

Epidemiology of Human Rabies in Thailand, B.E.2546-2550 (2003-2007 AD)

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ABSTRACT

In Thailand, rabies remains an important zoonotic disease due to its lethality in humans. Although the numbers of human rabies cases have been steadily decreasing over the past ten years, the epidemiological situation has started to change. Assessment of human rabies was based on the national infectious disease surveillance system from B.E. 2546-2550. There were 106 cumulative cases distributed in all four regions of Thailand. The highest mortality rates were found in the Central and Southern regions. Dogs were the main reservoir with the highest percentage found in puppies younger than 3 months (45%). Most of the causal dogs, and 61% of the dogs with owners had not received Rabies vaccination each year. The data strongly revealed that most of the human rabies cases did not receive rabies vaccine after the animal contact or bite. Prevention and control strategies should focus especially on the regions and provinces which had the highest number of cases, or on those regions which continue to have incident cases each year. It is also essential to set up a better control of the animal population which can potentially infect humans.

Keywords: Human, rabies, epidemiology, Thailand

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One of the oldest recognized zoonotic diseases, Rabies is still an important infectious disease listed by the World Health Organization. In Thailand, it has been a notifiable disease within the public health surveillance systems since B.E. 2524 under the Bureau of Epidemiology, Ministry of Public Health.¹ It is endemic in all regions of Thailand. In Thailand the Rabies Case Fatality Rate (CFR) during this period was 100%. Human rabies positive cases are diagnosed by history and symptoms, particularly hydrophobia. Confirmed cases were verified by laboratory testing.² Although the numbers of human rabies cases have been steadily decreasing over the past ten years, there have still been more than 100 cases per year in Thailand in recent years. However, the epidemiological situation has started to change. The objective of this study was to analyse rabies status and incidence in Thailand during the period from B.E. 2546-2550. These results will be used to establish strategies and pinpoint current problems to eliminate human rabies cases in Thailand by B.E. 2563 (2020 AD).

MATERIALS AND METHODS

Assessment of human rabies was based on information derived from the routine infectious disease surveillance system. The human rabies case definition for surveillance is included²:

1. Clinical criteria

A patient with fever, headache, pain or itching at the site of a mammal bite; spasm of swallowing with a history of a mammal bite, scratch or contact, and with one of the following symptoms:

- Hydrophobia, aerophobia or photophobia
- Myo-edema
- Paresis or paralysis

2. Laboratory criteria

- Antigen detection by direct fluorescent antibody test (FAT) or
- Virus isolation in a laboratory animal or in cell culture or
- Identification of antibody titer by Mouse Neutralization Test (MNT) or by Rapid Fluorescent Focus Inhibition Test (RFFIT), or
- Detection of viral DNA by molecular methods

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Surveillance data on human rabies, collected by the Bureau of Epidemiology from all Provincial Health Offices, consisted of annual cumulative numbers from B.E. 2546-2550 and all individual case investigation forms which were received. These were analyzed for distribution and risk factors associated with rabies in humans.

RESULTS

A rapid decrease was seen from B.E. 2541-2545 with 57, 68, 50, 37 and 30 cases per year respectively. After that, from B.E. 2546-2550, the cases steadily decreased to 21, 19, 20, 26 and 20 cases per year respectively (mean = 21 cases and average mortality rate = 0.03 per 100,000 population).

There were 106 cumulative cases distributed in all four regions. The highest cases were found in the Central region with 56 deaths in 18 provinces. The other regions, in order of severity showed the following: Northeastern region, 23 cases in 11 provinces, Southern region, 22 cases in 7 provinces, and Northern region, with 5 cases in 3 provinces. The highest mortality rates were found in the Central and Southern regions. The first 3 highest ranking groups were found in Bangkok with 9 cases, Ratchaburi, Songkhla and Nakhon Sri Thammarat with 7 cases per province and Rayong, Kanchanaburi and Chonburi with 6 cases per province.

Of the 106 cases, 69% were male and 31% were female, but these proportions varied each year. The highest mortality rate was found in the over age 60 age group, although this varied in the analysis of the yearly distribution of cases. The cases were found throughout the year with the animal contact or bite history varying during the time period. Dogs were the main cause of the deaths for rabies, responsible for 82% of human deaths. Cats were responsible for 5% of human deaths.

Of the dogs, 45% were younger than 3 months, 7% were 3-6 months old, 2% were from 6 months of age - 1 year of age, and 13% were more than 1 year old. Among these dogs, 61% of the dogs with owners had not received Rabies vaccination each year.

TABLE 2. Human rabies by region and province.

Reporting areas	Cases	Reporting areas	Cases	Reporting areas	Cases
Central Region	56	Northeastern Region	23	Southern Region	22
Bangkok	9	Surin	5	Songkhla	7
Kanchanaburi	7	Buriram	4	Nakhonsithammarat	7
Ratchaburi	7	Ubonratchathani	4	Suratthani	3
Chonburi	6	Sisaket	2	Phatthalung	2
Rayong	6	Mukdahan	2	Krabi	1
Samutprakan	5	Chaiyaphum	1	Ranong	1
Chantaburi	4	Nakhonratchasima	1	Yala	1
Sakaeo	2	Loei	1	Northern Region	5
Prachinburi	2	Sakonnakhon	1	Chiangmai	3
Saraburi	1	Nakhonpranom	1	Tak	1
Pathumthani	1			Phichit	1
Samutsongkhram	1				
Ayutthaya	1				
Angthong	1				
Prachuapkhirikhan	1				
Samutsakhon	1				
Nakhonpathom	1				
Suphanburi	1				

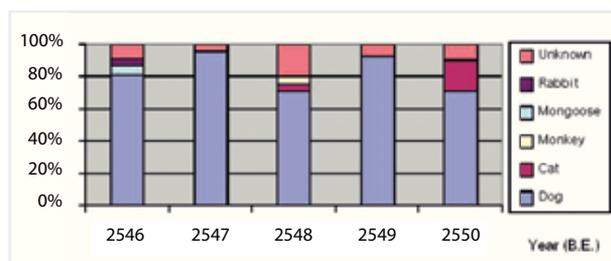


Fig 1. Percentage of animals that cause human rabies by year.

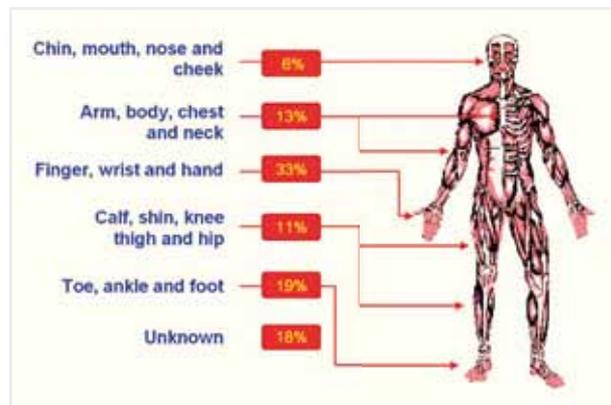


Fig 2. The parts of the body affected.

TABLE 1. Human rabies cases from B.E. 2546-2550.

Year (B.E.)	Cases	Mortality rate (per 100,000 populations)
2546	21	0.03
2547	19	0.03
2548	20	0.03
2549	26	0.04
2550	20	0.03

Among the cases there were 44% deep wound bites, 23% abrasion/scratch wounds and 19% lacerated wounds. The most common parts of bodies affected were fingers, wrists and hands (33%), toes, ankles and feet (19%), arms,

body, chest and neck (13%), calves, shins, knees, thighs and hips (11%) and chin, mouth, nose and cheek (6%). Most of the human rabies cases did not receive rabies vaccine after the animal contact or bite.

CONCLUSION

Although the human rabies cases have decreased from the past, the epidemiological situation has changed. Ancient Thai beliefs suggest that rabies can be found not only in the summer, but throughout the year. Gender and age groups at risk vary each year. Dogs were the main rabies reservoir and cause of the cases as in the past. However, the age of dogs below 3 months was higher compared with the previous rates, during which the dogs were more than one year of age. Also, in this recent study, unvaccinated dogs which had owners were the major cause

of the cases in comparison to the past in which stray dogs were the primary source. The regions that should be focused on for prevention and control strategies were the Central and Southern regions, especially the provinces which had the highest number of cases, or with continuing incident cases each year. In order to prevent this serious disease, it is essential to set up a better control of the animal population which can potentially infect humans.

REFERENCES

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