

Management, Post-exposure Prophylaxis and Treatment of Dog Bites and Rabies Cases in a Tertiary Care Hospital

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Rabies is usually a disease of animals, but it spreads over humans when an infected animal, particularly dog expose its saliva containing rabies virus into a scratch or other wounds of a person during their bites. Although, clinical forms of rabies cases are potentially fatal, human rabies can be effectively treated if the exposure is recognized before the symptoms develop. Appropriate post-exposure prophylactic measures, if employed in due time to individuals exposed to rabies virus will prevent the disease from occurring. A prospective observational study was carried out for a period of 1 month in a total of 54 patients at Government General Hospital, a tertiary care hospital located at Kakinada, Andhra Pradesh. The data collected was analyzed to know the prophylactic measures under taken for the management and treatment of patients based on their demographic profile and type of exposure (bites/rabies). The study results showed that the incidence rate is higher in male than female in both the types of exposures. Results clearly indicate that vaccines, mostly of human origin are usually administered in combination (RIG+ARV) for the prophylaxis of the disease with whole success, and drugs from several therapeutic classes were administered as multidrug regimens for the symptomatic treatment complications associated with post-exposure rabies illness.

Key words: Dog bites, Rabies, Post-exposure, Prophylaxis.

Rabies is a serious illness that is often life-threatening once the clinical signs develop¹. In fact, it is a neurological disease caused by the rabies virus, a neurotropic virus² (genus: *Lyssavirus*, family: *Rhabdoviridae*) that affects the central nervous system, thus causing encephalopathy and, ultimately death³. Humans are usually infected when they are bitten by an infected animal, particularly dog, or exposed to its saliva or neurological (CNS) tissues². Although domestic animals account for less than 10 percent of reported cases annually, most human exposures occur as a result of exposure to domesticated animals³. Today, rabies is estimated to cause at

least 55 000 deaths per year worldwide, about 56% of which occur in Asia and 44% in Africa, particularly in rural areas on both the continents⁴. Clinically, the disease is manifested as an encephalitic (furious) form with hyper excitability, autonomic dysfunction and hydrophobia, or a paralytic (dumb) form characterized by generalized paralysis³. Although, clinical forms of rabies cases are potentially fatal, human rabies can be effectively treated if the exposure is recognized before the symptoms develop. Appropriate post-exposure prophylactic measures, if employed in due time to individuals exposed to rabies virus will prevent the disease from occurring. According to WHO guidelines^{5,6,7}, post-exposure treatment of rabies includes primarily wound treatment i.e., immediate washing and flushing of wounds with soap and water, or water alone, disinfecting with ethanol (700 ml/l) or iodine (tincture or aqueous

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solution); followed by rapid administration of purified immunoglobulin (RIG) and modern (RV) vaccine. The prophylactic measures described above are to be rigidly followed as per the following modalities (categorized depending upon the type of exposure/bite) as recommended by WHO in order to assure prevention of infection in almost all circumstances. For Category III type of exposure which includes single or multiple transdermal bites, scratches or contamination of mucous membranes with saliva (i.e. licks), RIG (Rabies Immune Globulin) plus RV (Rabies Vaccine) are recommended to be administered; for category II which includes minor scratches or abrasions without bleeding or licks on broken skin and nibbling of uncovered skin, RV (Rabies Vaccine) alone; and for category I which includes touching, feeding of animals or licks on intact skin, no exposure, so, no treatment is required.

The study aimed at assessing the measures undertaken for the management and post-exposure prophylaxis of dog bites or rabies cases, and also to know about the treatment status of such patients through evaluation of prescriptions, which may serve as basis for rational use of drugs and also for cost effective medical care of patients.

MATERIALS AND METHODS

The study was carried out at Government General Hospital, a tertiary care hospital located at Kakinada, Andhra Pradesh. A prospective observational study was under taken for a period of 1 month (June 2011) in a total of 54 patients by reviewing the prescriptions and inpatients case sheets. Total patient population were studied in two therapeutic groups, 30 patients (in the age group between 01-80 years) who attended hospital due to dog bites were included in one group, and 20 patients (in the age between 10-70 years) who admitted into hospital with chief complaints of post-exposure rabies complications were included in another group. The details of patient related information such as age, sex and body weight including medical history were recorded and therapeutic data such as drugs prescribed, doses, dosing frequency, duration and route of administration including laboratory data (biochemical profile) were obtained by reviewing

prescriptions and treatment charts. Data for the present study was collected on a standard documentation form which contained inpatient number, date of admission, reason for admission, site of bite and date of discharge etc. Patients in each group were divided into different categories according to their age and sex. The data collected was analyzed to know the prophylactic measures taken for the management and treatment of patients based on demographic profile and type of exposure (bite/rabies) of patients.

RESULTS AND DISCUSSION

A total of 54 prescriptions were studied and critically analyzed. It was found that among 54 patients, 30 patients were attended hospital due to moderate to severe dog bites (single/multiple) and rest of the population i.e., 24 patients were admitted into hospital with chief complaints of post-exposure rabies complications.

During the survey, the year wise dog bite and rabies cases since 2007 to 2011 were collected, and presented in table 1.

The study results depicted in Table 2 showed that among 30 patients (in first group), male patients were 19 (63.33 %) and female were 11 (36.66 %) respectively. Results clearly indicate that male patients were exposed more than that of female patients. The incidence rate is highest in patients with age group of 21-30 (26.34%) and lowest in age group of 11-20 (5.26%), 61-70 (5.26%) and 71-80 (5.26%).

The details of types of exposure and post-exposure measure undertaken for the prophylaxis of rabies from occurring are shown in Table 3. The rate of exposure is higher in male than

Table 1. Year wise dog bite and rabies cases[@]

Year	No. of patients attended hospital due to dog bites	No. of rabies patients diagnosed
2007	4017	9
2008	4827	7
2009	16217	6
2010	22119	14
2011	14196	8

[@] Government General Hospital, Kakinada

female in both category III and category II types of exposure. It is clearly understood from the result that vaccines, mostly of human origin are usually administered in combination (RIG + ARV) for the prophylaxis of the disease with whole success.

About 24 rabies patients (in second group) were studied for post-exposure symptoms of rabies like difficulty in swallowing, breathing, hydrophobia, aerophobia etc. along with post - exposure complications like cardio respiratory

arrest. The previous medication history, diagnostic and biochemical profile, drugs used for the treatment of such post-exposure rabies illness and complications were also recorded. The data recorded in table 4 depicts that among 24 patients (in second group), male patients were 19 (79.16 %) and female were 11 (20.83 %) respectively. Results clearly indicate that the male were highly exposed to rabies attack as compared to female. The incidence rate is highest in patients with age group

Table 2. Age wise distribution of patients attended hospital due to dog bites[#]

Age in years	Male		Female		Total	
	N	%	N	%	N	%
01-10	02	10.53	02	18.20	04	13.33
11-20	01	05.26	02	18.20	03	10.00
21-30	05	26.34	03	27.29	08	26.66
31-40	03	15.78	01	09.10	04	13.33
41-50	03	15.78	01	09.10	04	13.33
51-60	03	15.78	02	18.20	05	16.66
61-70	01	05.26	-	-	01	03.33
71-80	01	05.26	-	-	01	03.33
Total	19	63.33	11	36.66	30	100.0

[#] No. of patients studied: 30

Table 3. Types of exposure and post-exposure prophylaxis of dog bites

Type of exposure	No. of patients		Type of vaccine administered	No. of patients
	Male	Female		
Category III(multiple, severe)	15	07	ARV + RIG (human)	21
Category II(multiple, moderate)	04	01		
Category III(single)	01	02	ARV + RIG (animal)	09

Table 4. Age wise distribution of patients admitted into hospital due to rabies[§]

Age in years	Male		Female		Total	
	N	%	N	%	N	%
11-20	05	26.34	00	00	05	20.83
21-30	01	05.26	02	40.00	03	12.50
31-40	07	36.84	01	20.00	08	33.33
41-50	02	10.53	01	20.00	03	12.50
51-60	03	15.78	01	20.00	04	16.66
61-70	01	05.26	00	00	01	04.16
Total	19	79.16	05	20.83	24	100.0

[§]No. of patients studied: 30

Table 5. Drug usage in post-exposure rabies

S. No.	Drug prescribed ^s	Class of the drug	No. of prescriptions
1	Ceftriaxone	Antibiotic	24
2	Diazepam	Hypnotic	22
3	Ranitidine	H ₂ -antagonists	20
4	Pantoprazole	Proton-pump inhibitor	22
4	Hydrocortisone	Steroid	15

[#]Total no. of prescriptions analyzed: 24

^s Drugs (only few are mentioned) are given by injection

of 31-40 (26.34%) and lowest in age group of 21-30 (5.26%), and 61-70 (5.26%).

The prescribing pattern of drugs usage in patient diagnosed with rabies complications were studied for each patient individually and data obtained is displayed in table 5. Drugs were administered as multidrug regimen in form of injections for the treatment of post-exposure rabies without any cure. Drugs from several therapeutic classes were given to patients in right dose to get relief from symptomatic illness of rabies.

CONCLUSION

This study focuses the significant assessment and concomitant monitoring of prescribing practices of prescribers to achieve rational and cost effective medical care avoiding unnecessary use of antibiotics and also to minimize the prescription errors.

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