ORIGINAL ARTICLE

Monkey bite menace in a village in South Delhi

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Abstract

Background: Non-Human Primate (NHP) bites rank second to dog bites and first among travellers returning from endemic countries. Delhi has been facing monkey menace for a long period of time due to human-wildlife boundary disruption. The study was conducted to find the epidemiological profile of monkey bite victims and the circumstances of attack. **Methodology:** A mixed method study was conducted from April to October 2018 in two phases. First phase was a cross sectional study conducted on animal bite victims attending UPHC FatehpurBeri on a sample size of 315 selected by consecutive sampling technique. In the second phase transect walk in the village reporting highest proportion of monkey bites was conducted. Patients who received initial treatment / vaccine from different center were excluded from the study. No exit interview was taken. Explanations that interview was done after registration is included. Consecutive sampling technique was used. **Results:** 78(24.8%) of the animal bites reported were monkey bites. Of monkey bite victims 30(38.5%) were school going children (5-15 yrs). Majority of the bites 56(71.85%) were from Bhati-mines village. This village is in close proximity to Asola wildlife sanctuary area where monkeys caught in the urban localities were relocated. Overpopulation of monkeys with food scarcity in the sanctuary has resulted in migration of the monkeys to the village. This along with the poor housing standards has increased the risk of indoor unprovoked monkey bites among the village inhabitants.

Conclusion: Monkey bites have become a public health problem among residents of Bhati-mines. Immediate initiatives should be taken up to tackle the issue of prevention of monkey bites and its appropriate management.

Key words: monkey bites, rabies, non-human primates.

Introduction

Rabies, a vaccine preventable disease occurs in 150 countries, but remains a neglected tropical zoonotic disease (NTD) with 100% case fatality rate.[1,2] India is endemic for Rabies, with 36% of the world's rabies deaths, of which 99% of human rabies transmission is through dog bites.[1,3,4] Non Human Primate (NHP) bites rank second following dogs in most studies and first among travellers returning from Southeast Asia.[5] Human rabies cases following monkey bites have been reported in local populations in India and Sri Lanka5, and in travellers returning from India to Australia and Germany.[6,7] A total of 159 reports of rabies in NHPs have been retrieved from various sources in South America, Africa, and Asia.[5] Rabies cases were reported in monkeys, langurs, and baboons in India.[5] In South Delhi Municipal Corporation (SDMC) 766 cases of monkey bites / year were reported.[8] Despite an increasing

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population of NHPs being reported as a menace in many urban areas in India and several studies from animal-bite clinics frequently documenting NHP bites, a very few reports of rabies in NHPs or human rabies following exposure to NHPs are published from India.[9]

Since animal bites are neither notifiable nor reported in the routine surveillance system, the data on animal bites in the country is scanty.[10] A large number of monkey bite cases were reported to Primary health Center, Fatehpur Beri in South Delhi. Hence we decided to study their sociodemographic profile, trace high risk areas and understand the circumstances increasing the risk of monkey bites.

Material and Methods

A mixed method study was conducted in two phases from April to October 2018. The first phase was a cross sectional study conducted on animal bite victims attending Urban Primary Health Centre (UPHC), FatehpurBeri, a field practice area of Department of Community Medicine, Vardhman Mahavir Medical College and Safdarjung hospital.

In a pilot study of 50 animal bite patients coming to UPHC FatehpurBeri, 25% reported monkey bites. The sample size was calculated considering the p= 25; alpha error of 0.05 and relative error of 20%. Considering a non-response rate of 10%, final sample size was calculated to be 315. Consecutive sampling was used to select all the animal bite victims coming to UPHC, FatehpurBeri until the desired sample size was met. All new cases of animal bite victims visiting the center were included in the study. For children less than 12 years the adult accompanying them served as the informant. Patient who received initial treatment/ vaccine from different center were excluded from the study. A semi-structured, interviewer administered questionnaire which had variables including patient details (gender, age, education status), bite characters (site, time, place) and treatment details was used to collect data. The data were collected immediately after patient registration. Data was analysed to calculate proportions. We identified the village which had highest proportion of monkey bites. This village was considered for the second phase of the study.

In the second phase, a transect walk was conducted in the village during which observations and interviews were conducted. Observations of the area were made to identify the potential factors increasing the risk of monkey bite. During analysis these factors were tabulated under major headings. For informal interview with residents along the transect path respondents were chosen by purposive sampling. During these interviews we tried to understand the villagers' perceptions of the problem, reasons for the monkey bites and suggestions to prevent monkey bites. The responses are presented along with some verbatim quotes.

Ethical clearance was obtained from Institutional Ethics Committee of Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi. Written informed consent was obtained from participants of the study.

Results

Out of the 315 patients of animal bite included in the study, 78 (24.8%) patients were monkey bite victims. Among the monkey bite victims, 52 (67%) were females, 30(38.5%) were school going children (5-15 yrs) and 47 (60%) were aged less than 15 years. Among the 78 monkey-bite victims, 10(12.8%) had past history of monkey bites. Nearly half of the monkey bite cases belonged to lower middle socio-economic class.

Table 2 describes circumstances under which monkey bite occurred. Majority of the monkey bites 25(32.1%) occurred after 7 pm, indoors 59(75.6%) and were unprovoked bites 70(90%).

Table 3 describes the post-monkey bite management practices. A total of 57(73.1%) had received first aid after bite and 54(69.2%) washed with water; 44(56.4%) used soap with water, 2(2.6%) used water, soap and antibiotic and 3(3.8%) used only antiseptic over the wound. Among 54 who washed with water, 34 washed within 5 minutes of incident. 14 in 5-15 min, 2 washed in 15-30 min, and 4 washed after 30 min of injury. Out of 78, 5 (6.4%) applied other substances in injury site, 4 used chilli powder and 1 used mustard oil.

Figure 1 describes the geographic distribution of monkey bite victims. Majority of them i.e. 56 (72%) were from the village Bhati-mines. Transect walk was conducted in Bhati-mines, a village in South Delhi which was in close proximity to the Asola wildlife sanctuary area. The sanctuary area is demarcated with a boundary wall which was reported to be approximately 2 km from the observed study area. Table 4 summarizes the main findings of the transect walk.

Informal interviews were conducted at different points along the walk covering people of different age groups. The respondents reported that monkeys caused 'a great deal of nuisance to everyday life' and 'it had steeply risen in the past 10 years resulting in about 10-12 monkey bite victims per week'.

The major reasons stated for monkey bites were 'proximity of the village to the sanctuary area', 'monkeys being dropped just at the border of sanctuary area', 'poor maintenance of boundary wall', 'inadequate food for monkeys in the sanctuary area; and 'poor housing standards of the localities'.

Suggestions to prevent monkey bites were that 'boundary wall should be electrified at the top' and that 'more fruit plantations should be grown in sanctuary area'. Other suggestions for preventing monkey bites were- 'improved housing to prevent monkey from entering homes' and 'children should not play with monkeys'. They also suggested that availability of vaccine in their locality would help them get prompt services.

Table1: Socio demographic profile of monkey bite victims

Socio – demographic profile		Frequency(%) n=78
Gender	Male	26(33.3)
	Female	52(66.7)
Age	<5 yrs	17(21.8)
	5 yrs - 15 yrs	30(38.5)
	16 yrs – 59 yrs	28(35.9)
	≥60 yrs	3(3.8)
Socio economic class*	Lower class (<Rs.938)	12 (15.4)
	Lower middle class (Rs.938-1875)	40(51.3)
	Middle class (Rs.1876-3126)	26(33.3)
	Upper middle class (Rs.3127-6253)	11(14.1)
	Upper class (≥Rs.6254)	1 (1.29)

*BG Prasad socio economic scale (areas covered under UPHC at FatehpurBeri are rural and urban)

Table 2: Circumstances under which monkey bite occurred

Bite characters			Frequency (%) n=78
Time	Dark	7pm – 6 am	25 (32.1)
		4pm-7pm	21 (26.9)
	Day time	6am-11.59am	17 (21.7)
		12pm-4pm	15 (19.2)
Place		Indoor	59 (75.6)
		Outdoor	19 (24.4)
Provocation		Provoked	7 (9)
		Unprovoked	70 (89.7)
		Not known	1 (1.3)

Table 3: Post monkey bite management practices

Post bite Management		Frequency (%) n=78
Health care seeking behavior	≤1 day	64 (82.1)
	>1day	14(17.9)
First aid	Given	57(73.1)
	Not given	21(26.9)
Other substance use on the wound	Yes	5 (6.5)
	No	73 (93.5)

Fig 1: Geographic distribution of monkey bite victims reporting to Primary Health Centre, Fatehpur Beri

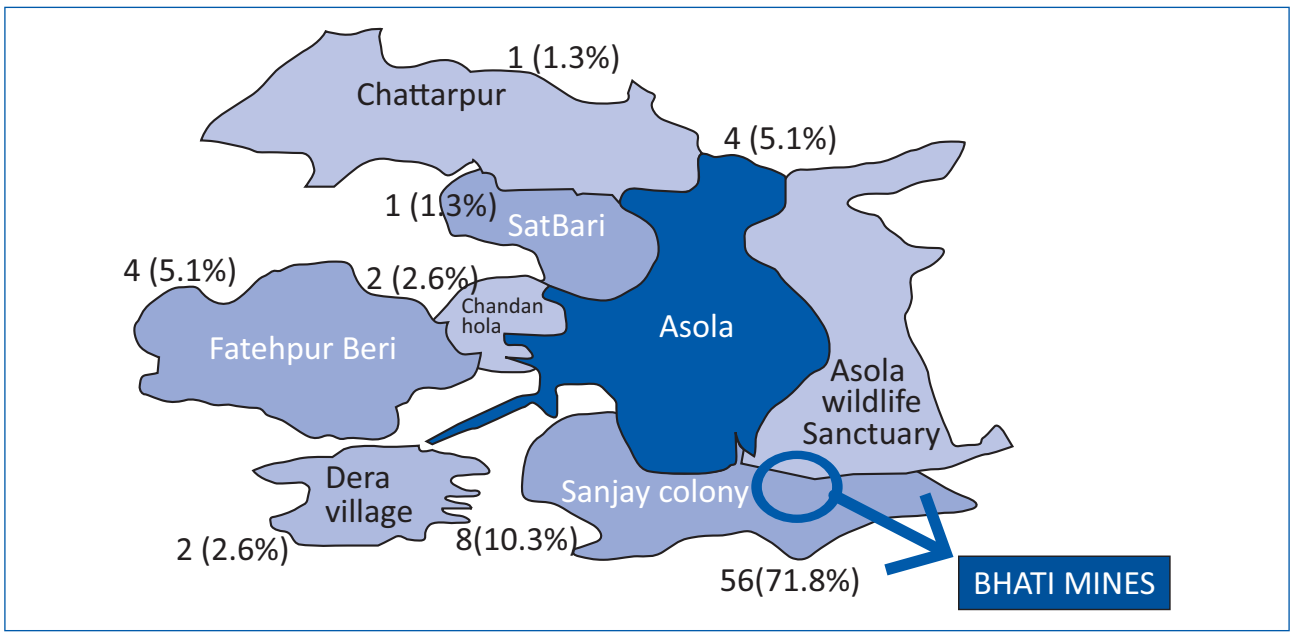

Table 4: Findings of factors affecting monkey bites identified during transect walk

	Entry	Residential area	School	Market Place
Type of construction	Kuccha roof	Kucha / pucca Roof	Pucca Roof	Kucha / pucca Roof
Plantation	Reserved plantation areas were dry without fruit trees and plantations	Not much of plantation seen	Trees were present	Not much of plantation seen
Roads	Roads present at entry	Roads/Muddy path	Roads	Roads/Muddy path
Animals	Dogs and Monkeys	Dogs, Monkeys, Cattle	Monkeys	Dogs, Monkeys

Discussion

In the first phase of our study it was found that 25% of animal bite cases reporting to UPHC Fatehpur Beri were monkey bite cases. According to WHO reports Monkey bites account for 2–21% of animal bite injuries and 2.2% as per a study conducted in India.[1,10] Our study results showed that 72% of monkey bite victims were from Bhati-mines village, a part of Sanjay colony which is in close proximity to the Asola Sanctuary area. The issue of monkey

bites in Delhi has been discussed in the Parliament on several occasions.[8,11] Private monkey catchers are deployed to trap these monkeys and relocate them to Asola Sanctuary.[8,12] This sanctuary has now become overpopulated with more than 20,000 monkeys with inadequate food supplies. Articles of interview with sanctuary officers state that the monkeys are fed each day at five designated points in the sanctuary, a majority of the population has now become dependent on the food, but some monkeys may still stray out of the sanctuary. It is difficult to monitor each monkey unless a tracker is installed on each of them.[13]

Majority of the cases reporting monkey bites were females. Majority of the monkey bites took place indoors after 7 pm and were unprovoked. Our results of transect walk reveal that monkeys have migrated towards residential area in search of food and poor housing standards of the localities facilitated their entry into the house. Food scarcity for the monkeys could lead to unprovoked bites. More than half of the monkey bite cases were in the school going age group. During transect walk it was reported that children are frequently attacked in school premises.

Conclusion

Nearly one fourth of the animal bite cases reporting to the health centre were monkey bite victims and 72% of them were from Bhati mines village located near Asola Sanctuary. Majority reported first aid and had sought treatment within 24 hours of the bite. Yet in 18% cases there was a delay of more than 24 hours and 27% did not report first aid after monkey bite.

Recommendation

As short term approach we recommend that Information Education and Communication activities on local wound management and immunization for animal bites should be organized in these villages. We organized a health talk on preventive measures and post exposure management for monkey bites in Bhati-mines at the end of this study. Availability of anti-rabies immunization within the village area through its sub centre should be considered. As long term approach we recommend that the current strategy of capturing and relocating the monkeys needs to be revisited with a more scientific and robust approach. The sanctuary area must be made self-sustainable to feed monkeys. The illegal encroachment of sanctuary area should be controlled. Monkey bites has become an important public health problem among residents of Bhati-mines. Immediate initiatives should be taken up to tackle the issue of prevention of monkey bites and its appropriate management.

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