

OCCURRENCE AND MANAGEMENT OF SUSPECTED RABIES IN LIVESTOCK SPECIES DUE TO DOG BITES AT SATKANIA UPAZILLA VETERINARY HOSPITAL, BANGLADESH AND MADRAS VETERINARY COLLEGE HOSPITAL, INDIA

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ABSTRACT

The study was carried out to record all clinical cases of dog bites in different livestock species at two internship placements in India during October to November and Bangladesh during July to September 2012. The study aimed to determine the proportionate prevalence of suspected rabies in livestock species, frequency of observed clinical signs and the therapeutic management of dog bites. A structured record keeping sheet was used to obtain the necessary information. The prevalence of suspected rabies in cattle was 38% and 3.5% each in goat and horse respectively. The prevalence of rabies in non-vaccinated animal was 84.6%. Female cattle had higher suspected rabies cases (24.1%) than male cattle. 51.7% dog bites were managed by washing the biting site with alkaline soap followed by dressing the wound with either antiseptic or antibiotic powder. Post-exposure vaccines were used in 24.1% cases. Strict adherence to vigorous wound washing and immediate medical evaluation after animal bites will prevent the development of Animal rabies. Veterinarians and animal control officers should handle potentially rabid animals with extreme caution.

Keywords: Dog bite, rabies, post-exposure vaccine, vaccination, wound washing

INTRODUCTION

Rabies is endemic in Bangladesh (Jamil *et al.*, 2012) both in humans and animal, get from being bitten by an animal infected with the rabies virus and always deadly in humans and animal but can be totally prevented by appropriate management of bite, recognize the exposure and promptly get appropriate medical care before developing the symptoms of rabies.

Rabies is a zoonotic disease caused by RNA viruses in the family *Rhabdoviridae*, Genus *Lyssavirus*. Virus is typically present in the saliva of clinically ill mammals and is transmitted through a bite. After entering the central nervous system of the next host, the virus causes an acute, progressive encephalomyelitis that is almost always fatal (Botvinkin *et al.*, 2003). About 55,000 people have been reported to be died due to rabies each year across the world (Knobel *et al.*, 2005). Dogs are the main reservoir of the virus and are responsible for spillover infections in humans and animal (Hossain *et al.*, 2011). Any warm blooded animal can get rabies. Cattle, goat, horse, domestic cats and humans often found infected with rabies in Bangladesh (Samad, 2013). Rabies can also infect coyotes, wolves, ferrets skunks and foxes.

The most important conditions for the successful spread of rabies virus prevail in Bangladesh; a large population of stray dogs, which potentially interact with the population and with other species of animals. Although rabies occurs throughout the year in all parts of Bangladesh, the mortality rate in livestock is unknown and large number of rabies cases remain unrecorded. Scattered reports from various sources indicate, however, that about 25,000 animals are vaccinated every year with pre-exposure and post-exposure vaccines produced locally and imported from other countries (Samad, 2013).

With political will and solid global epidemiologic information, rabies elimination is possible. Molecular typing of circulating rabies viruses is necessary to identify and develop effective control measures, and to understand the spread of certain rabies virus variants and their incursion into new regions Nadin-Davis *et al.* (2007). If animal bites are managed appropriately and timely the rabies can be prevented to a large extent. In this regard the post exposure treatment and management of animal bite cases is of prime importance. Considering the above

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facts the present clinical report was designed with the following objectives: to estimate the proportionate prevalence of rabies in two internship placements of Bangladesh and India, to record the frequency of observed clinical signs of rabies in different species and to know the therapeutic management of livestock species bitten by dog.

MATERIALS AND METHODS

Two internship placements were considered for the study of suspected rabies cases in different species due to dog bites. They included Upazilla Veterinary Hospital (UVH), Satkania, Chittagong and Madras Veterinary College Hospital (MVC), Chennai, India. The study was conducted at UVH during July to September and at MVC during October to November, 2014. During the whole study period a total of 29 dogs bite cases in different livestock species. Bite histories were studied at the internship placements. Individual case was examined thoroughly and clinical signs were record in clinical sheet. Other information such as species, age, and sex, site of dog bite and vaccination status of individual cases were also recorded in the clinical sheet. Among the 29 cases 7 animals were vaccinated with post exposure vaccine.

According to clinical signs and symptoms cases were diagnosed as suspected rabies cases. The following clinical signs were considered to define suspected rabies case such as excessive salivation, behavioral change, aggression, restlessness, mania, hyper excitability or hyperesthesia (Drew, 2004; Rupprecht *et al.*, 2006; Hudson *et al.*, 1996). After clinical assessment of the cases, necessary therapeutic measures were taken to manage the problem.

Statistical analysis

Data were entered into the MS Excel program 2007 and sorted and cleaned the data. Descriptive statistics were performed on the data obtained by using MS excel 2007. The results were expressed as frequency and percentage.

RESULTS AND DISCUSSION

Proportionate prevalence of suspected rabies cases

The occurrence of suspected rabies cases in different species due to dog bite was 41.4% in Bangladesh and 3.5% in India. The recorded suspected rabies cases were 38% in cattle and 3.5% each in goat and horse. Vaccinated animals had fewer cases (6.9%) than non-vaccinated animals (38%) (Table 1).

Table 1. Occurrence of suspected rabies cases due to dog bite in different species

Factors	Category	Suspected rabies due to dog bite	
		Showing sign of rabies (%)	No sign of rabies (%)
Country	Bangladesh (Satkania Upazilla Veterinary Hospital)	12 (41.4%)	16 (55.2%)
	India (Madras Veterinary College Hospital)	1 (3.5%)	0
Species	Cattle	11 (38.0%)	5 (17.2%)
	Goat	1 (3.5%)	11 (38.0%)
	Horse	1 (3.5%)	0
Vaccination (Rabicin)	Yes	2 (6.9%)	5 (17.2%)
	No	11 (38.0%)	11 (38.0%)

Proportionate prevalence of suspected rabies cases according to age and gender of different species

In cattle, the incidence of suspected rabies cases was higher in older animals (>1year) (13.8%) than younger (10.3%). Only one male goat at the age of 0.5 year had suspected rabies. An adult male horse had the suspected rabies in this study. According to gender female cattle had higher suspected rabies cases (24.1%) than male cattle (13.8%) (Table 2).

Occurrence and management of suspected rabies in livestock species

Table 2. Occurrence of suspected rabies cases in different species according to their age and gender

Species	Age (years) and sex categories	Suspected rabies due to dog bite	
		Yes (%)	No (%)
Cattle	0-1	3 (10.3%)	1 (3.5%)
	>1-2	4 (13.8%)	1 (3.5%)
	>2	4 (13.8%)	3 (10.3%)
Goat	0-0.5	-	3 (10.3%)
	0.5-1	1 (3.5%)	5 (17.2%)
	>1	-	3 (10.3%)
Horse	>4	1 (3.5%)	-
Cattle	Male	4 (13.8%)	3 (10.3%)
	Female	7 (24.1%)	2 (6.9%)
Goat	Male	1 (3.5%)	6 (20.7%)
	Female	-	5 (17.2%)
Horse	Male	1 (3.5%)	-

Observable clinical signs recorded from suspected rabies cases according to different species

A range of clinical signs was recorded from different species in the study. They included aggression (38.0%), mania (34.5%) excessive salivation (34.5 %), frenzy (13.8%) and restlessness (3.5%). Suspected rabid goat had only profuse salivation (3.5%). Aggression, frenzy, biting tendency and lip twitching were recorded from a suspected rabid horse in this study.

Table 3. Frequency of different clinical signs recorded from suspected rabies cases due to dog bites

Recorded clinical signs	Cattle	Goat	Horse
	n (%)	n (%)	n (%)
Aggression	11 (38.0%)	-	1 (3.5%)
Mania	10 (34.5%)	-	-
Profuse salivation	10 (34.5%)	1 (3.5%)	-
Frenzy	4 (13.8%)	-	1 (3.5%)
Biting	-	-	1 (3.5%)
Restlessness	1 (3.5%)	1 (3.5%)	-
Lip twitching	-	-	1 (3.5%)

Dog bite management of different suspected rabid and non-rabid cases

Dog bite management of different studied animals were performed by washing the biting site by alkaline soap followed by dressing the wound with either antiseptic or antibiotic powder. 6 of 15 bitten cattle and 1 of 12 bitten goats were given with post-exposure vaccine based on wound severity and the dog was rabid or not (Table 4).

Table 4. Different management practices for the studied animals bitten by stray dogs

Species	n	Wash with alkaline soap	Dressing with antiseptic/antibiotic	Post bite vaccination with rabies
		n (%)	n (%)	n (%)
Cattle	15	3 (10.3%)	6 (20.7%)	6 (20.7%)
Goat	13	4 (13.8%)	8 (27.6%)	1 (3.5%)
Horse	1	-	1 (3.5%)	-
Total	29	7 (24.1%)	15 (51.7%)	7 (24.1%)

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The proportionate prevalence of suspected rabies cases in different livestock species in the present study corresponds to the earlier studies in Bangladesh and India (Blanton *et al.*, 2006; Ichhpujani *et al.*, 2008; Hossain *et al.*, 1986). They found 1.2% case in cattle, 0.5% in goat and 3% in horse. However, the low level of prevalence of rabies was reported in goat (0.5%) in Bangladesh. The results of current study was higher than the earlier studies it may be due to the fact that they included all others diseases with rabies in the study, but in current study include only reported cases of dog bites that suspected to rabies. Vaccinated animals had less recorded suspected rabies cases (6.9%) which suggest that vaccine was effective to control rabies. This finding is supported by Matibag *et al.* (2008).

The suspected rabies was higher in older animal than young regardless of species. The identical result is reported by Krebs *et al.* (2004). In the suspected rabid cattle major clinical signs recorded (Table 3) in the study were aggression (38%), salivation (34.5%), mania (34.5%) and frenzy (13.8%). Similar result was reported by Bishop *et al.* (2003). However, Hudson *et al.* (1996) differed the results from the current study. They recorded aggression or hyperesthesia (70%), salivation (100%) and behavioral change or mania (100%). In goat, profuse salivation (3.5%) and restlessness (3.5%) recorded in this study differed from the study of Bishop *et al.* (2003) who recorded salivation (16%) and restlessness (3%). It is because only one positive suspected case was recorded in goat in the present study and the current study only includes the reported cases in hospital. In horse, the frequency of aggression, frenzy, biting and lip twitching recorded in the current study are agreed by Bishop *et al.* (2003).

In this study dog bite was attempted to manage by washing the biting sites with alkaline soap followed by antiseptic or antibiotic and post-exposure vaccine. Similar management practiced was previously adopted by others (Goldstein, 1992; Presutti, 2001; Lewis and Stiles, 1995; Smith *et al.*, 2000; Weiss *et al.*, 1998). In order to avoid post bite complication antibiotic was used which is supported by Dire *et al.* (1992) and Presutti (1997).

The study was conducted with total of 29 clinical cases of dog bites of different livestock species in India and Bangladesh. The result from the study indicates management of dog bites and prevalence of suspected rabies cases in two countries also in different livestock species, sex and age categories of animal. Prevalence of suspected rabies due to dog bites was 41.4% in Bangladesh and 3.5% in India. Total 7 out of 29 bitten animals were given with post-exposure vaccine to manage the problems and 51.7% cases of dog bites were managed by using antiseptic or antibiotics. Vaccinated animals had less recorded suspected rabies cases (6.9%) than non-vaccinated animals (38%). Public education is the key to reducing the risk of rabies among domesticated animals and humans. Pre-exposure rabies vaccination should be offered to pet, domesticated animal and persons in high-risk groups, such as veterinarians, veterinary technicians, animal control personnel, wildlife rehabilitators, taxidermists, trappers, and rabies testing/research laboratory workers.

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