

A Study Of Animal Bite Victims And Management Practices In A Tertiary Care Institution In Ahmedabad , Gujarat , India

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Abstract:

Objectives :

Human Rabies is an important public health problem worldwide and more than 50,000 people die annually of the disease. The Sheth V.S.General and Sheth C.M. Hospital and Smt. N.H.L Municipal Medical College, Ahmedabad , India is a tertiary referral centre where a rabies clinic runs 24 hours. In view of lack of information about the demographics of the disease in an urban environment the present study was carried out.

Material and Method:

The present observational study of 10732 of animal bite cases was carried out from January 2019 to December 2019 in the Casualty / Out-Patient department of our Institution. The study protocol was approved by the institutional review and the following article is solely based on the computer based data registered.

Results:

The present study showed that the victims were largely male (81.11%), and about 25% of the cases were less than 14 years of age. The dog was the major biting animal (97.86%), Category III (77.2%) bites formed the majority of types of the bites. Patients of all types of bites were managed according to WHO guidelines. All patients were given the rabies vaccine , all patients with Category III bites were given human rabies immunoglobulin (HRIG) (77.2%).

Conclusion:

Our study shows that the incidence of dog bite in Ahmedabad has been increasing since last decade. In spite of constantly increasing incidence, the incidence and death due to dog bite is decreasing with nearly zero deaths in the last 3 years and only 2 deaths in 5 years which shows the increasing coverage of rabies vaccination and health facilities provided by the government and corporation. Further dog population

control and bite prevention are the keys to reduce the death rate from the deadly disease-Rabies.

Keywords: Animal Bite; dog bite; rabies; HRIG

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Introduction:

Human rabies continues to be endemic worldwide and according to a recent estimate about 50,000 people die of this disease every year 1 . A majority of these deaths (about 97%) are attributed to bites from dogs, but animal bites are neither notifiable nor reported in the routine surveillance system. Consequently, the data on animal bites in the country is scanty, unreliable and controversial due to poor surveillance/reporting system. The annual estimated number of dog bites in India is about 17.4 million. 2 . Sudarshan et al 3 showed that the nerve tissue vaccine formed the mainstay of treatment; a high proportion of bite victims (39.5%) did not follow wound care, the use of rabies immunoglobulin was low (2.1%) and recourse to indigenous treatment was widely prevalent 3 .

After the incubation period the animal enters a "prodromal phase" when it can show different signs of behavioral changes. After the prodromal phase the animal can either undergo a "furious" or a "paralytic phase (paralysis of the jaw, mouth or throat)" of the disease. Unprovoked attacks, aggressiveness, restlessness and excessive salivation are some of the signs of rabies in dogs. Headache, hydrophobia, aerophobia and behavioral changes and a wound that itches or is painful are some examples of signs of

rabies in humans. Humans, as well as animals, usually die within a week after the first neurological signs are seen.

Material and Method:

The present observational study was carried out from January 2019 to December 2019 in the Casualty/ Out-Patient department of Sheth V.S.General and Sheth C.M Hospital, Smt. N.H.L Municipal Medical College, Ellis bridge, Ahmedabad, Gujarat, India, to collect demographic data on animal bite victims.

The study protocol was approved by the institutional review and the following article is solely based on the computer based data registered.

Table 1: Data of dog bites in Ahmedabad City during 2006 to 31-07-2017. (Official data released by AMC)

Year	Total	Total no. of Rabies Death cases in side AMC	Total no. of Rabies Death cases outside AMC
2006	18414	1	0
2007	19872	3	4
2008	24445	2	2
2009	27136	3	2
2010	30732	1	4
2011	38622	1	0

2012	41141	3	1
2013	41345	2	0
2014	47354	0	1
2015	50861	1	0
2016	53574	0	0
2017	36363	0	0

It shows that the incidence of dog bite in Ahmedabad has been constantly increasing since last decade. It

is almost 3 times in 2016 than that was in 2006. The reason for increasing incidence of dog bite may be the

newly added geographical areas under corporation of our city. Number of reporting units has also been

increased by corporation from 6 to 12 that also out-reached the health facility to suburban areas under

corporation of our city. In spite of constantly increasing incidence, the incidence and death due to dog bite

is decreasing with nearly zero deaths in the last 3 years and only 2 deaths in 5 years which shows the

increasing coverage of rabies vaccination and health facilities provided by the government and corporation.

Table 2: Year-wise animal bite cases managed at our Institution

Year	Dog	Cat	Rat	Monkey	Horse	Human	Camel	Pig	Goat	Total
2010	9030	81	23	12	2	1	0	0	0	9149
2011	9219	100	29	9	0	0	0	0	0	9357
2012	8803	109	25	0	0	9	1	0	0	8947
2013	8060	120	49	32	1	0	1	0	0	8263
2014	8631	411	153	84	1	7	4	0	0	9291
2015	8781	216	67	29	2	10	0	2	0	9107
2016	9116	79	30	22	0	4	0	1	0	9252
2017	10382	195	74	55	2	0	0	0	0	10708
2018	11040	161	47	37	0	0	0	0	0	11285
2019	10503	159	47	20	2	1	0	0	0	10732

Data Analysis from January 2019- December 2019 of our Institution:

Table 3: Gender Distribution

Gender	Cases
Male	8706 (81.11%)
Female	2026 (18.89%)
Total	10732

Table 4: Age Distribution

Age	Cases
Less than 14 Years	2602(24.26%)
More than 14 years	8130(75.74%)
Total	10732

Table 5: Type of Animal bite

Animal	Cases
Dog	10503 (97.86%)
Cat	159 (01.48%)
Rat	47 (00.43%)
Monkey	20 (00.18%)
Horse	2 (00.001%)
Human	1 (00.009%)
Camel	0
Pig	0
Goat	0
Total	10732

Table 6: WHO Classification of wound

WHO Classification	Cases
Category I (Touching or feeding animals, licks on intact skin)	150 (1.4%)
Category II (Nibbling of uncovered skin, minor scratches or abrasions without bleeding)	2297(21.4%)
Category III (Single or multiple transdermal bites or scratches, contamination of mucous membrane or broken skin with saliva from animal licks, exposure due to direct contact with bats)	8285(77.2%)

Total	10732
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Table 7: Management at our Institution

Wound Care/Management	Cases
No treatment	2436 (22.7%)
Water Only	2135 (19.9%)
Soap With water	3799(35.4%)
Soap with water and antiseptic	2361 (22.0 %)
Anti-Rabies Vaccination	10732 (100.0 %)
Immunoglobulin (HRIG)	8285 (77.2 %)
Total	10732

Results and Discussion

The present study is computerized data analysis from January 2019 to December 2019 of cases presented to our institution for treatment of different animal bite. It was conducted in 10732 consecutive patients during this period, showing that the victims were largely male (81.11%), and about 25% of the cases were less than 14 years of age. The dog was the major biting animal (97.86%), Category III (77.2%) bites formed the majority of types of the bites. Patients of all types of bites were managed according to WHO guidelines. All patients were given the rabies vaccine, all patients with Category III bites were given human rabies immunoglobulin (HRIG) (77.2%) both of which are free of cost as arranged by the Government in India. Follow up was advised to the victims as and when required.

The WHO recommendations include immediate wound washing, expeditious administration of rabies vaccine and for severe categories of exposure, infiltration of purified rabies immunoglobulin (RIG) in and around the wound 4 .

Rabies is considered one of the world's most neglected diseases in developing countries with a disproportionate burden amongst the rural poor and children 5 . In countries enzootic for rabies, cell culture vaccines continue to remain in short supply and unaffordable 6 . The pilot project initiated by the National Centre for Disease Control in 2008 in five Indian cities to train medical professionals in animal-bite management and raising public awareness is one such initiative 7 . As the rabies vaccine as well as RIG continue to remain expensive, regimes with fewer doses like the Zagreb regime, the intradermal vaccine and monoclonal antibodies are likely to offer safe and cost-effective treatment options in the years to come 8 .

Children of high risk category are: 1) Children having pets at home, 2) Children perceived with higher threat of being bitten by dogs such as hostellers, risk of stray dog menace while going

outdoors, should always receive pre- exposure prophylaxis.

Modern tissue culture vaccines (MTCV) at IntraDermal route are used for pre & post-exposure prophylaxis. For pre-exposure prophylaxis, 3 doses on day 0, 7, 28 given as Intradermal at antero-lateral thigh or deltoid. For post-exposure prophylaxis, ARV is given in 4 doses on day 0, 3, 7, 28 - as Intradermal at antero-lateral thigh or deltoid and Human Immunoglobulin is given in the dose of 20 IU/kg body-weight.

Dog management in India

The approach to dogs in India differs largely from the Swedish conditions. The human-dog relationship ranges from dogs kept as pets, much like the common practice in Sweden, to feral dogs living in the streets. WHO has established five different categories to further clarify the different populations of urban dogs:

1. Restricted dogs, fully supervised by man,
2. Family dogs, semi-independent and fully restricted by man,
3. Neighborhood dogs, semi-restricted and semi-dependent,
4. Unrestricted dogs, semi-dependent and unrestricted,
5. Feral dogs, independent and unrestricted.

Categories 3-5 would be described as street dogs from a European point of view. These dogs have an important function in Indian society as rat hunters and they help dispose of domestic waste. In doing so, they contribute to public health by helping to control the vermin. The semi- to unrestricted dogs are also commonly used as guard dogs. On the downside, free roaming dogs serve as an important reservoir with regard to the spread and transmission of rabies and other diseases, and might also be perceived as dangerous by the public. Indian authorities have routinely tried to manage the free roaming dog populations by simply euthanizing individuals, most commonly in a brutal and inhumane manner with poorly trained staff carrying out the task.

The World Organization for Animal Health (OIE) states in their guidelines for controlling street dog populations that putting down the street dogs does not work as a sustainable technique in controlling the dog population. It will have a short-term effect ,but other dogs quickly take their place. Lately, these methods are being replaced with ABC- (Animal Birth Control) programs, based on neutering of mainly female dogs, vaccinating them and releasing them back into the area where they came from to fill the ecological niche. This has proved to be an effective way of managing rabies.

Dog bite prevention

The guidelines for dog bite prevention include for instance, a restriction of particularly high- risk dog

breeds, education of dog-owners and adequate animal training. Educating children about dog bite prevention appears to have a positive outcome. In spite of this, it may be disputed whether educational interventions have an impact on the behavior of children when presented with a dog or if they only improve children's ability to give a correct answer when asked on the matter.

In 2000, Chapman undertook a study in Australia where children were given an interactive lecture on safe dog behavior. Seven to 10 days post-intervention, participants were presented with an unknown dog unaware that they were being filmed by the research team. Results showed that children who had taken part of the intervention showed significantly safer behavior compared to children in the control schools.

This indicates that educational efforts could be helpful in improving and promoting safe interaction with dogs among children on a short term basis.

Interventions in dog populations might also have a positive effect on reducing the dog bite numbers. In a study in Jaipur a decline in dog bites was associated with a sterilization program of female dogs which is implemented by Ahmedabad Municipal Corporation, too. The reduction in dog bites was thought to depend on firstly less maternal protective behavior among the dogs. Secondly, the reduced number of fertile animals in the dog population itself caused less territorial fights among the dogs, less fights over females and a total decline in the size of the dog population.

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