Dog Rabies in Bangkok

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Abstract

Canine rabies remains a serious public health problem in Thailand. The Queen Saovabha Memorial Institute (QSMI) of the Thai Red Cross Society is the principal rabies diagnostic center in central Thailand. The retrospective study of canine rabies cases collected between 1994 – 1999 revealed that : (1) The prevalence of rabid dogs has decreased, and was associated with an overall decrease in the number of animals submitted for examination. However, the percentages of dogs with positive Fluorescent antibody test (FA) remained the same at approximately 40 per cent. (2) About 62 per cent of rabid dogs were less than one year old. Dogs at this age are more active and most have not been adequately vaccinated. Approximately 80 per cent of rabid dogs had never been vaccinated against rabies.

Key word : Diagnosis of Rabies, Thailand

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The population of Thailand is 66 million. Human rabies deaths have decreased over the past decade. Only 57 cases (0.09 / 100,000) were found in 1998; compared with 212 cases (0.38 / 100,000) in 1989. Most human cases occurred in the central region, including Metropolitan Bangkok; and the disease is more common in males than in females. An estimated 40 per cent of cases were 5-9 years old and 92 per cent had not received rabies post exposure treatment. More than 220,000 people receive rabies post exposure treatment annually. This does not include the number from private hospitals or

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clinics, which is usually not reported. More than 96 per cent of animal rabies occurred in dogs of which 9 per cent were less than 3 months old[1].

The Queen Saovabha Memorial Institute (QSMI) of the Thai Red Cross Society is the principal rabies post exposure treatment center with an average of 8,000 human visits annually. It is also the animal rabies diagnostic center for the central region of Thailand. Nearly 30 per cent of all animals submitted for rabies diagnosis in Thailand are reported by QSMI. Thirty to thirty-five human animal bite cases are seen daily and 100 animals are examined monthly at QSMI. This is a retrospective report of the activities of QSMI which may shed some light on the nature and extent of the declining, but still significant, problem of rabies in the central region of Thailand.

MATERIAL AND METHOD

QSMI accepts live animals, carcasses and animal as well as human tissue for rabies diagnosis. All suspected rabid animals diagnosed between 1994-1999 were reported. The owners or persons who brought the animals to QSMI were interviewed by a veterinary assistant. The origin and health history of each animal were recorded, and the animal, if alive, was examined by a staff veterinarian and observed for at least 10 days. Dead animals were autopsied. The laboratory diagnosis of rabies was made by collecting impression smears from the hippocampus (2 impressions) and brain stem (4 impressions). The smears were stained with fluorescent labelled anti – rabies globulin (Becton Dickinson Microbiology Systems, 250 Schilling Circle, Cockeysville, MD 21030, U.S.A). Fluorescent antibody negative samples were injected intracerebrally into three mice as a back-up test. Mice were observed for 30 days. Data collected from 1994 – 1999 were analysed retrospectively

RESULTS

Between 1994-1999, it was found that 96 per cent of all rabies positive samples came from dogs. Among 7963 animals examined from 1994 to

Table 1. Laboratory diagnosis of rabies in animals at QSMI, 1994 - 1999.

Year	Number of animals examined	Number of positive animals	%	Number of rabid dogs diagnosed by	
				Fluorescent antibody test	Mouse inoculation test
1994	1,696	686	40.44	686	0
1995	1,443	620	42.96	620	0
1996	1,382	608	43.99	608	0
1997	1,254	469	37.40	469	0
1998	1,053	347	32.95	346	1
1999	1,135	336	29.60	336	0
Total	7,963	3,066	38.5	3,065	1

Table 2. Ownership status of rabid dogs at QSMI, 1994 - 1999.

Year	Number of dogs examined	Ownership status of rabid dogs						
		Total	Pet	%	Stray	%	Unknown	%
1994	1,406	689	362	52.54	269	39.04	58	8.42
1995	1,175	595	331	56.63	251	42.19	13	2.18
1996	1,110	580	324	55.86	248	42.76	8	1.38
1997	995	443	268	60.50	175	39.50	0	
1998	790	322	192	59.63	128	39.75	2	0.62
1999	862	322	186	57.77	129	40.06	7	2.17
Total	6,338	2,951	1,663	56.36	1,200	40.66)	88	2.98

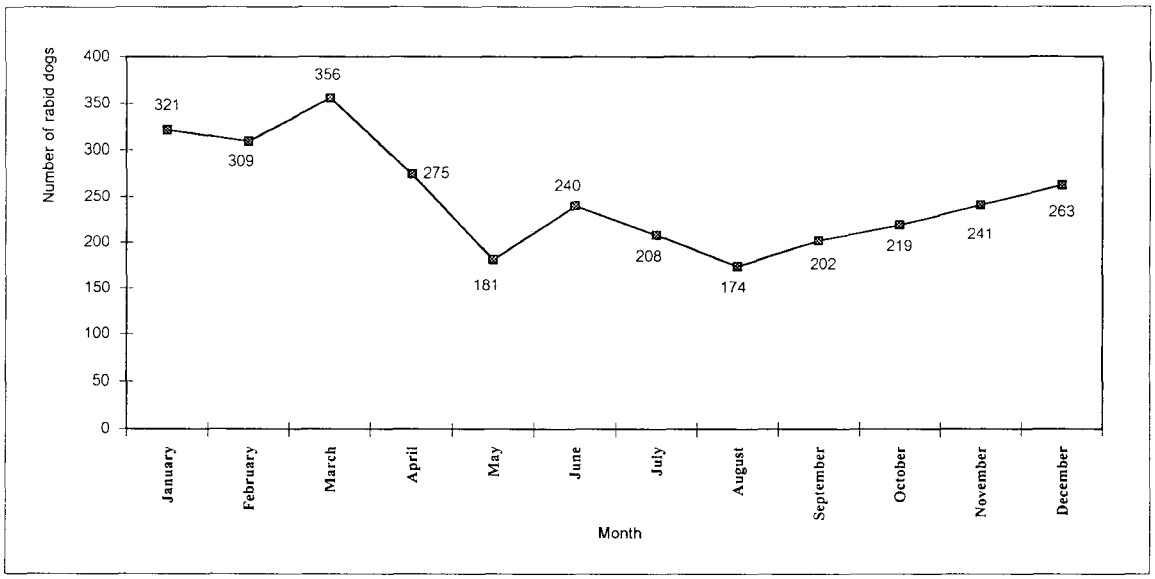

Fig. 1. Distribution of rabid dogs by month, 1994-1999.

1999, 3,066 (38.5%) were FA positive (Table 1). Based on the ownership status of rabid dogs investigated during 1994-1999, 56.4 per cent were pets and 40.6 per cent were strays (Table 2). An interview on the history of the dogs revealed that 90 per cent of them were less than 3 months old, and 62 per cent were not more than one year old. The youngest rabid dog was one month old, and the oldest one was 12 years. We found that 80 per cent of the rabid dogs had never been vaccinated. The distribution of rabid dogs by calendar month of diagnosis is shown in Fig. 1.

DISCUSSION

The population of Metropolitan Bangkok has increased over the last decade. It has now reached 10 million and correlates with an increasing dog population (400,000 in 1993 compared with 630,000 in 1999). The Queen Saovabha Memorial Institute (QSMI) of the Thai Red Cross Society is the principal rabies diagnostic centre for the central region of Thailand. The proportion of fluorescent antibody positive dogs, among those examined for rabies averaged 38.5 per cent, there was only one false-negative in 1998 from brains analyzed between 1994 to 1999 by fluorescent antibody test. The result of this showed that FAT can be a reliable diagnostic tool for making clinical management decisions. The total number of animals submitted to QSMI and all laboratories in Thailand for rabies diagnosis has decreased. From 1994-1999, the data

Table 3. Detailed information of rabid dogs in Bangkok, 1994-1999.

	No	%
Age (N = 2,165)		
< 3 months	199	9
3 months – 1 year	1,141	53
> 1 year	825	38
Gender (N = 2,350)		
Male	1,389	59
Female	961	41
Ownerships status (N = 2,863)		
Pet	1,663	58
Stray	1,200	42
Vaccination status (N = 1,664)		
Within 3 months	105	6
> 3 months – 1 year	106	6
> 1 year	119	8
Never	1,334	80
Sign (N = 2,848)		
Furious	2,248	79
Dump	600	21

* Animals with unknown information were not included

from QSMI revealed that the percentage of rabies diagnosed animals hnd decreased, just as it had in laboratories of the Ministry of Public Health throughout Thailand[1].

Our data revealed that 62 per cent of rabid dogs seen at QSMI between 1994-1999 were less than one year old. Young animals are usually more active and presumably have more contact with other animals and children. Approximately 80 per cent of clients who received post exposure treatment at our clinic had a history of contact with dogs. Forty per cent of human deaths from rabies in Thailand were below the age of nine[1].

Published rabies vaccination programs for dogs in Thailand recommends that vaccination should be started at 3 months of age or older. This age - group has shown good antibody response[2] without interference from passively acquired maternal immunity[3-5]. However, some investigators reported that interference between active and passive immunity would disappear beyond this age[6]. Many papers have recommended the same schedule [7]. Our previous studies[8] found that no rabies neutralizing activity could be detected by Rapid Fluorescent Focus Inhibition Test (RFFIT). We think that young dogs are the main vector for rabies. We should encourage rabies primary and booster vaccination of pregnant dogs in order to prolong maternal immunity in their puppies.

There are more male than female dogs in Bangkok with a male to female ratio of 1.5: 1. This is similar throughout Thailand, and it has also been found in other rabies endemic countries[9-14]. It is unclear why males are more prevalent. The ratio of rabid pet dogs was higher than that of rabid stray dogs in this study. It is possible that stray dogs which bite may not be taken as often for rabies diagnosis, therefore the number of positive pet dogs was higher.

Based on the history of pet dogs investigated, the number of rabid dogs with a history of rabies vaccination was low. Only 20 per cent of rabid dogs had a vaccine history. We are not sure whether rabies in this group of dogs was caused by vaccine failure or not, because some factors may influence immune induction such as the health status of dogs, [15,16] route and number of injections and time before onset of illness after receiving the vaccine[17,18]. Because most rabid dogs (62%) were less than 1 year old, more than one rabies vaccination was recommended to give a higher level of protective antibody[16,19]. Most rabid dogs presented as the furious rather than the dumb form of rabies. This has been reported from many other countries. Non fatal rabies without or with moderate clinical signs has been reported in naturally infected dogs from developing countries and in experimentally infected dogs but this phenomenon is extremely rare[20-22].

The incidence of canine rabies was highest from January to March, 3 to 5 months after fighting during the breeding season in October. The relationship between dog oestrus and rabies has been reported in other endemic regions[23]. Public Health authorities should be aware of this information and campaigns for mass dog vaccination prior to the breeding season should be recommended.

Health education of the public is one of the main principles that should be initiated as early as possible. Both governmental and non - governmental organizations should pay more interest in this matter. People must be instructed to realize the necessity of dog vaccination against rabies. They should learn about the higher risk of rabies virus infection among animals, and the severity of rabies in man and animals. The need of postexposure treatment for bitten persons must be emphasized. School children are one of the target population groups to be educated continuously and cooperation from the mass media will be very helpful. In order to facilitate the public, centers must be set up in several areas to provide animal vaccinations against rabies.

In order to keep the rabies infection in animals under control, mass immunization of at least 75 per cent of the entire dog population of the area should be accomplished within the shortest period of time as has been suggested by the WHO Expert Committee On Rabies[24]. Stray dogs need to be eliminated and the population of owned dog must be under some measures of control. A license for pets may be one approach. Contraceptive means to reduce the dog population have been suggested for Thailand. This method is likely to be favorable by the Thai people who are Buddhists and do not like to destroy animals.

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สุนัขบ้าในเขตกรุงเทพมหานคร

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โรคพิษสุนัขบ้ายังคงเป็นปัญหาทางสาธารณสุขโรคหนึ่งในประเทศไทย สถานเสาวภา สภากาชาดไทย เป็นศูนย์กลางในการตรวจวินิจฉัยโรคพิษสุนัขบ้าในเขตภาคกลาง จากการศึกษาข้อมูลของสถานเสาวภาตั้งแต่ พ.ศ. 2537 ถึง พ.ศ. 2542 พบว่า 1) จำนวนสุนัขบ้ามีแนวโน้มลดลงซึ่งสอดคล้องกับจำนวนสัตว์ที่ส่งตรวจมีจำนวนลดลงทั่วประเทศเช่นกัน แต่อย่างไรก็ตามร้อยละของสัตว์ที่เป็นโรคพิษสุนัขบ้ายังไม่ลดลงมาก โดยเฉลี่ยแล้วยังคงอยู่ในระดับร้อยละ 40 2) ร้อยละ 62 ของสุนัขที่เป็นโรคพิษสุนัขบ้ามีอายุไม่เกิน 1 ปี ซึ่งสุนัขกลุ่มอายุดังกล่าวมีสถานภาพการฉีดวัคซีนป้องกันโรคพิษสุนัขบ้าน้อยมาก โดยพบว่าร้อยละ 80 ของสุนัขที่เป็นโรคพิษสุนัขบ้าไม่เคยฉีดวัคซีนป้องกันโรคมาก่อนเลย

คำสำคัญ : สุนัข, โรคพิษสุนัขบ้า

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