 39.7% got this information from neighbours, 32.8% from family members and 27.5% from their relatives (Table 4).

DISCUSSION

In this study males were exposed more (76.8%) to animal bites than females. Male to female ratio was 3.3:1. 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. Khokhar et al (2003), Behera et al (2008) and Hanspal et al (2007) also reported that animal bites were more in males than females. One fourth cases of animal bites occurred in children upto 10 years of age and nearly half of the cases occurred in persons of economically productive age group. Behera et al (2008) noted that 46.4% of the victims of animal bite were from economically productive age group of 15 to 45 years. The incidence of animal bites decreased with increasing age. Tiwari et al (2009) and Jeffery (1996) found that 25.39% and 26.4% children were bitten by animal bites respectively. Children's small size may encourage a dog to act dominantly towards them. 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 (Jeffery, 1996).

It was found that children were at a statistically significant higher risk of getting bitten by a provoked bite compared to adolescents and adults ($P<0.001$). Children do not recognise 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 (Tiwari et al, 2009). Here 66.9% of the victims were from socioeconomic class IV and V and 62.1% were from rural areas. Farmers and labourers in rural areas proceed for work in early hours of the day. Therefore they are more likely to be exposed to stray animals. 61.25% and 59.8% cases of animal bites from rural areas were reported by Modi (2009) and Behera et al (2008) respectively. In India 96% of the rabies is due to bite from dogs which are mostly stray and ownerless (Park K, 2009). Dog as a major biting animal was found in the present study and other studies also agree with this finding (Tiwari et al 2009, Mohanti et al 2009, Maetz

Table 1: Socio-demographic characteristics of study subjects.

Socio-demographic Characteristics	Male No. (%) (n=225)	Female No. (%) (n=68)	Total No. (%) (n=293)
Age (years)			
≤10	62(27.6)	11(16.2)	73(24.9)
10-20	49(21.8)	09(13.2)	58(19.8)
21-30	45(20.0)	13(19.1)	58(19.8)
31-40	28(12.4)	16(23.5)	44(15.0)
41-50	17(07.6)	11(16.2)	28(09.6)
51-60	14(06.2)	05(07.4)	19(06.5)
>60	10(04.4)	03(04.4)	13(04.4)
Educational status			
Illiterate	50(22.2)	26(38.2)	76(25.9)
Primary	44(19.6)	14(20.6)	58(19.8)
Middle school	38(16.9)	09(13.2)	47(16.0)
Secondary school	54(24.0)	11(16.2)	65(22.2)
Higher secondary	23(10.2)	05(07.4)	28(09.6)
Graduation and above	16(07.1)	03(04.4)	19(06.5)
Socioeconomic status			
Class I	04(01.8)	02(02.9)	06(02.0)
Class II	14(06.2)	04(05.9)	18(06.14)
Class III	58(25.8)	15(22.1)	73(24.9)
Class IV	68(30.2)	20(29.4)	88(30.0)
Class V	81(36.0)	27(39.7)	108(36.9)
Residence			
Rural	142(63.1)	40(58.8)	182(62.1)
Urban	83(36.9)	28(41.2)	111(37.9)

Table 2: Provocation status of animal bites in study subjects.

Animal bite	Children (%)	Adolescents and adults (%)	Total (%)
Provoked	48 (65.8)	85 (38.6)	133 (45.4)
Unprovoked	25 (34.2)	135 (61.4)	160 (54.6)
Total	73 (100)	220 (100)	293 (100)

X^2=16.23, P<0.001

Table 3: Factors related to animal bite in study subjects.

Factors	No.	Percentage
Type of animal		
Dog	272	92.8
Cat	10	03.4
Monkey	04	01.4
Pig	04	01.4
Others*	03	01.0
Reporting time		
<24 hrs	38	13.0
24-48 hrs	178	60.7
3-4days	56	19.1
5-7days	12	04.1
8days -1 month	07	02.4
>1 month	02	0.7
Site of bite		
Head, neck, face	09	03.1
Trunk	04	01.3
Upper limbs	41	14.0
Lower limbs	232	79.2
Multiple sites	07	02.4
Category of bite		
Category I	05	01.7
Category II	17	05.8
Category III	271	92.5
Ownership of animal**		
No (Street)	198	70.2
Yes (Pet)	84	29.8

* Includes 1 fox, 1 mongoose, 1 calf.
**only for dogs and cats (n=282)

Table 4: Factors related to treatment of animal bites in study subjects.

Factors	No.	Percentage
First aid*		
Washing with water only	09	06.5
Washing with soap and water	07	05.1
Use of antiseptic	06	04.3
Use of turmeric power	28	20.3
Use of lime	87	63.0
Use of bitter gourd leaf	12	08.7
Medicine from traditional Healer (of Kundalwadi)		
Taken	71	24.2
Not taken	222	75.8
Heard about Kundalwadi's medicine		
Yes	262	89.4
No	31	10.6
Who told about Kundalwadi's medicine**		
Family members	86	32.8
Relatives	72	27.5
Neighbours	104	39.7

*Multiple choice
**(n=262)

1979). Among 282 dogs and cats, 84 (29.8%) were pet and 198 (70.2%) were from street. Tiwari et al (2009) and Khokhar et al (2003) reported that 69.7% and 73.8% of animal bites were due to street dogs respectively.

Maximum subjects (60.7%) reported to health centre within 24 to 48 hours and only 13% within 24 hours after bite. Late reported cases especially after 5 days were forcefully brought to the hospital by their family members or close relatives. Late reported cases constituted either younger children or illiterate elderly rural people. These younger children did not tell their parents about the animal bite because of fear of injections. Malini et al (2010) observed that 62.0% of animal bites reported late after 24 hours of bite because the animal was alive, looking healthy and traceable and 12% cases did not regard the bite as so severe.

Overall lower limbs were the main site of bite as these are most easily approachable part of the body for an animal. Head and face bites were common in children. Tiwari et al (2009), Hanspal et al (2007) and Maetz (1979) also observed that lower limbs were main site of bite. 92.5% of the animal bites were of category III. Mohanti et al (2009) and Khokhar et al (2003) observed that majority of the animal bite exposure were of category III. Contrary to this finding category II cases reported were 85.94% by Modi (2009) and 60.47% by Tiwari et al (2009).

Local wound treatment that is immediate flushing and washing the wound(s) , 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% (Park K,2009) . In the present study more than half of the cases did not receive any kind of first aid treatment. Among those who received first aid treatment only 5.1% cases had done proper first aid and rest of cases had done the first aid in the form of application of lime, turmeric powder and paste of bitter

gourd leaf which has no value as a first aid or even these practices may damage the nerve ending and favours the virus entry in nerves. Application of chilly paste on wound as a first aid treatment by 85.62% victims was the finding of Khokhar et al (2003). Behara et al (2008) reported that 39.5% of cases had applied traditional substances like juice of bitter gourd leaf or calotropies leaf, turmeric or chilly power and oil over the bite area. He also found that 30.3% cases had adopted traditional methods like 'Jhar Phoonk' for treating the animal bite cases before reporting to ARC. The present study and studies conducted by Khokhar et al (2003) and Behara et al (2008) found that washing the local wound with water and soap as a first aid treatment were practiced to a lesser extent.

In developing country like India people are still having faith on traditional healers. Herbal medicines used by these traditional healers do not have any scientific base. People are using these medicines knowingly or unknowingly because of their blind faith on them. At present 3rd generation of a family in Kundalwadi is practicing traditional herbal medicine for treatment of dog bite cases. Kundalwadi is a town of approximately 14,000 population about 90 Km away from District Head Quarter. On an average daily 25 to 30 dog bite victims of Marathwada region of Maharashtra State and nearby areas of Andhra Pradesh and Karnataka State are still visiting Kundalwadi for treatment of dog bite. Therefore authors of this study were interested to know how many study subjects were heard about or taken Kundalwadi's medicine. Surprisingly it was found that out of 293 study subjects, 262 (89.4%) were heard about the Kundalwad's traditional herbal medicine and 71 (24.2%) had taken it. Neighbours (39.7%), family members (32.8%) and relatives (27.5%) were the sources of the information of this medicine to the victims of dog bite.

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