

Profile of Pediatric Animal Bite Cases in Victoria Hospital, Bengaluru: A Cross Sectional Study.

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ABSTRACT

BACKGROUND: Animal bite, usually dog bite is a significant public health problem in India. In India, every 30 minutes, a life is lost due to rabies. There is an overall rate of 2 dog bites per second in India. The annual incidence of animal bite is more in children. India's share is more than 36% of total rabies deaths. The incidence of animal bite/yr is 17.4 millions due to poor surveillance & inadequate legislation for compulsory notification of cases. **OBJECTIVE:** To determine the proportion and profile of pediatric animal bite cases attending Anti Rabies Clinic (ARC), Victoria hospital, Bengaluru. **METHODS:** Retrospective record based study from 22nd January to 31st December 2015 was conducted among children aged 0-18 yrs in Victoria Hospital during January-February 2016. Study was analyzed using descriptive statistics and results represented in the form of figures, tables and proportion. **RESULTS:** Among 2856 animal bites, 962 cases (33%) belonged to study group & 95.84% of them were dog bites. 70.47% of animal bites belonged to category III and around 56% of animal bites were on upper limb of the study group. Only 253 cases (26.29%) visited Anti-Rabies Clinic on the day of bite. **CONCLUSION:** The proportion of pediatric animal bite cases is 33% which is significantly high and alarming too. Knowledge among public about the rabies and its outcomes is very less and most of them are unaware of its timely treatment with the availability of immunoglobulins and vaccines.

Key Words: animal bite, anti-rabies clinic, rabies, Victoria Hospital, Bengaluru

INTRODUCTION

Rabies, a practically 100% fatal disease is endemic in India and continues to be a public health problem except in the Islands of Andaman & Nicobar and Lakshadweep which are rabies free.¹ The incidence of rabies has reportedly declined from 30,000 annually to 20,000 following a recent assessment by a WHO sponsored national multi-centric survey in 2003-04.² In India, every 30 minutes, a life is lost due to rabies. There is an overall rate of 2 dog bites per second in India. The annual incidence of animal bite is more in children. India's share is more than 36% of total rabies deaths.³

The rabies virus, bullet shaped is very minute (120 x 80 nanometer; 1 nanometer = One millionth of a millimeter) and seen only through an electron microscope. The virus is present in the saliva of rabid animals; in the saliva of hydrophobia patients and also in the urine (low titres).⁴ Following bite, scratch, lick on broken skin (cuts/abrasions) and on intact mucus membrane the virus enters the body, multiplies locally in the tissues, muscles and enters a nerve (neurotropic) and travels to brain (@ 3 mm per hour) and

affects the brainstem function; causes hydrophobia (fear of water), aerophobia (fear of breeze) and photophobia (fear of light) and finally leads to death. The time interval between bite/exposure and onset of hydrophobia (incubation period) is usually between 3 weeks to 3 months; rarely 4 days to 2 years.⁵

Rabies, a disease of 100% fatal even today with no cure anywhere in the world. However, it is preventable with currently available modern rabies vaccines and immunoglobulins.⁶ Consequently, more responsibility rests with the physician to advise and provide the patient the correct post-exposure prophylaxis. With the advent of consumer protection act in the country and the mass media providing rabies information to lay people, the role of physician in rabies prevention assumes significance. So the physician must provide correct rabies prophylaxis following exposure failing which he/she may be sued for compensation under Consumer Protection Act.⁷

An expert group meeting for reviewing and finalizing the guidelines for management of animal bite cases was held at National Institute of Communicable Diseases, Delhi. Following this, the national guidelines for management of

animal bites were formulated in 2002 to bring out uniformity in post-exposure prophylaxis practices. Until recently the Nervous Tissue Vaccine (NTV) was the mainstay for post-exposure prophylaxis.⁶ As per WHO recommendations, the production and use of this reactogenic vaccine has been stopped since December 2004 in our country. Modern Cell Culture Vaccines (CCV) are now being used for post-exposure prophylaxis. Higher cost of intra-muscular administration of CCV is a limiting factor for its wider use. To overcome this problem, WHO has recommended use of efficacious, safe and feasible intra-dermal (ID) route of inoculation of CCVs. Sri Lanka, Thailand and Philippines have successfully adopted ID route of administration of CCV against rabies as part of their policy.⁷

National authorities after expert consultation have approved the use of ID route for administration of CCVs in the country in phased manner. Hence, the guidelines of animal bite management have been reviewed and revised with inclusion of correct technique of ID inoculation of anti-rabies CCVs.

Many studies had been taken up on the profile of rabies and its consequences but very few are done on paediatric age group who are highly susceptible for animal bites. The present study is about the profile of pediatric animal bites in Victoria Hospital in order to know the profile of pediatric animal bite.

METHODOLOGY

A hospital based cross sectional study was conducted in Victoria Hospital under Bangalore Medical College and Research Institute (BMCRI) after obtaining institutional ethical clearance. It was a record based Cross-sectional study from 22nd January 2015 to 31st December 2015. The study duration was from January 2016 to April 2016.

The study participants belonged to the age group of 0-18yrs. Data was collected retrospectively using Anti-rabies clinic ARC Registers from 22nd January 2015 to 31st December 2015. Anti-Rabies Clinic was started in Victoria Hospital during the same time from department of Community Medicine under the guidance of Dr. Anil Kumar.S, Medical Officer. A semi-structured questionnaire was prepared and the respective retrospective data was collected accordingly.

Data was entered in Microsoft Excel and analyzed in Statistical Package for the Social Sciences (SPSS) version 20. Descriptive statistics used to describe the distribution of all variables. Results are represented in proportions/frequency, tables, figures and graphs.

RESULTS

Age and Gender distribution of study participants: A total of 2856 animal bite cases, 962 (33%) cases belong to pediatric age group. As per IAP, pediatric age group is in between 0-16 years. 318 cases (33.06%) were in the age group of 6-10yrs. Among 962 cases, 734(76.29%) animal

bites were seen in boys and 228 cases(23.70%) in girls. Mean age of the study participants was 8.5yrs±0.8SD as shown in table 1.

Table 1: Age Group Distribution of Study participants

Age group in years	Total number of cases(N) in %	Male(n) in %	Female(n) in %
0-5	216(32.45%)	157(72.68%)	59(27.31%)
06-10	318(33.06%)	233(73.27%)	85(26.27%)
11-15	282(29.3%)	229(81.20%)	53(18.79%)
>15	146(15.18%)	115(78.76%)	31(21.23%)
Total	962	734(76.29%)	228(23.70%)

*Mean age of study subjects:8.5+0.8SD

Table 2: Distribution of type of animal bite cases

Type of Animal bite	Number of bites in %
Dog bite	922(95.84%)
Cat bite	23(2.39%)
Monkey bite	16(1.66%)
Bear bite	01(0.1%)

Table 3: Time of ARC visit after animal bite

TIME OF ARC VISIT	Number of animal bites in %
Day of bite	253(26.29%)
First day	333(34.61%)
Second day	107(11.12%)
Third day	83(8.63%)
Fourth day	80(8.32%)
Fifth day	27(2.81%)
Sixth day	18(1.87%)
Seventh day	24(2.5%)
More than a week	37(3.85%)

Distribution of type of animal bites: Out of 962 pediatric animal bites, 922(95.84%) were dog bite and the remaining animal bite cases were by cat, monkey and bear bite to a lesser extent as depicted in table 2.

Time of ARC visit after animal bite: Victims of animal bites visited ARC on the day of bite were dramatically less(253 cases-26.29%) followed by 34.61%, 11.12%, 8.63%, 8.32%, 2.81%, 1.87%, 2.5% and 3.85% on 1st day, 2nd day, 3rd day, 4th day, 5th day, 6th day, 7th day and more than a week respectively as mentioned in table 3.

Distribution of type of dogs: Stray dogs are the most common culprit for dog bite cases. Of 922 dog bite cases, 582 (63.12%) were stray dogs followed by 340(36.87%)

were pet dogs and 272(29.50%) were dogs under observation. Dogs under observation was for 10 days though this concept of observation is not applicable in present days but still considered based on history which is mentioned in figure 1.

Figure 1: Distribution of type of dogs

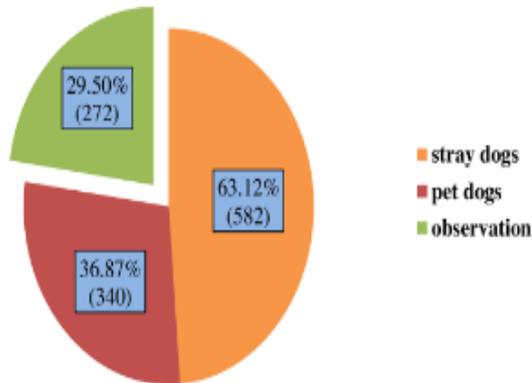


Figure 2: Categories of Animal bites

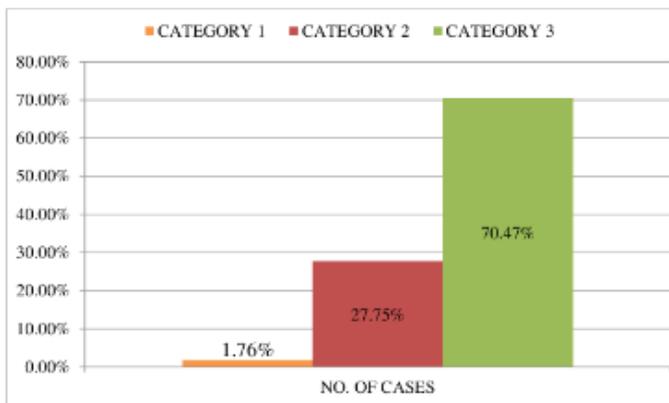
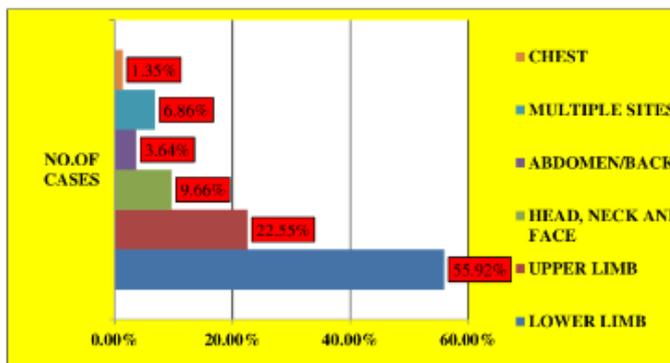


Figure 3: Sites of Animal bites



Categories of Animal bite: Category III animal bites are the most dangerous. 70.47% of the cases belonged to Category III followed by 27.75% of cases in category II and only 1.76% of them were category I as shown in figure 2.

Sites of Animal bite: The site of animal bite also possess a major threat to the victims of animal bite. 55.92% of animal bites were on lower limb, 22.5% on upper limb and 9.66% were on head, neck and face region. The bites were also seen on chest, abdomen and back and also multiple sites which is mentioned in figure 3.

DISCUSSION

Dog bite injuries in children remain an under recognized and underreported public health problem. Children continue to be at much greater risk of sustaining a serious dog bite injury than adults. Dog bites account for about 80% of animal bites.⁸

In the current study, the prevalence of pediatric animal bite cases is 33% and most of the animal bite victims were in the age group of 6-10yrs; 33.06%.The similar type of study was conducted by Vyas Sheetal et al⁹ in municipal corporation hospitals of Ahmedabad showed that 25.7% of cases were in 0-9yrs age group. Dinesh et al¹⁰ concluded that the proportion of pediatric dog bite cases was 31.68% and 39.8% of cases was seen in 6-10yrs age group. MuruganVenkatesh et al¹¹ showed that period prevalence of dog bites was 17.9 per 1000 children and 56% of cases were among children less than 10yrs of age. ApoorvaBhaskaret al¹² depicted that more number of animal bite cases (37.5%) were in pre-school age group.

Males (76.29%) are commonly affected than females (23.70%) in the present study. Vyas Sheetalet al⁹ also concluded that 75% of animal bite cases were among males and 25% in females. Dinesh et al¹⁰ concluded that 70.94% of animal bite victims were males and 29.06% were females.

In the current study, 95.84% were dog bite cases followed by cat, monkey and others. A study conducted by Vyas Sheetal et al⁹ determined that 97.3% were dog bite cases, 3% were monkey bites. R.C Panda and K.N.Tiwari¹³ also showed that 90.7% of cases were dog bite.

Category III bites are the most dangerous and life-threatening for any victim of animal bite cases. In such instance, 70.47% of cases belonged to category III animal bite followed by 27.75% category II and 1.76% were category I in our study. Vyas Sheetalet al⁹ concluded that 59% of cases were category III and 41% were category II. MuruganVenkateshet al¹¹ determined that 67% of animal bite cases were category III. Apoorva Bhaskar et al¹² also concluded that 70% of cases were category III.R.C Panda and K.N.Tiwari et al¹³ showed that 94.7% belonged to category III.

Lower limb (55.92%) was the most commonly involved site of animal bite among animal bite victims in the current study.Vyas Sheetal et al⁹ concluded that 83% of animal bite victims had the bite on their lowerlimb. Dinesh et al¹⁰ also showed that 53.7% of animal bites were on lower limb of the victims. Murugan Venkatesh et al¹¹depicted that 53.6% of bites were on lower limb of the cases. R.C Panda and K.N.Tiwari et al¹³ also showed that 44.7% of animal bites were on lower limb.

Only 26.29% of cases reported to ARC on the day of bite in our study. Vyas Sheetal et al⁹ concluded that only 22.5% of cases visited ARC on the same day of animal bite. R.C Panda and K.N.Tiwari et al¹³ showed that 33.2% of cases reported to ARC on the same day of animal bite.

CONCLUSION:

The proportion of pediatric animal bite cases is 33% which is significantly high and alarming too. Children are the most susceptible for these animal bites as they will be outdoors most of the time and the chances of getting bites are more for head and neck among younger children which is severe category III bite and if left neglected and untreated it has 100% chances of fatality.66% of the dogs were stray dogs which are more potent for biting humans as they tend to remain unvaccinated and improper licensing. Knowledge among public about the rabies and its outcomes is very less and most of them are unaware of its timely treatment with the availability of immunoglobulins and vaccines which is depicted in the present study stating that only 26% of the victims of animal bite reported to ARC on the day of bite. Hence parents and children should be given health education and awareness regarding handling of pets and pre-exposure prophylaxis and all cases of animal bite should be given ARV and advised for RIG if required.

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