Original Research Article

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Study of morbidity of pediatric dog bites: single center experience

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ABSTRACT

Background: Pediatric dog bite injuries are common and vary in severity. One out of every five of those bites causes an injury that requires medical attention, according to the centers for disease control. Children are also more likely to be injured by a dog bite than adults. The study was conducted with the objective to describe the incidence and the characteristics of dog bite injuries treated in a large tertiary pediatric.

Methods: This study was performed in Pediatric Surgery Department of BMC and RI, Bangalore, India. Clinical data collected from emergency department referred to pediatric surgery from August 2014 to July 2015.

Results: The total number of dog bites reported were 32, of which majority (70%) accounted for class 3 injuries requiring surgical intervention in form of debridement, suturing and reconstructions. 56% of dog bites involved face and upper limb. Majority of the patients were between ages (3-8 years). The most severe injuries include orbital injury, emasculation with bilateral orchidectomy, urethral injury requiring staged repairs and multiple hospital admissions. Length of hospital stay ranged from a one day to 15 days.

Conclusions: Pediatric dog bites can cause wide range of injuries frequently requiring operative intervention and can cause severe morbidity. Dog bite rates are high and it may be assumed that the current preventive measures are inadequate. A national dog-bite prevention and education campaign need to be developed with goal of decreasing pediatric dog bites.

Keywords: Injury, Pediatric dog bites, Prevention

INTRODUCTION

Dog bite injuries are common and devastating with an annual incidence of 12.9 per 10,000 persons. Dog bites account for about 80% of animal bites. Children are more likely to be injured rather than adults. Children below 10 years are at higher risk. One out of every 5 bites require medical attention.

Dog bites to children represent a serious and significant mechanism of pediatric injury, and contribute to the burden of emergency medical services nationwide. Highest incidence of reported and medically treated dog bites alone accounts for nearly 45,000 emergency department visits each year, or approximately 200 visits per100,000 population.⁵

The associated direct and indirect lifetime costs for dog bite injuries to this 5-9 year old population are estimated to cost huge financial burden.⁶

There have been several studies that focused on dog bite injuries and their epidemiology, especially in the 1990s. Several preventive and legal measurements were then implemented to reduce the incidence of dog bites, but current studies are scarce.

Moreover, most studies focused on children, as the incidence was particularly high in this population. Hence, this study was aimed to describe the incidence and characteristics of dog bite injuries treated in pediatric surgery department.

METHODS

A retrospective review of children with dog bites was performed at Bangalore Medical College and Research Institute, Bangalore, India during August 2014 to July 2015. Patients older than 18 years and who were bitten by animals other than dogs were excluded from the study. Data including patient demographics, date of injury, anatomical location of injury, number of wounds, consulted services, hospital admission and need for operation, duration of stay, or as out-patient were recorded in an excel spreadsheet.

Medical data and demographic characteristics were summarized using standard descriptive statistics, including means and standard deviations for continuous variables such as age and percentages for categorical variables such as gender. This study was performed under the supervision of the statistician, preventive and social medicine department.

RESULTS

In this study 32 cases were included with injuries on head and neck (18) and on torso (14) as given in Table 1. In this study majority of the cases (23) were affected by stray dogs. Of 32, 10 cases were attacked by multiple dogs. Table 2 described the categories of included cases as per WHO classification. 70% of injuries are of class III. Patient demographics were given in Table 3. Of all the different age groups of children, school going children of age group 3-14 years are most commonly affected with dog bites (22) as they are unattended by the parents.

Table 1: Number of cases with affected areas.

Areas affected	No. of cases (%)
Head and neck	18 (56)
Torso	14 (44)

Table 2: Number of cases categorized as per who classification.

Categories	No. of cases (%)
Category 1	2 (5)
Category 2	8 (25)
Category 3	22 (70)

Category I: touching or feeding suspect animals, but skin intact; Category II: minor scratches without bleeding or licks on broken skin; Category III: one or more bites, scratches, licks on broken skin, or other contact that breaks the skin; or exposure to bats.

Patients with different categories of facial bite injuries were represented in Table 4. Almost 8 cases had deep injuries with muscle involvement. Table 5 gives information regarding the duration of hospital stay of

injured cases. 75% of the cases required admission in the hospital and their mean duration of stay being 1-3 days. 9% of the cases required 3 days-3 weeks. 22 patients required debridement, primary or secondary suturing. All cases of class 3 injuries received immunoglobulins along with ARV. Figure 1 and 2 presents the pediatric cases with dog bite injures.

Table 3: Patient demographics.

Age	Description	No. of cases
Up to 28 days	Neonate	1
28 days - 1year	Infancy	1
1 - 3 years	Toddler	2
3 - 6 years	Preschool	12
6 - 14 years	School going	10
14 - 18 years	Teenagers	6

Table 4: Number of cases with different classes of facial injuries.

Type	Findings	No. of cases (%)
I	Superficial injury without muscle involvement	3 (16)
II A	Deep injury with muscle involvement	8 (44)
II B	Full thickness injury to lip, cheek /oral mucosa	2 (11)
III A	Deep injury with defect (avulsion)	2 (11)
III B	Deep avulsion of auricular /nasal cartilage	3 (16)
IV A	Deep injury with facial nerve /parotid duct involvement	0
IV B	Deep injury with bone involvement	0



Figure 1: Case presentation of 8 years old baby.
(a) dog bite to perineal region, had both testis missing with cord structures hanging at superficial ring, debridment; (b) primary repair; (c) 6th week postoperatively.

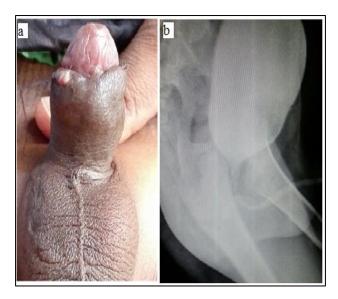


Figure 2: Case presentation of 7 year old boy. (a) scrotal and anterior urethral injury initial on spc; (b) X-ray showing primary buccal mucosa tubularisation up to glan.

Table 5: Number of cases admitted and their duration of hospital stay.

Department	No. of cases (%)
Out-patient department	8 (25)
In-patient department	24 (75)
Duration	
1 - 3 days	22 (91)
3 days - 3 weeks	4 (9)
> 3 weeks	0

DISCUSSION

Dog bite injuries in children remain an under recognized and underreported public health problem. Morbidity from acute bite trauma can include substantial blood loss, large soft-tissue defects, lacerations, abrasions, infection, and broken bones. Scars, both physical and psychological, are the long-term reminders of these events. Although mortality is less frequent, several deaths are reported each year to be the result of severe dog maulings. The primary objective of this study was to characterize the nature of dog bite injuries treated over a 1-year period at a large tertiary pediatric hospital and to thereby identify relevant critical parameters for public education and injury prevention.⁴

The overall physical and financial toll that dog bites can exact is immense. Wound care and repair, tetanus prophylaxis, and antibiotic treatment for infection prevention can be a substantial drain of health care money.⁷

Pediatric dog bite injuries are preventable, yet they persist as a prevalent public health problem. Children

continue to be at much greater risk of sustaining a serious dog bite injury than adults; 70 percent of dog bite-associated fatalities and the majority of dog bite injuries that necessitate medical care are in this young population.

The physical and psychosocial consequences of being attacked by a dog as a child can be devastating. Whereas some dog bite awareness efforts are already in existence, much more attention is needed to prevent such injuries. Dog bite prevention can be helped by age-appropriate educational measures. The public, especially dog owners and their children, should be familiar with the rules for relating to dogs.

In addition, required reporting and detailed study of dog bite injury data from high-volume tertiary pediatric health care institutions would better elucidate specific patterns of injury. This will allow for the development of more effective prevention strategies, including programs for community outreach, dog bite prevention education, and possibly changes to future legislation. 8,9

CONCLUSION

Pediatric dog bites span a wide range of ages, frequently require operative intervention and can cause severe morbidity. School going children are at higher risk for being bitten in the face dog and are more likely to require hospitalization than older children. National dog bite prevention and education campaign, child protection campaigns needs to be addressed.

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institutional ethics committee

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