ORIGINAL ARTICLE

PEP Seeking Behaviour In An Urban Poor Locality

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Abstract

Need for study: Animal bites to humans are a major public health problem in India; an estimated 17.4 million animal bites occur annually. It is more common in urban poor localityas there is a combination of large human and dog populations living in congested habitable areas. **Objectives:** 1. To assess the burden of animal exposures in the study area. 2. To know the characteristics of animal bites. 3. To describe the post exposure prophylaxis received by the animal bite victims. **Methodology:** A community based; cross sectional study was conducted in an urban poor locality, Yarab Nagar coming under field practice area of KIMS, Bangalore. A house to house survey was conducted and all the households wereinterviewed using a pretested, semi-structured proforma to collect information regarding history of animal exposures inlast one year; if present, then a detailed history regarding the biting animal, circumstance of bite, practices after the bite, PEP received and completion of PEP was obtained. **Results:** A total of 6052 population were surveyed, among whom 67 animal bite cases were reported giving the prevalence rate of 1.1% in the study area. Majority of the bite victims were from the age group of 15-60 years (61.2%) and the common biting animal was dog (89.6%). Most of the bite injuries were abrasions (70.1%), mainly on the limbs (86.6%), 85.1% were category III exposures and 93.2% had washed their wounds. Among the exposed victims, only 53(79.1%) sought PEP at the health care facility and 84.9% completed the full course of vaccination, but only 44.4% of the Category III exposures received RIG. **Conclusion:** Animal exposures are an important public health problem in urban poor locality; providing timely and complete PEP is essential to prevent rabies.

Key Words: animal exposures, post exposure prophylaxis, anti-rabies vaccine, rabies immunoglobulin, urban poor locality

Introduction:

Rabies is a neglected zoonotic disease that it is insufficiently addressed by the countries and the international communities, as the people and communities who are affected the most are poor living in remote rural areas

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and urban slums of the developing World.[1] The disease occurs in 150 countries and territories covering all the continents except Antarctica. The disease that is practically 100% fatal, poses a potential threat to over 3.3 billion people worldwide.[2] Animal bites mainly affects the underserved populations both rural and urban, and has been documented for more than 4000 years. Most cases occur in Africa and Asia, with approximately 40% of cases in children.[3,4]

The magnitude and epidemiological pattern differs from country to country. It is a disease of poverty, affecting vulnerable population and children. In India, animal bites in humans are a major public health problem and an estimated 17.4 million animal bites occur annually.[5] The disease is mainly transmitted by dogs, being responsible for 96% of animal bite cases;the dog population in India is estimated to be 25 million and a vast majority of them are not protected against rabies.[6]

In urban areas, animal exposures are more common in poor locality, as there is a combination of large human and dog populations living in congested habitable areas. Therefore, whenever there is any animal exposure that is suspected, probably or confirmed to be rabid or when there is doubt about the factors that led to the exposure, post exposure prophylaxis (PEP) should be initiated as early as possible.[7,8] The post exposure prophylaxis consists of thorough wound washing with soap or detergent and water and virucidal agents to reduce the viral inocu¬lum at the wound site;post-exposure anti rabies vaccination (ARV) to induce antibodies which lower the risk of virus entering peripheral nerves after a bite from a rabid animal and timely administration of rabies immunoglobulin (RIG)/ rabies monoclonal antibodies (R'Mab) in all category III exposures to neutralize the virus at the wound site.[9]

The present study was done to assess the burden of animal bites in an urban poor locality and the post exposure prophylaxis received by the exposed victims.

Objectives:

1. To assess the burden of animal exposures in the study area.
2. To know the characteristics of animal exposures.
3. To describe the post exposure prophylaxis received by the exposed victims.

Methodology:

The study was undertaken after taking the Institutional Ethical Committee clearance. A community based cross sectional study was conducted in an urban poor locality, Yarab Nagar coming under field practice area of Kempegowda Institute of Medical Sciences (KIMS), Bangalore from January to June, 2017. A house to house survey was conducted in 4 blocks and all the households were interviewed using a pretested, semi-structured proforma to collect information regarding history of animal exposures in the last one year. If the household reports any animal exposure in their family; then a detailed history regarding the biting animal, circumstance of bite, practices after the bite, health seeking behavior, post exposure prophylaxis received from the health care system and the completion of anti-rabies vaccination was obtained. All the data was entered in the excel sheet and analysed using mean and percentages.

Results: A total of 6,052 population was surveyed covering 1512 houses, among whom 67 animal bite cases were reported giving the prevalence rate of 1.1% in the study area. The socio-demographic profile of the exposed individuals is shown in Table1.

Table 1: Socio-demographic profile of the exposed individuals (n=67)

Socio-demographic profile		Number	Percentage
Age (in years)	< 15	22	32.8
	15-60	41	61.2
	> 60	04	6.0
Sex	Male	41	61.2
	Female	26	38.8
Literacy Status	Literate	60	89.6
	Illiterate	07	10.4
Socio-economic status (Modified Kuppuswamy's Classification)	Lower	55	82.1
	class	12	17.9
	Others	-	-

In the present study, majority of the bite victims were from 15-60 years (61.2%); followed by < 15 year old children (32.8%) and elderly (6.0%). Most of the bite victims were males (61.2%); literates (89.6%) and belonged to lower socio-economic status (82.1%) according to Modified Kuppuswamy's SES classification.

Table 2: Characteristics of exposures (n=67)

Characteristics of exposures			Number		Percentage	
Biting animal	Dog	Pet (Owned)	60	20	89.6	29.8
		Stray(Unowned)		40		59.8
	Cat			03		4.5
	Monkey			03		4.5
	Cow			01		1.4
Circumstance of bite	Provoked			10		14.9
	Unprovoked			57		85.1
Vaccinationstatus of biting animal	Vaccinated			09		13.5
	Unvaccinated/ Don't know			58		86.5
Type of Exposure	Abrasion			47		70.2
	Laceration			08		11.9
	Punctured wound			12		17.9
Site of Exposure	Lower limb			40		59.8
	Upper limb			16		23.9
	Head, neck & face			09		13.5
	Trunk			02		2.8
Categorization of exposure	II			10		14.9
	III			57		85.1

The present study showed that, dog (89.6%) was the biting animals in most of the exposures, followed by cat (4.5%), monkey (4.5%) and cow (1.4%). Most of the exposures (85.1%) from these animals were unprovoked and the vaccination status of the 86.5% of the biting animals was either unvaccinated or unknown.

Among the bite victims, most of the injuries were abrasions (70.2%), lacerations (11.9%) and punctured wounds (17.9%). These exposures were mainly on the limbs (83.7%), followed by head, neck & face (13.5%) and trunk (2.8%). Majority of the exposures were category III (85.1%) in nature with transdermal bites. Among the 67 reported

exposed individuals, only 53(79.1%) sought post exposure prophylaxis at the health care facility; 45(84.9%) of them went to Government health sector and the remaining 8 (15.1%) went to private health care facility. Before going to health care facility; 42 (79.3%) had washed the wounds and all of them had applied some local antiseptics to the wound. 11(20.7%) of them had put irritants like turmeric, coffee powder and lime on the wound surface.

Table 3: Post exposure prophylaxisreceived by the exposed individuals (n=53)

Post Exposure Prophylaxis		Number	Percentage
Categorization of exposure	II	08	15.1
	III	45	84.9
Rabies Immunoglobulin (n =45)	Received (ERIG)	20	44.4
Anti-rabies vaccination	Started	53	100.0
	Completed full course	45	84.9

Among the exposed victims, who sought post exposure prophylaxis, 45(84.9%) had category III exposures. Rabies immunoglobulin was given only in the government hospital and 44.4% of the category IIII bites received rabies immunoglobulin. All the exposed individuals who went to health care facility had received the anti-rabies vaccination, but only 84.9% completed thefull course of vaccination. The reasons for not completing the full course of vaccination by the exposed individuals were negligence, animal was alive & healthy, busy with other work and not affordable. All the exposed individuals were healthy and alive without any complications.

Discussion:

Rabies is a neglected zoonotic disease caused by the rabies virus of *Lyssavirus* genus, within the family Rhabdoviridae. The rabies virus (RABV) is transmitted to humans and other animals through close contact with saliva from infected animals. All mammals are susceptible to infection by the rabies virus; transmission of RABV by dogs is responsible for up to 99% of human rabies cases in rabies-endemic regions, with a small proportion being transmitted via wildlife (such as foxes, wolves, jackals, bats, racoons, skunks or mongoose).The virus is transmitted by the saliva of rabid animals and generally enters the body via infiltration of virus-laden saliva from a rabid animal to other animals and humans through bites, scratches, licks on broken skin and mucous membrane. Rabies is a vaccine-preventable disease and is most amenable to control, as the appropriate tools for prevention i.e., post exposure prophylaxis (PEP) are available. Therefore, it is the first zoonosis on the list of neglected diseases targeted by World Health Organization (WHO) for regional and eventually global elimination of dog-mediated human rabies from the world by 2030. The post exposure prophylaxis, such as thorough wound wash with prompt administration of cell culture vaccine and simultaneous administration of rabies immunoglobulin/ rabies monoclonal antibodies in all category III exposures, is almost invariably effective in preventing rabies, even after high risk exposure.

WHO-APCRI survey revealed that, majority (75%) of the animal bite victims belonged to low-income group and exposure among these populations makes it more difficult to prevent rabies unless access to good medical care is immediately available.[1] Present study in an urban poor locality showed that the prevalence of animal exposures was 1.1%; similarly, the nationwide multi-centric survey conducted by APCRI with technical and financial support from WHO showed that the incidence of animal exposures to be 1.7%.[5] These studies showed that animal exposures are a substantial public health problem in India, because of uncontrolled stray dog population.

The present study also showed that majority of the bite victims were from 15-60 years (61.2%); followed by < 15 year old children (32.8%) and elderly (6.0%). Most of the bite victims were males (61.2%); literates (89.6%) and belonged to lower socio-economic status (82.1%).Similarly, a study conducted in Bangalore at an urban health training centre of a government medical college showed that most of the cases (64.4%) were adults followed

by 30.1% children less than 15 years of age and majority of the bite victims were male (72.4%).[10] Another cross-sectional study conducted in a slum of Chennai showed that most of the cases (71.1%) were adults followed by 25.2% children less than 15 years of age and majority of the bite victims were male (58.5%) and 54.8% of them belonged to lower class.[11] All the studies showed that animal exposures are more common in the adults, who are of economically productive age group and children of school age and more common among lower class of people, who can least afford to the management cost.

The present study showed that, dog (89.6%) was the biting animal in most of the exposures, followed by cat (4.5%), monkey (4.5%) and cow (1.4%). Most of the exposures (85.1%) from these animals were unprovoked and the vaccination status of the 86.5% of the biting animals was either unvaccinated or unknown. Similarly, a study conducted at a government hospital in Bangalore showed that 96.7% of the exposures were from dogs, among whom 67.1% were stray dogs whose vaccination status was not known and most of them were unprovoked bites.[12] Another cross sectional study from Central India showed that 95.5% 0f the exposures were because of dogs and 75.9% of them were unprovoked exposures and 78.6% of the biting animals were not able to observe/Escaped/ Fate not known.[13] All the studies showed that dog is the biting animal in majority of the cases and most of them were stray dogs whose vaccination status is not known and were not able to be observed/Escaped/Fate not known. Therefore, this warrants the risk of rabies exposure, which has to be managed by timely and complete post exposure prophylaxis to prevent rabies.

The present study also showed that among the 67 reported exposed individuals, only 53(79.1%) sought post exposure prophylaxis at the health care facility; 45(84.9%) of them went to Government health sector and the remaining 8 (15.1%) went to private health care facility. Before going to health care facility; 42 (79.3%) had washed the wounds and all of them had applied some local antiseptics to the wound. 11(20.7%) of them had put irritants like turmeric, coffee powder and lime on the wound surface. Another cross-sectional study from Surat showed that 67% washed with either water alone or with soap & water; 40% applied irritants like Chili powder, Lime and salt, Turmeric, Snuff etc.[14]

Another epidemiological study of animal bites among rural population in Tamil Nadu showed that 40% of the exposed individuals washed with soap and water, 34% used antiseptics and 26% used irritants like chilli powder, coffee powder, Kerosene, lime stone etc. It was found that majority (76.47%) went to Government hospital for treatment and another 23.53% went to private hospital for treatment.[15] All the studies showed that most of the animal bite victims from either rural areas or from urban poor locality sought the post exposure prophylaxis from the government health sector.

In the present study 84.9% had category III exposures. Rabies immunoglobulin was given only in the government hospital and 44.4% of the category IIII bites received rabies immunoglobulin. All the exposed individuals who went to health care facility had received the anti-rabies vaccination, but only 84.9% completed the full course of vaccination. The reasons for not completing the full course of vaccination by the exposed individuals were negligence, animal was alive & healthy, busy with other work and not affordable. Similarly, a study conducted in the government hospital showed that, majority of the reported cases (70.8%) belonged to category III exposures. The compliance rate for full course of intradermal vaccination was 77%. The major constraints were loss of wages, forgotten dates, cost incurred, interference with working hours/school timings, and distance from the hospital.[16] Another study from an anti- rabies clinic of Solapur showed that the compliance to full course of vaccination was only 41.6%.[17] Another study from government tertiary care hospital in South Karnataka showed thatmost (82%) of the exposures were of category III. 29% of them had received RIG. 72% of the patients completed the full course of vaccination.[18] All these studies showed that majority of the cases belonged to category III exposures and the compliance to complete course of vaccination was poor, as it is important to complete the full course of vaccination to get complete protection.

In conclusion, animal exposures are an importantpublic health problem in urban poor locality; providing timely and complete PEP is essential to prevent rabies.

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