

## Original Article

## ANIMAL BITE MANAGEMENT PRACTICES: STUDY AT THREE MUNICIPAL CORPORATION HOSPITALS OF AHMEDABAD

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## ABSTRACT

**Context:** Rabies is a deadly Zoonotic disease most often transmitted to humans through a dog bite. Most of these deaths could be prevented through post-exposure prophylaxis (PEP), including immediate wound washing, rabies immunoglobulin administration and vaccination. **Aims:** To study attitude and pre-treatment practices among the study population. **Methods:** Cross sectional study was carried out by conducting exit interview of 100 cases of animal bite each from three hospitals run by Ahmedabad Municipal Corporation. **Observations:** Total 300 cases of animal bites were studied in the present study. Most common biting animal was dog as 97.33% cases gave history of dog bite. Almost half of the cases belonged to age group less than 20 years with mean age of 19± 20.2 years and male to female ratio was 3:1. Right lower limb was the most common (45.7%) biting site and majority (59%) had category III bites. Immediate pre-treatment of wound was practiced by 72% of cases before visiting hospitals however only 5.7% had gone for immediate washing of wound with soap and water. The local applications at the site of bite were tobacco snuff, red chilli, turmeric, and miscellaneous things like Garlic, Jaggery, Kerosene, Lime, Bandage, Soframycine, Ghee, Wheat flour etc. which were practiced by 66% of cases. The average time interval between bite and visiting the hospital was 32 hours. **Conclusions:** With the availability of safe and effective tissue culture vaccines prevention of rabies is virtually assured by immediate and appropriate post exposure treatment. There is need for creating awareness in public and medical community about proper wound management, judicious use of anti-rabies serum and use of modern tissue culture vaccine after animal bite.

**Key words:** Animal bites, anti-rabies serum, post-exposure prophylaxis, pre-treatment practices, tissue culture vaccine.

## INTRODUCTION

Rabies is a disease entrenched in history, dating back to ancient Egypt. Caused by an RNA virus belonging to the *Lyssavirus* genus, rabies is capable of infecting all mammals. Rabies is primarily a disease of terrestrial and airborne mammals, including dogs, wolves, foxes, coyotes, jackals, cats, bobcats, lions, mongooses, skunks, badgers, bats, monkeys and humans. The dog has been, and still is, the main reservoir of rabies in India. Other animals, such as monkeys, jackals, horses, cattle and rodents, seem to bite incidentally on provocation, and the fear of rabies leads the victim to seek post-exposure prophylaxis. The number of cases involving monkey bites has been increasing in the last few years. Monkeys are susceptible to rabies, and their bites necessitate post exposure prophylaxis.<sup>1</sup>

Almost 50 000 people die each year from the disease, with India carrying the greatest burden of more than 20, 000 deaths annually. The remainder occur in Southeast Asia (particularly the Philippines), Oceania, Africa and Latin America.<sup>2</sup> Rabies is transmitted to humans through exposure

to saliva from infected animals (from bites, scratches, or licks on broken skin and mucous membranes). In 2004, cases of rabies transmission through solid organ transplantation were reported in the United States and Europe. The diagnosis of rabies is challenging because of the long incubation period (20–60 days on average, with rare reports of 5–6 days and up to 7 years) and the lack of specificity of early prodromal symptoms and neurologic symptoms. The infection eventually evolves into a viral encephalitis (furious rabies), with classic symptoms of hydrophobia, aerophobia, hyper excitability and autonomic dysfunction. Most patients with these symptoms die within a few days. The less common clinical presentation is the paralytic (dumb) form of rabies, which has a more protracted clinical course, with progressive paresthesias and flaccid paralysis.<sup>2</sup> Cases of human rabies with overt clinical symptoms are essentially fatal. No antiviral or immunomodulating drugs have been found to be effective for treatment. Therefore, a preventive strategy is most appropriate. It is seen that outcome of animal bites is influenced by various

factors including the treatment procedures practiced by health care providers.<sup>3</sup> With the availability of safe and effective tissue culture vaccines prevention of this dreaded disease is virtually assured by immediate and appropriate post exposure treatment. This is a three pronged approach including proper wound management, judicious use of antirabies serum and modern tissue culture vaccines.<sup>4</sup> In India, about 15 million people are bitten by animals, mostly dogs, every year and need PEP. The annual number of person-days lost because of animal bites is 38 million, and the cost of post-bite treatment is about \$25 million.<sup>1</sup>

In view of this the current study was carried out to know the profile of animal bite cases coming for treatment in the hospitals and to know their pre-treatment practices.

## METHODS

The present study was carried out in three hospitals run by Ahmedabad Municipal Corporation namely V.S. General Hospital, L.G. Hospital and Sardaben Hospital. The average number of new animal bite cases attending each of these hospitals was 18 per day. Hundred new cases of animal bite attending OPD of each of these hospitals were surveyed for the purpose of study in the month of September 2007 so as to include total 300 cases in the study. Pre-designed and pre-tested proforma was used for collection of information from cases of animal bite. All the cases attending ARV centre were included till the required sample was met from each hospital. Exit interview of cases was taken after they had attended the ARV centre. Collected data was analysed using appropriate statistical software.

## OBSERVATIONS

**Table1:** Distribution as per biting animal

Animal	Number of the Cases (%)
Dog	292 (97.3)
Cat	5 (1.7)
Mole, Rodent	3 (1.0)
Total	300 (100)

Out of 300 cases of animal bite which were surveyed in the present study 292 (97.33%) were bitten by dog followed by only few who had bites of cat and rodent or mole. (Table1)

Majority i.e. 156 (52.0%) were belonging to age group less than 20 years followed by the age group 20-29 years. Comparatively less number of cases belonged to age group 40 years and above. Mean age of cases was 19+20.2 years. Males outnumbered females as 225 (75%) of cases were

males. Male to female ratio of animal bite cases was 3:1. (Table2)

Lower limbs were the most common biting sites in majority of cases as 251 (83.7%) had bites of lower limbs. Upper limbs were next common biting site as 31 (10.3%) had bites of upper limbs. In 2 cases there were bites of both right upper and lower limbs. Other biting sites were trunk and head/ neck. Regarding the side of bite in case of lower limb bites, it was observed that 139 (55%) had bites on right lower limbs as compared to 114 (45%) who had bites on left side. Majority 177 (59%) had category 3 bites and none of the cases were falling in category I. (Table3)

**Table2:** Profile of animal bite cases

Characteristics	Number of cases (n=300) (%)
<b>Age group (y)</b>	
0-9	77 (25.7)
10-19	79 (26.3)
20-29	42 (14.0)
30-39	32 (10.7)
40-49	19 (6.3)
50-59	24 (8.0)
60-69	21 (7.0)
> 70	6 (2.0)
<b>Sex</b>	
Male	225 (75.0)
Female	75 (25.0)

**Table3:** Distribution as per site and category of bite of bite

Characteristics	Number (n=300) (%)
<b>Site of bite</b>	
Upper limbs	31 (10.3)
Trunk	9 (3.0)
Head and neck	7 (2.3)
Both right lower and upper limbs	2 (0.7)
Right lower limb	137 (45.7)
Left lower limb	114 (38.0)
<b>Category of bite</b>	
Category 2	123 (41.0)
Category 3	177 (59.0)

**Table4:** Immediate Pre-treatment after animal bite

Pre-Treatment	Number (n=300) (%)
Soap & Water	17 (5.7)
Local Remedies	199 (66.3)
Without any Pre Treatment	84 (28.0)

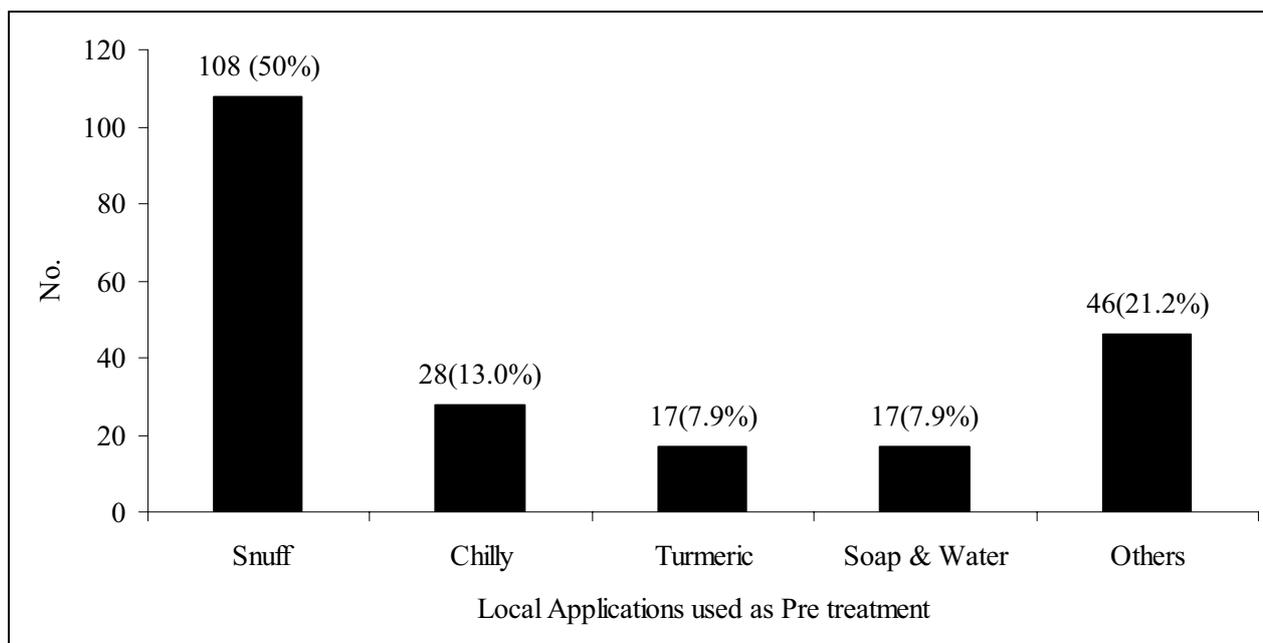
Immediate pre-treatment at the site of bite was done by 216 (72%) of the patients and only 17 (5.7%) had washed the wound with soap and water. Majority 199 (66.3%) had gone for the various types of local applications.

Out of the 216 patients who had applied something or the other at the site of bite, highest i.e.108 (50%) had applied tobacco snuff followed by 28 (13.0%) who applied chilly powder at the site. The other applications were turmeric in 17 (7.9%) and miscellaneous things like Garlic, Jaggery, Kerosene, Lime, Bandage, Soframycine, Ghee, Wheat flour etc. in 46 (21.2%) of cases. The WHO suggested immediate pre-treatment of washing the

wound with soap and plenty of water was done only by 17 (7.9%) of those cases who practiced pre-treatment. (Table4, Fig.1)

Majority of cases received treatment and ARV within first three days after animal bite with highest number i.e. 128 (42.5%) reporting on the second day. The mean duration between incurring the bite and receipt of treatment was 1.3 days $\pm$ 1.2 days. (Fig.2).

**Figure1:** Distribution as per types of local applications used for pre-treatments after animal bite



**Discussion:** In the present study, dog was found to be the most common biting animal as 97.33% cases were bitten by them. This is similar to findings of Sudarshan et al,<sup>5</sup> Sharma et al,<sup>6</sup> Rasanía et al<sup>7</sup> and Shetty et al.<sup>8</sup> The mean age of cases of animal bites was 19 years in the present study with maximum number of cases in the age group 0-20 years. This finding is similar to that reported by Rasanía et al<sup>7</sup> and Shetty et al<sup>8</sup> where the maximum number of cases were in the age category 0-14 years. The male to female ratio of animal bite cases in the present study as 3:1 and study at Pune by Shetty et al<sup>8</sup> reported the ratio of 1.98:1. Rasanía et al<sup>7</sup> also reported male pre-ponderance among animal bite cases. Lower limbs and especially right lower limb was the most common biting site reported in the present study. This finding is similar to finding of Shetty et al<sup>8</sup>. Majority of cases in the present study had category III bites whereas in the study by Rasanía et al<sup>7</sup> majority of the cases had category II bites. None of the cases belonged to Category I indicating that awareness of community about Category I exposure is poor. Immediate pre-treatment of wound was carried out by 72% of cases after animal bite and the washing of wound with soap

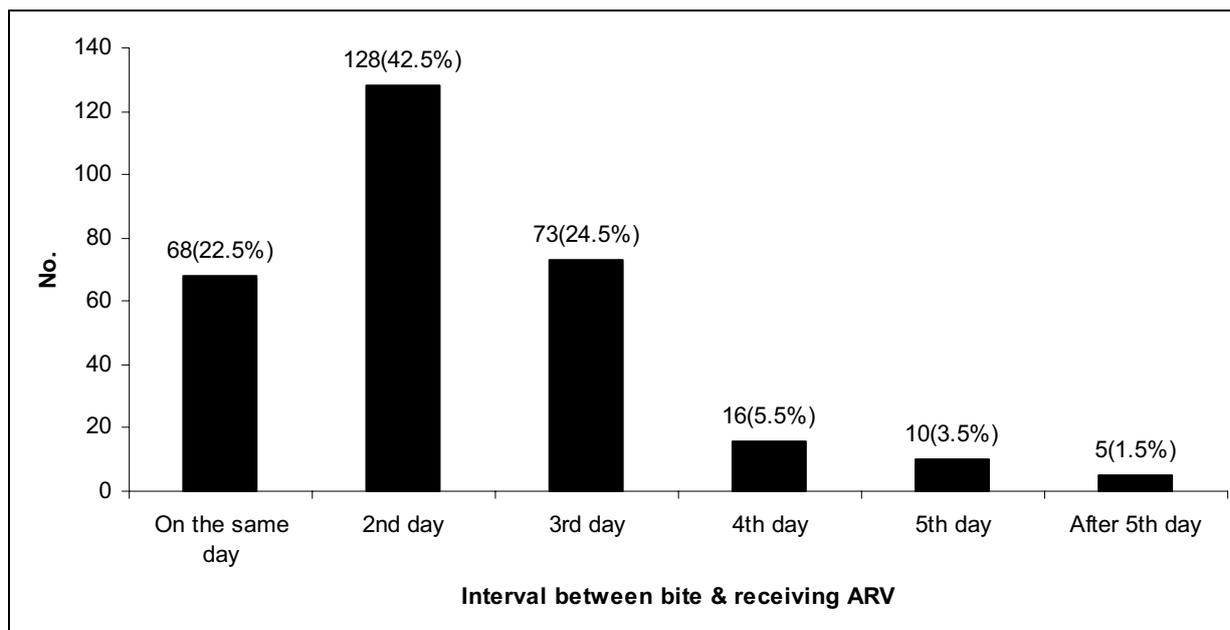
and water was done by only about 6% of cases. The practice of washing the wound At-immediately with soap and water was reported to be poor in the several other studies. Shetty et al<sup>8</sup> reported that the wound was washed with soap and water in only 3.6% of cases. A high proportion of bite victims did not wash their wounds with soap and water (39.5%) as reported by Sudarshan et al.<sup>5</sup> Immediate care like washing of wound with soap and water was practiced by only 23.5% as reported by Sharma et al.<sup>6</sup> Rozario et al<sup>1</sup> reported that in the latest survey, in 2004, only 39.5% of bite victims washed the wounds with soap and water. Other applications at the site of animal bite were mainly tobacco snuff, chilli and turmeric. Study by Bhargava et al<sup>9</sup> reported different practices including use of traditional remedies such as application of chilli paste, are prevalent for wound treatment. Rozario et al<sup>1</sup> reported that about 60% of infected people resort to indigenous treatment, with local applications to the wound (36.8%) and indigenous remedies (45.3%) being popular. Majority of cases did not report immediately to the health care facilities after animal bites as the mean interval between the animal bite and receipt of PEP including administration of ARV was 1.3 days.

Sharma et al<sup>6</sup> reported that majority of cases of animal bite did not report immediately to PHC for treatment after dog bite. Shetty et al<sup>8</sup> reported that 63.2% of cases reported within 24 hours of the bite.

At risk populations are not well-informed of the risk of rabies and what to do in the event of an animal bite. Public health educational programs are needed to create awareness in the public regarding the dangers of inadequately managed animal bites.

The knowledge of health care providers should be reinforced in the crucial issues like the importance of proper wound care, post exposure vaccination with modern tissue-culture vaccine and the administration of human rabies immune globulin, where indicated. Other actions like introducing and popularizing the intradermal route of rabies vaccination and training of the paramedical staff for the same can be taken to reduce the cost of treatment.

Figure 2: Time interval between animal bite and receiving ARV



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