The Queen Saovabha Memorial Institute in Bangkok sees approximately 7,000 human postexposure rabies patients yearly, of which approximately 1% are rat bites. In these exposures the rats could not be proven to be rabid because they could not be caught. This report documents a bite from a rat that was proven rabid.

Case Report

Mr. CC, a 45-year-old farmer in Phetchabun Province reported that he was attacked “fiercely” by a large rat (species not identified) while sleeping in his home and inside a mosquito net. He incurred multiple bites on his right hand and managed to capture and kill the rat. The rat was first examined by fluorescent antibody test (FAT) and mouse inoculation test (MIT) at the livestock department laboratory in Pitsanulok and in Phetchabun and the findings were later confirmed at the rabies reference laboratory (Queen Saovabha Memorial Institute, Thai Red Cross Society in Bangkok). Further studies using monoclonal antibodies, suggested that the rat had been infected with a common Asian dog rabies virus. The farmer received prompt postexposure prophylaxis against rabies including rabies immune globulin, injected into the bite sites, followed by a series of tissue culture vaccine. He remained well for the following year.

Thailand is a canine rabies endemic country, which treats over 200,000 humans for rabies exposures annually.1 There were 69 human rabies deaths in Thailand in the year 1999 and 51 in 2000; a dramatic decline since the early 1980s when up to 300 persons died of rabies every year. Wildlife rabies is not established in this region but there is thought to be bat rabies; however, little is known about this probable zoonosis.2 There are at least 35 species of rats3 in this region and these include the great bandicoot (Bandicota indica) weighing up to 545 grams but appearing to the layman to be very much like any other large rat.3,4 Other common rats are Norway Rats (Rattus norvegicus, 300 g), Lesser White-toothed Rat (Rattus lesueurii, 235 g), Ricefield Rat (Rattus argentiventer, 212 g), Island Rat (Rattus remotus, 221 g), and Lesser Bandicoot (Bandicota savilei, 199 g). Rabies in rats was first reported in Thailand by PC Smith in 19685 but experts have later shed doubt on this report (CE Ruprecht, personal communication, July 2001). The term “rat” is a generic one and is generally applied to any member of the mouse and rat families in Thailand. In Thai, the colloquial name (“noo”) is the same for both rats and mice (Rattus and Mus), and the biting animal is usually not identified other than being a large or small noo. Rats live in close proximity to man, dogs, and cats and some are quite large and likely to survive a cat or dog attack. Most will also eat carrion and they are extremely adaptable to new environments when population and food pressures encourage them to move from the field to the city where they compete for food with stray dogs and cats.6 Rat bites are therefore treated as potential rabies exposures in Thailand. No documented case of human rabies secondary to a rat bite has, however, been reported in this region. Large rural rats (Bandicota spp), positive for rabies by FAT and by MIT, have been reported from Sri Lanka.4 There was one unpublished rat rabies case in Bangkok 10 years ago. A pet white rabbit, living in a cage on top of a 1.5 meter high pole, was observed being attacked by a large rat (species not known) which had gnawed through the floor and had been eating the rabbit’s food for what may have been several days. The rabbit was later found to have an infected bite wound on one leg. It was dressed by a veterinarian and treated with antibiotics. The rat was not captured. Three weeks later the rabbit became neurologically ill and died. Necropsy was positive for rabies on FAT and confirmatory MIT (V Tepsumethanon, unpublished data, Queen Saovabha Memorial Institute, Bangkok, 2001). Trapping of approximately 100 rats in the neighborhood of the compound detected no other FAT positive ones.

Phetchabun is a mountainous and agricultural province 300 km northeast of Bangkok with a population of about 1.1 million humans, approximately 100,000 dogs, and an unknown number of rural and urban rats. Efforts were made in 1996 and again in 1999 to trap...
112 domestic rats and test them for rabies by FAT. No rabies infected rats were identified. A similar and larger study was also carried out in Northeastern Thailand and 1,200 urban and field rats were killed and studied by FAT. No FAT positive animals were identified (C Mitmoonpitak and V Sitprija, unpublished data, Queen Saovabha Memorial Institute, Bangkok, 2001).

Conclusion

We conclude that rat rabies is a very rare phenomenon in Thailand. However, it does occur and probably represents incidental infection of rats by dog or cat attacks or by eating dog, bat, or cat carrion. Unusual behavior by rats, such as aggressiveness and absence of fear, should be viewed as warning signs and the bite victim should be treated in the same manner as one with any mammal bite.

References