



RESEARCH ARTICLE

Studies on Dog Bites of Domestic Animals and Avian in Kashmir Valley

Khadim Hussain Dar¹, Muhammad Moin Ansari^{2*}, Mohammad Mansoor Bhat¹, Shahid Hussain Dar¹ and Hakim Ather¹

¹Teaching Veterinary Clinical Services Complex; ²Division of Veterinary Surgery and Radiology; Faculty of Veterinary Sciences and Animal Husbandry, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Jammu and Kashmir- 190006, India

ARTICLE INFO

Received: June 21, 2014
Revised: July 10, 2014
Accepted: July 20, 2014

Key words:

Bite injury
Dog
Post-exposure prophylaxis

ABSTRACT

The study aimed to conduct on a total of one hundred four (n=104) cases of different species namely ovine, caprine, bovine, equine, canine and avian presented with the history of dog bite wounds. The affected animals were examined and as far as possible maximum information was extracted from the owners or animal handlers about dog bites attack. After that all cases were subjected to clinical and physical examinations with special interest towards the site of dog bite and extent of lesion. The results of study suggest that among presented cases the most commonly attacked species by dogs is ovine (56.33%), followed by bovine (22.11%), caprine (09.61%), canine (06.73%), avian (02.11%) and equine (01.92%). Incidence of dog bites was high among female sex (56.73%) irrespective of age and species. Three of the animals which include one calf, heifer and ewe had developed clinical signs of rabies, thus they had to be euthanized. The remaining animals were stabilized and their wounds managed following routine protocol. Only the wounds exposing the body cavities were encountered surgery. Post-bite antirabies vaccination was prescribed in all the treated animals. The average amount of rupees 500-600 excluding the vaccination and transportation charges was spent by owner on the whole treatment of affected animal. In the majority of dog attacks, the breed of dog responsible was not accurately determined. Therefore there is a need to supports the development of reasonable, enforceable legislation to establish a well defined method for dealing with dogs proven to be dangerous to humans and domestic animals. However due to non reporting of dog bites as the treatment costs sometimes runs high and to social reason as people falsely believe that eating meat of dog bite affected animal will cause them rabies, so there is a need for further studies.

*Corresponding Author

Muhammad Moin Ansari
drmoim7862003@gmail.com

Cite This Article as: Dar KH, MM Ansari, MM Bhat, SH Dar and H Ather, 2014. Studies on dog bites of domestic animals and avian in Kashmir Valley. *Inter J Vet Sci*, 3(3): 151-154. www.ijvets.com

INTRODUCTION

Canines particularly dogs bring many well documented benefits to individuals and to society as a whole but unfortunately, on some occasions, dogs can become a nuisance by exhibiting socially unacceptable or dangerous behavior. Society for Prevention of Cruelty to Animals (SPCA) which is concerned with the sensible management of dogs within the community and minimizing the risks to public safety posed by dog bites has acknowledges that some dogs may present risks to society by exhibiting aggression. The statistics currently available on dog attacks on domestic animals and avian are incomplete and fragmented, since no comprehensive

reporting system exists for dog attacks on domestic animals and avian in Jammu and Kashmir. However it has been believed that every year large number of livestock animals including avian are attacked by dogs but majority of these are not recorded or brought to the notice of veterinarians and other health promoting agencies. The reasons for low reporting and recording are that the treatment cost sometimes runs high and people falsely believe that eating meat of dog bite affected livestock animal will cause them rabies, even if animal had recovered from the dog bite wound. Rabies is most likely to occur in cows, horses, goats and other livestock species are rarely affected (Rupprecht and Gibbons, 2004).

Majority of dog bites occur to domestic animals either at the time of grazing or backyard of a house when owner are not in a position to keep the eye on their animals and only about a third of reported dog bite incidents occur in public places as media coverage of dog attacks tends to focus on incidents that occur in public places. The sustained and worldwide epidemic of animal bite injuries and infections has been the subject of many scholarly reviews, and there has been a plethora of series and case reports but very few systematic studies. Since human-animal and dog-animal contact is of daily occurrence and worldwide in various settings, from farms to domestic pets to feral animals, it is not surprising that as a result of this contact, bite injuries are caused by a wide variety of domestic and wild animals (Abrahamian and Goldstein, 2011). Post-exposure prophylaxis may be needed immediately if a bite from a high risk animal involves the head or neck even if the dog is not rabid, as determined by testing or observation, the regimen can be discontinued (Rupprecht and Gibbons, 2004). When these injuries are reported, concerned health officials generally concentrate on unusual or resistant organisms or unusual complications and their management and these retrospective incidents form the basis for anecdotal medical decision-making that is employed worldwide.

MATERIALS AND METHODS

The study was conducted on a total of 104 cases (n=104) of different species including, ovine, caprine, bovine, equine canine and avian presented with history of dog bite wound for treatment. The affected animals were examined and as far as possible maximum information was extracted from the owners or animal handlers about dog bites attack. After that all cases were subjected to clinical and physical examinations with special interest towards the site of dog bite and extent of lesion. At the time of clinical examination of dog bite affected animals, the species, breed, age, sex, site and number of dog bites were recorded. All the affected patients were of native breed and crossbred. Also, they were of different ages and sexes. The initial treatment of dog bite to the domestic animals consists of applying pressure to control bleeding, irrigate the wound thoroughly with normal saline or drinkable tap water to remove dirt and bacteria when the lacerations are simple. But in case of contaminated dog bites wound a 1% povidone iodine solution is very much effective as compared to normal saline. Whereas domestic animals with penetrating and infected dog bites wound were administered lactam antibiotic such as amoxicillin combined with a beta-lactamase inhibitor for 5 days and analgesics for 3 days via intramuscular route. Moreover tetanus immunization and human tetanus immunoglobulin were administered to all animals having dog bites especially in equines. All the affected animals excluding avian even with the history of rabies vaccine where given post rabies vaccines to prevent from developing rabies. All affected animals were apparently healthy with exception of one ewe, calf and heifer which had developed the clinical signs of rabies.

Statistical analysis

The data recorded, wherever applicable, was statistically analyzed using chi square test.

RESULTS

Relationship between the species and site of dog bites

Relationship between the species of animals and site of dog bites are presented in Table 1. In the present study the affected animals had dog bites mostly on the neck region followed by head region, while fore and hind quarters had relatively the same number of dog bites, amongst all the sites/regions of body trunk region was least attacked by dog in affected animals. Moreover total of only 11.53 % animals which include 9 ovine and 3 bovine had dog bites on multiple sites like head, neck, fore quarters, hind quarters and trunk.

Relationship between the species and number of dog bites

Relationship between the species and number of dog bites are presented in Table 2. In the present study the affected animals mostly had single dog bite in one or the other region of body and only 27.88% out of 104 animals during the period of study had more than one dog bites on same or different regions of body. Sometimes bovine mostly young ones are also subject to multiple bites during the time of their separation from adults at the time of grazing.

Relationship between the dog bites, species and age

Relationship between the species, age and dog bites are presented in Table 3. As in the present study 53.84% out of 104 animals brought during the period of study were aged less than one year followed by 23.07% affected animals of 1-2 years of age and thus as the age increases the chances of dog bite to domestic animal decrease considerably

Relationship between the dog bites, species and season of the year

Relationship between the species, season and dog bites are presented in Table 4. The results of study indicate that the percentage of domestic animals and poultry with dog bites was highest in hot weather that is in the summer season (June-August), when domestic animals especially ruminants are seen roaming here and there in lieu of green pastures and are also feeling the brunt of high temperature which makes them somewhat docile and dogs take advantage of this and attack the animals who are seldom in the position to defend themselves.

Relationship between the dog bites, species and sex

Relationship between species, sex and dog bites are presented in Table 5. The present study on dog bites of domestic animals and avian showed that the dogs mostly attack the females sexes of all the species including avian as the female are relatively less active runners as compared to their male partners, also in case of bovines it can be attributed to large female population. In our study on dog bites out of 104 cases of dog bites recorded and examined, 56.73% females and only 43.26% animals were males.

Dog breeds responsible for attack on animals

The involvement of certain breeds of dog breeds viz. German shepherd in attacks on domestic animals and

Table 1: Relationship between the species and site of dog bites

Species	Site of Dog Bite						M.S	(%)
	Head	Neck	F.Q	H.Q	Trunk			
Ovine	11	17	9	6	3	9	56.73	
Bovine	7	4	1	6	2	3	22.11	
Caprine	3	4	1	1	1	-	09.61	
Canine	2	4	1	-	-	-	06.73	
Equine	-	1	1	-	-	-	01.92	
Avian	-	1	1	1	-	-	02.88	
Total (104)	23	33	16	14	6	12		
Total (%)	22.11	31.73	15.38	13.46	05.76	11.53	100	

F.Q, H.Q and M.S represent the fore quarter, hind quarter and multiple sites, respectively.

Table 2: Relationship between the species and number of dog bites

Species	Number of Dog Bites		
	Single Bite	Multiple Bite	(%)
Ovine	38	17	57.73
Bovine	21	6	22.11
Caprine	8	2	09.61
Canine	6	1	06.73
Equine	1	1	01.92
Avian	3	-	02.88
Total (104)	75	29	
Total (%)	72.11	27.88	100

Table 3: Relationship between the dog bites, species and age

Species	Age (year)						
	0-1	1-2	2-3	3-4	4-5	5-6	>6
Ovine	34	10	10	1	3	-	1
Bovine	9	8	3	1	1	1	-
Caprine	6	3	1	-	-	-	-
Canine	4	2	1	-	-	-	-
Equine	-	1	1	-	-	-	-
Avian	3	-	-	-	-	-	-
Total (104)	56	24	16	2	4	1	1
Total (%)	53.84	23.07	15.38	1.92	3.84	0.96	0.96

Table 4: Relationship between the dog bites, species and season

Species	Season			
	March-May	June-August	September-November	December-February
Ovine	25	15	11	8
Bovine	6	14	2	1
Caprine	3	3	2	2
Canine	-	4	3	-
Equine	1	1	-	-
Avian	1	1	-	1
Total (104)	36	38	18	12
Total (%)	34.61	36.53	17.30	11.53

Table 5: Relationship between the dog bites, species and sex

Species	Sex		(%)
	Male	Female	
Ovine	24	31	52.88
Bovine	10	17	25.00
Caprine	2	8	09.61
Canine	5	2	06.73
Equine	1	1	01.92
Avian	3	-	02.88
Total (104)	45	59	
Total (%)	43.26	56.73	100

avian has been highlighted by the media over recent years. In the majority of dog attacks, the breed of dog responsible was not accurately determined. Nearly 90% of the dogs in Jammu and Kashmir in authors view are non descriptive, that are crossbreeds, which do not

demonstrate a consistent breed type. The prevalence of particular dog breed attacks can also change rapidly over time, often influenced by distinct peaks of popularity for specific breeds.

Management of dog bites

As in our study the only three animals viz. 3 years old ewe, 2 months old female calf and 3 years old heifer, had already developed signs of rabies as they were brought very late for treatment and in that case there was no alternative treatment other than to advice the owner to euthanize the animals as they had become public health risk.

Cost of dog bite treatment

The cost of dog bite to animal depends upon the region of body affected, number of bites and extent of tissue damage as well as physical condition of the animal last but not least on whether the animal had a prophylactic vaccination against rabies or not. In our study as most of animals had only one bite and extent of damage was not great the owners had to spent somewhere between rupees 500-600 excluding the vaccination and transportation charges on the whole treatment of affected animal which in comprehension to the value of animals was very less amount.

DISCUSSION

Dog bites are often a human problem, associated with inappropriate selection of dogs, ignorance of dog care and management and inappropriate behavior around dogs (Abrahamian and Goldstein, 2011). Our results suggest that in case of domestic animals and avian the region mostly attacked by the dogs is the neck region and its only in bovines the head region is most preferred site of attack by dogs which could attributed to their relatively large head. Due to high dog population owing to non-organized castration and spaying programmes the dogs have become major problem to the humans as well as to their fellow domestic animals including the avian. Further, our findings indicates that ovine were the main species which had the maximum number of multiple bites which can be due to their relatively docile nature and probably as a the results of negligence on part of owner or shepherd during the grazing in remote and hilly areas where it often comes too late to notice of owner that sheep is being attacked by dog and by that time dog had bitten the sheep at many sites resulting in multiple bites and even death on spot. From the results of study on of all the affected animals it was observed that mostly the young once irrespective of the species to which they belong are attacked by dogs. From results its also clear that the least number of dog bite case are reported in winter season which could be attributed to the fact that due to the harsh and cold weather conditions in this part of world during the winter season animal owners usually keep their animals inside and also grazing is not feasible in winters as its mostly at the time of grazing that livestock animals particularly ruminants are attacked by the dogs. Moreover in present study only one animals aging 6 and with dog bite was observed which can be attributed to the sickness of the aged animal as otherwise adult healthy animals

always tries to resist the dog attack with all its might. Thus the results clearly points to the fact that dogs tend to avoid the more aggressive male member of species.

As very few studies (Ansari and Peer, 2007) have been done on the domestic animals including avian affected with dog bites so the present knowledge about the presentation, epidemiology, bacteriology, and treatment of dog bite wounds of domestic animals including avian is very limited. However, even these systematic studies are generally limited to dog or cat bites in humans and involve relatively small numbers of patients, therefore one must often extrapolate the best form of antimicrobial therapy to employ (Abrahamian and Goldstein, 2011). The clinically infected dog bite wounds in patients without prior antibiotic exposure were studied (Talan *et al.*, 1999). Most individual elements of bite wound care come from localized standards of care or general applications of wound care principles but have never been further validated. It has been recommends in most cases of dog bite wounds most effective antibiotics are beta-lactam antibiotic such as amoxicillin combined with a beta-lactamase inhibitor, as these antibiotics are able to act against even those microbes that are resistant to traditional antibiotics (Fleisher, 1999). In our study as most of animals had only one bite and extent of damage was not great the owners had to spent somewhere between rupees 500-600 excluding the vaccination and transportation charges on the whole treatment of affected animal which in comprehension to the value of animals was very less amount. The annual cost to the community for treating dog bite injuries in Australian public hospitals was calculated at over \$7 million (Bennett and Righetti, 2001). Around 76% of all dog bites occur in animals less than 2 years of age and many of their bites are on neck, head and limbs. The type of dog breed involved in attack on domestic animals and avian was not recorded as nearly 90% of the dogs in Jammu and Kashmir in authors view are non descriptive, that are crossbreeds, which do not demonstrate a consistent breed type. When dog bites can be attributed to a particular breed, the breeds represented tend to reflect their relative popularity in the community (Seksel, 2002). Post-exposure rabies prophylaxis, with both vaccine and rabies immune globulin, is recommended immediately if a biting or scratching animal is infected with rabies or suspected to be infected with rabies (Rupprecht and Gibbons, 2004). Attacks by dogs can cause terrible injuries and death and it is natural for those dealing with the victims to seek to address the immediate causes (Loewe *et al.*, 2007). So there is need to supports the development of reasonable, enforceable legislation to establish a well defined method for dealing with dogs proven to be dangerous to humans and domestic animals, and, impose penalties on irresponsible owners commensurate with the seriousness of breaches. The harm caused by dog bites to livestock animals including avian can be minimized, by properly implementing support strategies that aim to achieve a measurable reduction in the incidence of dog bites at time of grazing of domestic

animals and in backyard of house. Legislation and punitive measures that target dangerous and stray dogs, and place controls on dogs in public areas have proven to be only marginally effective in addressing this problem (Seksel, 2002). Establishing an environment where dogs are carefully selected, properly cared for, socialized and trained, and supervised around children and animals, is more likely reduce the incidence of dog attacks on humans and domestic animals. Also important are dog management factors such as neutering and tethering, and child care factors such as supervision around animals which can help in reducing the number of dog bite cases (Loewe *et al.*, 2007). SPCA suggests that proactive environmental health strategy which includes education campaigns directed at dog owners, children and the wider community. A public education program in Australia, involving teaching children how to interact with dogs in a safe and sensible manner, has scientifically proven to be effective in modifying children behavior around dog (Chapman *et al.*, 2000). Preventing behavioral problems in dogs is another important means of reducing the incidence of dog attacks.

Acknowledgement

The authors are highly thankful to Head, Teaching Veterinary Clinical Service Complex of the University and staff for their support throughout the tenure of the present study.

REFERENCES

- Abrahamian FM and EJC Goldstein, 2011. Microbiology of animal bite wound infections. *Clin Microbiol Rev*, 24: 231-246.
- Ansari MM and FU Peer, 2007. A retrospective study of bite wounds in animals. *Compendium of national symposium on rehabilitation of veterinary surgical patients*. *Ind Soc Vet Surg*, 31: 78.
- Bennett P and J Righetti, 2001. The Delta Dog Safe Strategy, In: *Proceedings of the annual urban animal management conference*, Melbourne.
- Chapman S, J Cornwall, J Righetti and L Sung, 2000. Preventing dog bites in children: randomised controlled trial of an educational intervention. *Brit Med J*, 320: 1512-1513.
- Fleisher GR, 1999. The management of bite wounds. *N Engl J Med*, 340: 138-140.
- Loewe CL, JD Francisco and J Bechinski, 2007. Pitbull mauling deaths in Detroit. *Amer J Foren Med Pathol*, 28: 356-360.
- Rupprecht CE and RV Gibbon, 2004. Clinical practice. Prophylaxis against rabies. *N Engl J Med*, 351: 2626.
- Seksel K, 2002. Report to the NSW Department of Local Government on breed specific legislation issues relating to the control of dangerous dogs.
- Talan DA, DM Citron, FM Abrahamian, GJ Moran and EJC Goldstein, 1999. Bacteriologic analysis of infected dog and cat bites. *N Engl J Med*, 340: 85-92.