

## ORIGINAL ARTICLE

# Clinical Profile and Factors associated with Hydrophobia Cases admitted in Isolation ward at Tertiary Care Hospital, Ajmer

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### Abstract

**Introduction:** Rabies is a highly fatal and completely preventable viral disease of the central nervous system occurring in more than 150 countries. It is primarily a zoonotic disease transmitted by bites and licks of rabid animals. Although a number of wild animals serve as natural reservoir, rabies in dog is the main source of infection in most cases of developing rabies.<sup>1</sup> Global elimination of the disease is feasible through mass vaccinations of dogs, which transmit most rabies cases to humans. Though 100% fatal, rabies can be easily prevented by proper post exposure - thorough washing of wound by soap and water, local administration of anti-rabies immunoglobulin and active immunisation by anti-rabies vaccine (ARV).<sup>7</sup> Misconception, cost, non-availability contributes for poor management of animal bites cases. With this background the present study is carried out with an objective to know the profile of hydrophobia cases attending Tertiary care Hospital, Ajmer. **Method and Materials:** The study period for collecting data from January 2016 to October 2018. The data included personal information, site of bite, category of the wound, biting animal and post exposure prophylaxis status. **Observation and Result:** The observation was done on socio-demographic profile, site of bite, grade of bite, types of animal bites, post-exposure prophylaxis, clinical presentation of hydrophobia, time interval between bite and death of study subjects and results were recorded year wise. **Discussion:** There is a contrast between authors that majority of human rabies cases were either males or children. The lower leg represented the commonest bite location. Highest incidence of bites were in Grade III category and was most commonly observed in children (<15 yrs). Most patients did not receive proper rabies vaccination post exposure. **Conclusion and Recommendation:** Majority of the cases had not received any PEP either due to ignorance or due to lack of access. Increasing awareness in the community regarding animal bites and adequate management with PEP can prevent rabies as per following National and WHO approved guidelines.

### INTRODUCTION:

Rabies is a highly fatal and completely preventable viral disease of the central nervous system occurring in more than 150 countries and territories. It is primarily a zoonotic disease transmitted by bites and licks of rabid animals.

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Although a number of wild animals serve as natural reservoir, rabies in dog is the source of infection in around 99% of the cases of human rabies.<sup>1</sup> Rabies in man is called hydrophobia. The disease begins with prodromal symptoms such as headache, malaise, sore throat and slight fever lasting for 3-4 days. About 80% of patients complain of pain or tingling at the site of the bite.<sup>1</sup> Hydrophobia can be defined as a morbid dread of water, extreme fearfulness of swallowing liquids that is symptomatic of rabies and results from painful spasms of the throat.<sup>2</sup> Rabies victims at first feel a general malaise and restlessness, then grow increasingly agitated with painful spasms of the throat. Soon they cannot drink, which is why rabies has been called “hydrophobia.”<sup>2</sup> This disease is present on all continents, except Antarctica, with over 95% of human deaths occurring in the Asia and Africa regions.<sup>3</sup> Global elimination of the disease is feasible through mass vaccinations of dogs, which transmit 95% of rabies cases to humans. Despite this, an estimated 59,000 people die from rabies across the world each year, with around 90% of these deaths occurring among children living in rural areas in Africa and Asia. In India alone, estimates range between 18,000 to 20,000 human deaths from rabies each year. Many of these victims are children, often dying outside of medical facilities – meaning their deaths go unrecorded.<sup>4</sup> The reason behind such a large number of rabies death are generally lack of awareness of preventive measures, insufficient dog vaccination, uninterrupted growth of canine population, lack of knowledge about importance of wound management, poor knowledge on post- exposure prophylaxis and also non-compliance to the vaccination schedule.<sup>5,6</sup> Though 100% fatal, rabies, following bite of suspected rabid animal can be easily prevented by proper post exposure treatment which includes three things - thorough washing of wound by soap and water, local administration of anti-rabies immunoglobulin and active immunisation by anti-rabies vaccine (ARV).<sup>7</sup> The factors like ignorance, myths and misconception, cost, non-availability contributes for poor management of animal bites cases despite the clear history of animal bite and availability of PEP, with this background the present study is carried out with an objective to know the profile of hydrophobia cases attending Tertiary care Hospital, Ajmer.

**METHOD AND MATERIAL:**

The present hospital based descriptive study was conducted at Isolation ward of Jawaharlal Nehru Medical College, Ajmer. A total of 42 hydrophobia cases were reported at the ward from Jan 2016 to Oct 2018 for palliative treatment. Information regarding socio-demographic variables was recorded. Information of 2018 was gathered from patients’ attendants, case papers and wound assessment after obtaining informed consent from them. Previous data (2016, 2017) was obtained from hospital records. The collected data included personal information, site of bite, category of the wound (Wound Category as per National Guidelines), biting animal and Post exposure prophylaxis status. The data was analyzed using descriptive statistics.

**OBSERVATION:**

**Table-1: Socio- demographic profile of study subjects**

Variable	Rural							
	YEAR 2016		YEAR 2017		YEAR 2018		TOTAL	
	N	%	N	%	N	%	N	%
< 15	04	40	06	42.85	04	44.44	14	42.42
15-29	02	20	01	7.14	01	11.11	04	12.12
30-44	01	10	01	7.14	00	00	02	6.06
45-59	01	10	02	14.28	01	11.11	04	12.12
>60	02	20	04	28.58	03	33.33	09	27.27
<b>TOTAL</b>	<b>10</b>	<b>100</b>	<b>14</b>	<b>100</b>	<b>09</b>	<b>100</b>	<b>33</b>	<b>100</b>

Variable	Urban							
	YEAR 2016		YEAR 2017		YEAR 2018		TOTAL	
	N	%	N	%	N	%	N	%
< 15	02	66.67	03	75	01	50	06	66.67
15-29	00	00	01	25	01	50	02	22.22
30-44	00	00	00	00	00	00	00	00
45-59	00	00	00	00	00	00	00	00
>60	01	33.33	00	00	00	00	01	11.11
<b>TOTAL</b>	<b>03</b>	<b>100</b>	<b>04</b>	<b>100</b>	<b>02</b>	<b>100</b>	<b>09</b>	<b>100</b>

Variable	Rural							
	YEAR 2016		YEAR 2017		YEAR 2018		TOTAL	
	N	%	N	%	N	%	N	%
Male	08	80	11	78.57	08	88.89	27	81.82
Female	02	20	03	21.43	01	11.11	06	18.18
<b>TOTAL</b>	<b>10</b>	<b>100</b>	<b>14</b>	<b>100</b>	<b>09</b>	<b>100</b>	<b>33</b>	<b>100</b>

Variable	Urban							
	YEAR 2016		YEAR 2017		YEAR 2018		TOTAL	
	N	%	N	%	N	%	N	%
Male	02	66.67	03	75	02	100	07	77.78
Female	01	33.33	01	25	00	00	02	22.22
<b>TOTAL</b>	<b>03</b>	<b>100</b>	<b>04</b>	<b>100</b>	<b>02</b>	<b>100</b>	<b>09</b>	<b>100</b>

Table - 2: Site of bite of study subjects

SITE OF BITE	YEAR 2016		YEAR 2017		YEAR 2018		TOTAL	
	N	%	N	%	N	%	N	%
Head and Neck	03	23.07	05	27.77	01	9.09	09	21.42
Upper Extremity	04	30.76	04	22.22	2	18.18	10	23.81
Lower Extremity	06	46.15	09	50	08	72.72	23	54.76
<b>Total</b>	<b>13</b>	<b>100</b>	<b>18</b>	<b>100</b>	<b>11</b>	<b>100</b>	<b>42</b>	<b>100</b>

Table- 3: Grade of bite of study subjects

GRADE OF BITE	YEAR 2016		YEAR 2017		YEAR 2018		TOTAL	
	N	%	N	%	N	%	N	%
II	01	7.69	02	11.11	01	9.09	04	9.52
III	12	92.30	16	88.89	10	90.91	38	90.48
<b>Total</b>	<b>13</b>	<b>100</b>	<b>18</b>	<b>100</b>	<b>11</b>	<b>100</b>	<b>42</b>	<b>100</b>

Table- 4: Types of animal bites of study subjects

BITING ANIMAL	YEAR 2016		YEAR 2017		YEAR 2018		TOTAL	
	N	%	N	%	N	%	N	%
Street Dog	10	76.92	16	88.88	10	90.90	36	85.71
Cat	02	15.38	01	5.55	01	9.09	04	9.52
Monkey & other wild animals	01	7.69	01	5.55	0	00	02	4.76
<b>Total</b>	<b>13</b>	<b>100</b>	<b>18</b>	<b>100</b>	<b>11</b>	<b>100</b>	<b>42</b>	<b>100</b>

**Table- 5: Post- exposure prophylaxis taken by study subjects**

POST EXPOSURE PROPHYLAXIS	YEAR 2016		YEAR 2017		YEAR 2018		TOTAL	
	N	%	N	%	N	%	N	%
No Treatment	04	30.77	05	27.78	02	18.18	11	26.19
Partially Vaccinated	06	46.16	09	50	05	45.45	20	47.62
Anti Rabies Serum & Partial Vaccination	03	23.07	04	22.22	04	36.36	11	26.19
<b>Total</b>	<b>13</b>	<b>100</b>	<b>18</b>	<b>100</b>	<b>11</b>	<b>100</b>	<b>42</b>	<b>100</b>

**Table-6: Clinical presentation of hydrophobia in study subjects**

Symptoms	Number	Percent
Fever	33	78.57
Irritation & Pain at Site of Bite	4	9.52
Hydrophobia	39	92.85
Photophobia	3	7.14
Aerophobia	23	54.76
Noise phobia	3	7.14
Paresthesia	2	4.76
Altered sensorium	11	26.19
Abnormal behaviour	13	30.95
Neck rigidity	1	2.83
Rigidity in limbs	1	2.83
Body ache	2	4.76
Breathlessness	5	11.90
Vomiting	4	9.52
Salivation	5	11.90
Dysphagia	6	14.28

**Table-7: Time interval between bite and death of study subjects**

TIME INTERVAL	NUMBER	PERCENTAGE
Less than 1 month	15	35.71
1 – 3 months	22	52.38
3 – 6 months	05	11.90

**Table-1** shows that out of total no. of cases (42) which were observed in a span of 3 years i.e. 2016, 2017 & 2018, maximum of the cases were the residents of rural area (33/42, 78.57%) and the rest (09/42, 21.43%) of urban area. Highest no. of cases were observed in the age group <15 years that is 4(40%), 6(42.85%) & 4(44.44%) in the years 2016, 2017 & 2018 respectively. Similar trend was seen in the cases from urban area as well which was 02(66.67%), 03(75%) and 01(50%) in the years 2016, 2017 & 2018 resp. Maximum no. of the cases were males (27/33, 81.82%) from rural area as well as from urban area 7/9 (77.78%). Females were 6/33 (18.18%) from rural area & 2/9 (22.22%) belonged to urban area.

**Table-2** shows that lower extremity was the most common site exposed to animal bite 54.76% followed by upper extremity (23.81%) and Head & Neck region i.e. 21.42%. No single case was observed in the trunk & back region.

**Table-3** shows that out of 42 animal bite cases, 38 (90.48%) were grade III bites and only 4 (9.52%) case had grade II bite.

The main animal responsible for bites were Street dogs (85.71%) followed by cats (9.52%), Monkey and other wild animals (4.76%) as observed in **Table-4**.

In this study it was observed that only 31 patients (73.81%) had taken the first dose and the remaining 11 (26.19%) had not taken the first dose itself. Only 11 (26.19%) among those who had taken their first doses had taken ARS (Anti Rabies Serum) but were partially vaccinated. Not a single case had taken the full vaccination as observed in **Table-5**.

Fever was the most frequent prodromal symptom (33, 78.57%). Signs of Autonomic Nervous System dysfunction included Hydrophobia (92.85%) & Hyper-salivation (11.9%) were observed. Altered sensorium (26.19%) & abnormal behaviour (30.95%) were also seen, which are the signs of CNS involvement.

**Table-7** shows that in maximum number of cases, (52.38%) the time interval between bite and death was 1-3 months. In 15 (35.71%) cases the time interval was < 1 month. Attendants of 37 (88.09%) cases took their patient back at home against the medical advice when they came to know about the prognosis of the disease. Only 05 (11.90%) patients stayed back at hospital till they died.

In-depth interview revealed 8/11 (72.72%) cases took their bite casually and thought bites of cats and dogs to be inconsequential. 7/11 (63.63%) cases were unaware of free of cost availability of PEP in Government Hospitals. Non availability of anti-rabies serum (RIG) in rural areas was a barrier for 72.7% of the cases. The attendants of the cases were unaware of doses, site of infection, benefits of immediate wound washing, necessity of local antiserum administration.

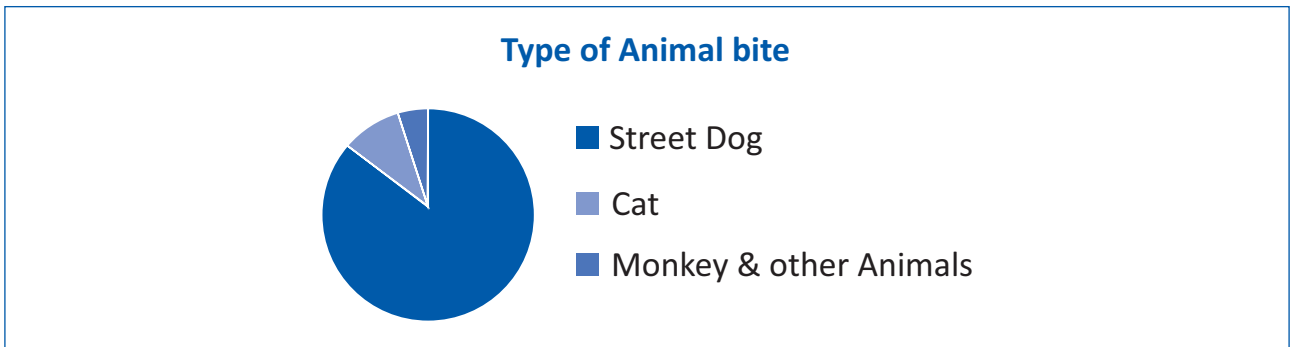


Chart - Types of Animal Bites

**DISCUSSION:**

Majority of the human rabies cases were males. This is similar to observations made in other studies.<sup>8,9,10</sup> Children aged less than or equal to 15 years constituted 32.5% which is maximum of the cases, that is similar to the observations made by Satapathy DM et al<sup>9</sup> which had observed that majority of the rabies victims were children in contrast with some of the authors in previous studies at different places in India.<sup>9,10</sup> The present study revealed that the majority of the cases were from rural areas. Similar observations were made in studies conducted at Lucknow<sup>9</sup> and Amritsar.<sup>10</sup> In this study, the lower leg represented the commonest bite location. This is probably because of the fact that children and adults might use a leg to tease or abuse animals, separate fighting dogs or defend against dog attacks, resulting in more bites on the extremities. Significantly highest incidence of bites were in Grade III category and it was most commonly observed in children (<15 yrs). Again, the possible reason could be that these children show an explorative and playful behaviour with animals, but are unwary about bite risk and cannot defend themselves when attacked, resulting in more severe injury.<sup>11</sup> Animal bites (mainly dog bites) are a

common occurrence in many developing countries across the globe. In the present study majority of cases 85.71% presented with history of dog bite. Behera TR et al<sup>12</sup> in their study in Berhampur, Orissa reported that among animal bite cases attending Anti Rabies Clinic, 84.5% were victims of Dog bite. Renu Bedi<sup>13</sup> et al also reported 90.7% of animal bites were due to dogs. Manish Kumar et al Lucknow<sup>14</sup>, also reported that 94.5% of animal bites were due to dogs. The present study illustrates that most patients 80% did not receive proper rabies vaccination post exposure out of these 42.5% were partially vaccinated and 37.5% who did not receive any vaccination at all, while Manish Kumar<sup>14</sup> reported 85% of cases who did not receive proper rabies vaccination and Chhabil Kumar et al<sup>15</sup> illustrated that most patients (76.7%) did not receive proper rabies vaccination or passive immunization post exposure. In the present study hydrophobia was observed in 92.85% of cases same as the observations made by Chhabil Kumar et al<sup>15</sup> where 81.3% of cases showed this symptom. The most frequent prodromal symptom reported in current study was fever (78.57%), altered sensorium (26.19%) & abnormal behaviour (30.95%) similar to the study done by Chhabil Kumar et al<sup>15</sup>.

## CONCLUSION AND RECOMMENDATION

From the present study it is evident that the suspected human rabies cases admitted had not received complete schedule of post exposure prophylaxis. The high mortality in India due to rabies is attributed to lack of awareness of PEP for animal bites and also lack of access to vaccine and immunoglobulin. Our study also shows that majority of the cases had not received any PEP, either due to ignorance or due to lack of access can only be speculated. Therefore, we can conclude that lack of awareness, ignorance, myths, misconceptions, cost, non-availability and poor management leads to the development of Hydrophobia after animal bite. Increasing awareness in the community regarding animal bites and adequate management with post exposure prophylaxis can prevent Rabies.

## REFERENCES

1. K.Park, *Park's textbook of preventive and social medicine*. 24th edition. Bhanot publication;2016: 294- 299.
2. <https://www.merriam-webster.com/dictionary/hydrophobia> accessed on 29 May, 2018.
3. WHO factsheet- Rabies- <http://www.who.int/en/news-room/fact-sheets/detail/rabies>. Accessed on 30 May 2018.
4. *Eliminating rabies in India through awareness, treatment and vaccination*. <http://www.who.int/news-room/feature-stories/detail/eliminating-rabies-in-india-through-awareness-treatment-and-vaccination>. Accessed on 30 May 2018.
5. WHO. *4India's ongoing war against rabies*. WHO.World Health Organization; 2011. Available at:<http://www.who.int/bulletin/volumes/87/12/09-021209/en>. Accessed on 30 May, 2018.
6. Ichhpujani RL, Chhabra M, Mittal V, Bhattacharya D, Singh J, Lal S. Knowledge, attitude and practices about animal bites and rabies in general community--a multi-centric study. *J Commun Dis*. 2006;38(4):355-61.
7. National Institute of Communicable Diseases. *National Guidelines for Rabies Prophylaxis and Intra-dermal Administration of Cell Culture Rabies Vaccines*. 2007;27.
8. Satapathy DM, Sahu T, Behera TR, Patnaik JK, Malini DS. Socio-clinical profile of rabies cases in anti-rabies clinic, M.K.C.G. medical college, Orissa. *Indian J of Public Health* 2005;49(4): 241-242.
9. Singh MK, Singh JV. Profile of hydrophobia cases admitted to infectious diseases hospital, CSM medical university, Lucknow. *Indian J of Community Health*, July 2008- June 2009; 20,21 (2, 1):7

10. *Dahliwal DS, Dahliwal RS. An analysis of 51 cases of hydrophobia at Amritsar (Punjab). Indian J of Community Medicine 2000; 25(3):118- 120.*
11. *Moumita Samanta, Rakesh Mondal, Ankit Shah, Avijit Hazra, Somosri Ray, Gautam Dhar. Animal Bites and Rabies Prophylaxis in Rural Children: Indian Perspective, Medical College Kolkata, West Bengal. Journal of Tropical Pediatrics, 2016 Feb; 62(1): 55–62.*
12. *T R Behera, DM Satpathy, RM Satpathy and A. Sahu: Profile of animal bite cases attending the ARC of M.K.C.G. Medical College hospital, Berhampur (Orissa) APCRI Journal, Vol IX, Issue II, January 2008, 19-23.*
13. *Renu Bedi et al Profile of animal bite cases attending the ARC of JLN Medical College and Hospital, Ajmer APCRI Journal Vol VIII, Issue 1, July 2006, 28-30.*
14. *Manish Kumarsingh, J V Singh. Profile of hydrophobia cases admitted to infectious disease hospital, CSM Medical University Lucknow IJCH, Vol.20- no. 2, vol 21, no 1, July 2008-june 2009*
15. *Chhabil Kumar, Amita Kashyap: Clinical Profile of Hydrophobia cases and factors associated for not taking Post Exposure prophylaxis, SMS Hospital Jaipur, Vol XVI, Issue I, July 2014, 12-15.*