

Original Article

Seasonal Trend of Animal Bite cases reporting at Anti Rabies Clinic (ARC) Of M.K.C.G. Medical College, Berhampur, Orissa.

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Abstract

Research Question: What is the seasonal trend of animal bite cases at ARC of MKCG Medical College, Berhampur, Orissa?

Objectives: 1) To know the type of animal bites attending the ARC.

2) To study the seasonal trend of different animal bites.

Study Setting: Anti Rabies Clinic of MKCG Medical College, Berhampur, Orissa.

Period of Study: January 2000- December 2003 (4 Years)

Type of study: Hospital record based retrospective study.

Result:

A total of 21,000 animal bite cases reported to the ARC during the study period of 4 years (2000-2003) with an average of 437 per month. Average percentage of cases reported due to Dog bite is 90.36%, Monkey 7.2 %, Cat 1.9% & Jackal 1.79% respectively. Among those, suspected rabid animal bites are 8.79% and unprovoked bites are 23.74 %. Average suspected rabid animal bite is higher in April (10.2%) followed by August (9.2%), September (9.2%) & May (9.0%). High attendance of animal bite cases reported at ARC during winter season (October- February) with peak in February (average of 541 cases per month) and lower during summer and Rainy season with dip in August. This pattern of reporting is probably due to the fact that winter is the breeding season for animals & the dogs lactate their puppies & bite humans in apprehension to protect their pups and during summer because of more outdoor activities by humans even during night may be the cause of more animal bite reported during these seasons.

Key Words: Rabies, Animal bite; Dog bite; Monthly trend of animal bites; Seasonal trend of animal bites.

Introduction

“Rabies” is derived from the Sanskrit word 'Rabhas' which means, "to do violence", whereas some believes its origin from the Latin word "rabere" to rave, meaning "in delirium". Rabies is acute and fatal viral encephalitis caused by a single stranded RNA virus belonging to genus Lyssavirus type I, of family Rhabdoviridae. It is primarily a zoonotic disease of warm blooded animals particularly carnivorous, such as Dogs, Cats, Jackals, Wolves; mostly transmitted to man by bites or licks of infected animals.¹

Rabies is widely distributed throughout the world and is present in all continents. The number and size of rabies-free countries, territories, or areas are small compared to those of rabies-affected areas.

About 95% of human deaths due to rabies occur in Asia and Africa. 30% to 60% of the victims of dog

bites are children under the age of 15 years. Most human deaths follow a bite from an infected dog. Poor people, especially children, are at highest risk of dog rabies. Dog rabies is responsible for more than 14 million courses of post-exposure treatment to prevent the onset of disease. One Asian dies due to rabies every 15 minutes.²

Rabies is common in most parts of India except Andaman, Nicobar and Lakshadweep Islands due to sea acting as a barrier. The dog population of India is around 25 to 30 million animals. Most of these are ownerless or stray dogs. The majority of the stray dog population is found in rural areas. These dogs play a major role in the spread of rabies. Each year approximately 7 million people undergo post exposure rabies treatment after a dog bite.

The Association for the Prevention and Control of Rabies in India (APCRI) reported in 2004 that there were 20,565 reported human deaths over the period of one year. Due to mis-diagnosis and under-

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**Table I:
Year & Month-wise distribution of cases.**

Month / Year.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2000	506	581	633	452	413	379	362	387	370	352	418	482	5335
2001	482	540	458	462	406	362	305	325	354	430	448	453	5025
2002	404	486	449	431	422	368	345	411	355	371	419	523	4984
2003	756	557	551	537	389	361	420	294	359	562	399	471	5656
Average	537	541	523	471	408	368	358	354	360	429	421	482	5252

reporting the actual number of rabies deaths is believed to be higher. The dogs and cats (98%) were largely responsible for the human mortality and the other animals were mostly from the wild viz. mongoose, fox and jackal. Majority of human rabies deaths occurred in adults, males and in poor/low income group. The stray dog problem was high (83%) and the pet dog care (35%) was not satisfactory. Nearly 96% of cases are due to bites from stray, ownerless, dogs. About 70% of the victims are children younger than 15 years of age.³

Studies had also showed that there is a particular seasonal pattern in animal bite cases.^{4,5} These studies had also shown that younger age populations were usually exposed to animal bites. Also the management of Post Exposure Prophylaxis after animal bite is costly, and in India the patient has to bear nearly half of the financial burden for this purpose.

The present study was carried out with the objectives of knowing the type of animal bite cases, the monthly & seasonal trend of animal bites.

Materials and methods

The present Hospital record based study was carried out at the ARC, MKCG Medical College, Berhampur, Orissa. A total number of 21,000 cases of animal bites attended the ARC for treatment during the period of January 2000 to December 2003 (4 years). The present study was carried out with the objectives of (1) to know the type of animal bites attending the ARC (2) to study the seasonal trend of different animal bite cases.

Result

It was observed that total 21,000 cases reported the ARC during the study period of 4 years with the average 437 per month. Increased

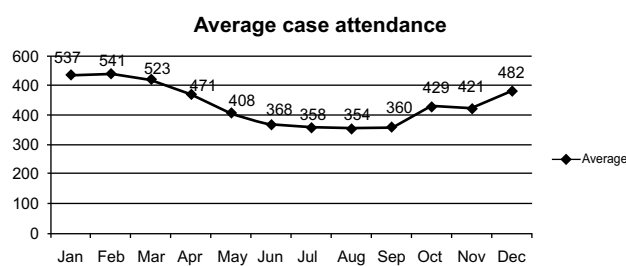


Figure I: Month wise average case attendance

reporting of animal bite cases was observed during winter season (November to February) with peak average attendance in February. (Figure I)

Average percentage of cases reported due to Dog bite is 90.36%, Monkey 7.2 %, Cat 1.9% & Jackal 1.79%. Among those, suspected rabid animal bites are 8.79% and unprovoked bites are 23.74 %. Unprovoked bites are more during summer season and second peak during early winter season (November) with a dip in October. Rabid animal bite cases observe a sine like curve with crests in April, September & November. Monkey bite cases reported shows a rise with plateau during late summer and early rainy season (June to October). Jackal and Cat bites cases reported shows a similar trend of lower reporting during winter and higher in rainy seasons.

Table III shows an average percentage of unprovoked bites are higher in April (27.2%), May (25.7%) & January (25.5%) and lowest in October (19%). During summer months (March, April, May & June), more percentage of unprovoked bites are reported in April (27.2%) with highest of 35% in April 2000 and lowest of 19% in April 2003, this shows a decreasing trend with progress of time.

During rainy season (July, August, September & October), average percentage of unprovoked bites are higher in July (24%) followed by August (23.5%).

Table II:
Monthwise distribution of different type of animal bite cases.

Type of Animal bite Months	Monkey (%)	Cat (%)	Jackal (%)	Dog (%)	Rabid (%)	Unprovoked (%)
Jan	5.5	1.95	1.6	90.36	8.87	25.5
Feb	7.6	1.37	0.67	92.7	8.5	24
Mar	5.75	1.15	0.4	91.55	8.37	23.75
Apr	6.25	1.55	0.65	88.83	10.75	27.25
May	6.25	2.52	2.4	87.96	9	25.75
Jun	7.1	2.07	2.87	86.65	7.75	23.25
Jul	9.1	2.25	2	82.25	7.87	24.12
Aug	11.25	3.25	3.25	85.68	9.25	23.5
Sep	10.4	2.12	1.8	89.35	10.75	23.25
Oct	6.5	2.15	2	90.73	7.87	19
Nov	5.6	1.8	1.87	91	9.25	24.75
Dec	5.3	1.7	2	89.11	7.25	20.75
Average	7.2±1.9	1.9±0.56	1.79±0.86	90.36	8.79±1.1	23.74±2.2

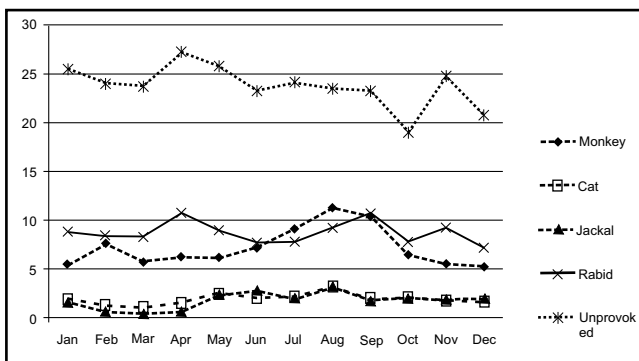


Figure II: Monthwise distribution of animal bite cases

During the month of July, highest percentage was observed in the year 2000 and lowest in the year 2003, showing a decreasing trend.

During winter season (November, December, January & February), average percentage of unprovoked bites are maximum in the month of January (25.5%) and minimum in the month of December

(20.7%). In January 2002 maximum percentage (34%) of unprovoked animal bites were observed.

Table IV shows highest percentage of suspected rabid animal bites during April (10.7%) and more rabid animal bite cases reported in summer followed by winter and rainy season. In the month of April, more percentage of suspected rabid animal bite is observed in the year 2002 (13%) and least in the year 2003 (8%). During rainy season more percentage of suspected rabid animal bites reported in the months of August and September especially in 2000 & 2001. During August and September more reported in 2000 and lowest in 2003 which shows a decreasing trend.

During summer season, more contribution to total cases observed in June (2.7%) followed by May (2.4%). The average percentage increases during May and June. More percentage recorded in June 2003. The trend of Jackal bite increases from 2000 to

Table III:
Year and Month-wise distribution of unprovoked animal bite cases.

Month / Year	Jan (%)	Feb (%)	Mar (%)	Apr (%)	May (%)	Jun (%)	Jul (%)	Aug (%)	Sep (%)	Oct (%)	Nov (%)	Dec (%)
2000	25	28	29	35	30	25	30	26	27	21	29	19
2001	20	18	29	29	27	28	24	28	24	29	25	20
2002	34	23	18	26	25	24	22	21	23	16	24	24
2003	23	27	19	19	21	16	20.5	19	19	10	21	20
Average	25.5	24	23.7	27.2	25.7	23.2	24.1	23.5	23.2	19	24.7	20.7

Table IV :
Year and Month-wise distribution of suspected rabid animal bite cases.

Month / Year	Jan (%)	Feb (%)	Mar (%)	Apr (%)	May (%)	Jun (%)	Jul (%)	Aug (%)	Sep (%)	Oct (%)	Nov (%)	Dec (%)
2000	7.5	9	8	12	8	4	7.5	10	12	8	11	7
2001	9	8	11	10	12	14	6	12	11	12	8	8
2002	8	7	7.5	13	9	7	8	6	11	7	9	7
2003	11	10	7	8	7	6	10	9	9	4.5	9	7
Avg.	8.9	8.5	8.4	10.7	9	7.7	7.9	9.2	9.2	7.9	9.2	7.2

Table V :
Year and Month-wise distribution of Jackal bite cases.

Month / Year	Jan (%)	Feb (%)	Mar (%)	Apr (%)	May (%)	Jun (%)	Jul (%)	Aug (%)	Sep (%)	Oct (%)	Nov (%)	Dec (%)
2000	1	0.3	0.2	0.5	2	-	4	3	1.3	2	3.5	4
2001	4	2	1	0.6	3	-	2	4	3	2	1.5	1
2002	0.5	0.2	0.4	0.5	1	2	1	3	1	4	1	1
2003	1	0.2	0	1	3.6	3.5	1	3	2	0	1.5	2
Average	1.6	0.67	0.4	0.65	2.4	2.7	2	3.2	1.8	2	1.9	2

Table VI :
Year and Month-wise distribution of Cat bite cases.

Month / Year	Jan (%)	Feb (%)	Mar (%)	Apr (%)	May (%)	Jun (%)	Jul (%)	Aug (%)	Sep (%)	Oct (%)	Nov (%)	Dec (%)
2000	2	1	1	1	2.5	1.3	2	2	3	1.4	2	2
2001	1.5	2	0.6	1.2	2	1	3	4	1.5	3	2	2
2002	3	1	1	2.5	3	2	1	3	2	3	1	1
2003	1.3	1.5	2	2	2.6	4	3	4	2	1.2	2.2	2.1
Average	1.9	1.4	1.1	1.5	2.5	2.1	2.3	3.2	2.1	2.1	1.8	1.7

Table VII :
Year and Month-wise distribution of Monkey bite cases.

Month / Year	Jan (%)	Feb (%)	Mar (%)	Apr (%)	May (%)	Jun (%)	Jul (%)	Aug (%)	Sep (%)	Oct (%)	Nov (%)	Dec (%)
2000	6	11	7	7	6	8.4	11	11	11	7	9	6
2001	6	5	5	5	7	5	9	8	6.5	6	4	5
2002	4	6	5	6	5	7	8	10	12	8	4	6
2003	6	8.5	6	6	7	8	8.5	16	12	5	5.5	4.2
Average	5.5	7.6	5.7	6.2	6.2	7.1	9.1	11.2	10.4	6.5	5.6	5.3

2003 during summer, probably due to deforestation, more access of people to forest and vice versa.

During rainy season percentage of Jackal bite decreases and highest is observed in mid of season (August: 3.2%). During July, the percentage of bite decreases from the year 2000 to 20003 but in August it is almost stable, increasing trend is noticed in September and October.

During winter a decreasing trend is observed. Almost 2% of total cases are observed in November

and December. The percentage of jackal bite decreases from the year 2000 to 2004 during November and December.

More Cat bite cases are reported in rainy season from July to October. During summer season the number of cat bite increases with May (2.5%) & June (2.1%). The trend of cat bite increases in subsequent years (Maximum in 2003). This may be probably due to more cat are taken as pet by people.

During rainy season, maximum percentage of cat bite is observed in August (3.2%) with approx 2.1%

in remaining rainy season. The trend fluctuates during July with an increase during 2002-2003. The trend increases in August and September and decrease in the month of October.

During winter season, more cases are observed in January with almost equal with November (1.8%), December (1.7%) and lowest in late winter (February, 1.4%). It is observed that almost constancy is maintained during subsequent years except a dip in the year 2002.

Monkey bites are higher in July to September (Rainy season) with a peak in August.

During summer season (March to June) number of cases increased from March to June with peak in June (7.1%), increasing trend more observed in month of June.

During winter season February (7.6%) accounts more number of cases while remaining months have an average of 5.5%, increasing trend observed in winter season with a dip in 2001.

Discussions

Dog bite cases are the major reason for reporting to the anti rabies clinic of any institution. In our study dog bite cases accounted for 90.36% which correlates other findings. At SCB Medical College, Cuttack of our State, majority of attendance at ARC is due to the dog bites (85.7%) followed by monkey bites (9.1%) and cat bites (4.8%).⁴ High attendance of animal bite cases reported at ARC during winter season (October- February) with peak in February (average of 541 cases per month) and lower during summer and Rainy season with dip in August. Similar findings by Hanspal et al⁶ due to breeding season, poor visibility in morning & evening during which people can't locate the animal and may fall victim to animal bite. The similar trend of animal bites at SCB Medical College, Cuttack, Orissa was also observed in a study by M. Mohanty et al⁴ during 2007-2008 showing highest number of animal bite cases in months of January (10.6%) and February (10.9%). They suggested the reason for such finding to the fact that visibility in winter months is poor during morning & evening which could have led to more number of animal bites. The present study finding is contrary to study by Agrawal et al which shows higher incidence in summer.⁷ Vinay M et al in their study at MIMS, Mandya found maximum

number of animal bite cases during the month of April to May with an average of 10.6% of the cases per month.⁵ The observations are similar to the study by Behera TR et al at our institution during the year 2007 showing animal bite peak during winter season in January (11.7%) followed by December (9.9%) and February (9.2%).⁸ This pattern of reporting is probably due to the fact that winter is the breeding season for animals & the dogs lactate their puppies & bite humans in apprehension to protect and during summer because of more outdoor activities by humans even during night may be the cause of more animal bite reported during these seasons.

Dog bite accounts for most of the cases (90.36%) followed by Monkey bite (7.2%), Cat bite (1.9%) & Jackal bite (1.79%) similar to the study by TR Behera et al at our ARC of M.K.C.G. Medical college Berhampur during 2007 showing dog bite (84.5%) followed by monkey bite (7.9%) & Cat bite (3.4%).⁸ A similar study at J.L.N Medical College & Hospital Ajmer by Renu Bedi et al in 2004 shows approx 90% cases were due to dogs followed by cats (6.9%), monkey (1.7%), pig, camel etc.⁹ Similar study at S.C.B. Medical College & Hospital Cuttack, Orissa by M Mohanty et al in 2007-08 shows approx 85.7% cases were due to dog bite followed by cat bite (9.1%) and monkey bite (4.8%).⁴ A similar finding was observed by Vinay M et al at ARC, MIMS, Mandya with bites due to dogs accounting to 96.3%, cat bite 2.1%, monkey bite 0.2%.⁵

Among all types of animal bite cases attending the ARC, suspected rabid animal bite are 8.79% and unprovoked bite for 23.74%. Average suspected rabid animal bite is higher in April (10.2%) followed by August (9.2%), September (9.2%) & May (9.0%).

Unprovoked animal bites are observed highest in April (27.2%) followed by May (25.7%) & January (25.5%). Most of unprovoked bites are observed with bite by dogs. The winter season is breeding season. The lactating dog/cat attack the human being on coming closure to them perceiving as a threat & impending danger to their puppies expressing a motherly act.

Jackal bites are higher in January (2.7%) followed by May (2.4%) & lowest in March (0.4%), probably due to the fact thinning of forest in late summer season & increased access of human being to wild animals and vice-versa. This increases the chance of

encounter with wild animal especially jackal leading to increased incidence of bites highest in late summer season & lowest in early summer season (March).

Cat bites are higher in August (3.2%) and lowest in March (1.9%) accounting an average of 1.9% of animal bites in the month.

Monkey bites are higher in July to September with peak in August (11.2%) followed by July (9.1%) and lowest in December (5.3%) accounting an average of 7.2% of animal bites in the month.

Conclusion

Among all types of animal bite cases, Dogs are the main biting animal (90.36%) and the seasonal trend shows an increase during winter & summer season, may be because of breeding, lactation & more exposure of human beings during these seasons. Similarly unprovoked bites are also observed during the same winter and summer season.

Rabies in animals is a disease of low priority both in veterinary schools and later in public health service. However following the introduction of Animal Birth Control (ABC) programme for street dogs in urban areas there is a surge in animal welfare activism and dogs have come to stay on the streets of India. The street dogs besides being reservoirs of rabies are also responsible for painful bites and sometimes even road accidents & deaths.

The authors thus suggest for preparedness by the Government and the Pharma companies in supplying modern tissue culture anti rabies vaccines &

rabies immunoglobulins during winter and summer seasons as maximum number of animal bite cases are reported during these seasons.

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Announcement

The APCRI Journal is published twice a year. Once in January and again in July. The APCRI Journal invites Contributions from the Scientific Community, on All aspects of Rabies and Related Matter, in the form of Original Articles and Review Articles, Brief Reports, Case Reports, Personal Viewpoint, Letters to the Editor, Notes and News, Your Questions and Book Review.

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