

Reservoirs of Rabies in Thailand

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Part I. Rabies Diagnostic Service

OBJECTIVE: The objective was to maintain a competent facility capable of providing a rapid and accurate rabies diagnostic service in order to determine the risk of human exposure to rabies virus infection from animal bites. In addition to providing an important service, this activity was a reliable source of information regarding rabies virus infections in the canine population of Thailand.

DESCRIPTION: Suspect rabies specimens are accepted from U.S. military and approved Thai sources. The fluorescent rabies antibody (FRA) test and intracranial inoculation of weanling mice (MI) are the methods used routinely for diagnosis. The indirect FRA test is used to evaluate the presence of rabies virus antibody in human sera when requested.

PROGRESS: A total of 780 specimens were submitted for examination during the past 12 months. The results are presented in Table 1. A comparison of the FRA and MI results is presented in Table 2. Based on the MI results, the accuracy of the FRA results were 99.1% when negative and 98.2% when positive. During this report period, rabies antibody titers in 151 human sera were determined by the FRA technique.

SUMMARY: Of a total of 780 specimens submitted for rabies diagnosis, 331 (42.4%) were infected with rabies virus. These results are similar to those reported earlier. Although dogs continue to be the major species involved and constitute the greatest hazard to man, other species, particularly cats, should not be ignored.

Table 1.
Rabies Diagnostic Results

Species	Number Examined	Number Positive	Percent Positive
Canine	625	320	51.2
Feline	72	7	9.7
Others	<u>83</u>	<u>4*</u>	4.8
Total	<u>780</u>	<u>331</u>	<u>42.4</u>

* 2 human, 1 monkey, 1 bat.

Table 2.
Comparison of FRA and MI Rabies Diagnostic Results

		MI		
		POS	NEG	
FRA	POS	325	4	329
	NEG	6	445	451
		331	449	

Part II. Survey of Domestic Animals for Rabies Virus Infection.

OBJECTIVE: The purpose was to determine the prevalence of rabies virus infections in asymptomatic stray dogs captured by municipal and federal authorities in Thailand.

DESCRIPTION: Canine specimens were obtained from two sources. Stray dog control programs were conducted by the Division of Communicable Disease Control, Thai Ministry of Health, and cooperating U.S. Air Force installations in Thailand. From 10 to 30 of the dogs collected each day during the operation of a program were submitted for rabies virus examination. The total number of dogs captured in the communities involved is not known. The second source of specimens was the Bangkok Municipal Health Department which operates a continuous stray dog pickup program. Each week, 10 percent of the dogs picked up on a single day were randomly selected for examination. The total figure, therefore, approximates 1.6 percent of all the stray dogs destroyed during the 18 month period of the survey (estimated 32 thousand). From both groups, only dogs without clinical signs of rabies were examined. All specimens were examined by the FRA technique. Rabies virus was isolated from FRA positive specimens by mouse inoculation and confirmed by serum neutralization test.

PROGRESS: A total of 906 dogs was examined during the 18 month study period. The examination results are presented in Table 1. Since these animals were asymptomatic at the time of euthanasia and salivary gland examinations were not done, it is not possible to estimate how many of the FRA positive animals were capable of transmitting the disease. It is assumed that all were in some stage of virus incubation and that all would have eventually died of rabies. Certainly many would have been responsible for disease transmission to other animals and perhaps to man at some time before death. During the same period, 881 suspect canine specimens were submitted for routine rabies diagnosis and 449 or 51.0 percent were found to be positive.

SUMMARY: The number of isolations obtained from the two dog populations emphasizes the extent of canine rabies in Thailand and the continuing need for more adequate control programs if the problem is ever to be eliminated.

Table 1.
Isolation of Rabies Virus from Asymptomatic Stray Dogs in Thailand.

Source	Number Examined	Number Positive	Percent Positive
<u>Ministry of Health:</u>			
Udon	177	6	3.4
Korat	140	3	2.1
NKP	47	1	2.1
Ubon	30	1	3.3
<u>Bangkok Health Department</u>			
Bangkok	512	25	4.9

Part III. Survey of Selected Rabies Virus Isolates for the Presence of "Rabies-Like Viruses"

OBJECTIVE: The purpose was to study 50 isolates of rabies virus obtained from animals having no clinical history of rabies in order to confirm their identification or, in failing to do so, provide material for further investigation into the occurrence of "rabies-like viruses" in Thailand.

DESCRIPTION: Selected isolates were to be inoculated into weanling mice to provide aliquots of infected mouse brain suspension. The virus titer of each isolate pool would be determined. A neutralization-screening test using 100 MLD₅₀ of virus and antisera calculated to neutralize 5 MLD₅₀ of CVS rabies virus would be conducted. In addition, FRA examination of each isolate would be performed at 2, 4, 24 and 48 hours after slide preparation. Isolates not neutralized and/or demonstrating a weakening FRA reaction with time would be studied further by neutralization tests.

PROGRESS: A total of 60 isolates were selected for study on the basis of available clinical history. All but 9 were recovered from weanling mice. Five of the latter were recovered after inoculation into suckling mice. All recovered isolates were FRA positive after 4 hours fixation in acetone. An infected brain suspension pool of each of the 56 isolates was produced from weanling mice and divided into 5 aliquots. Virus titrations in suckling mice were completed with 26 of the isolates. Mouse brain suspensions of CVS and a virulent street virus were produced and titrated. Normal and hyperimmune horse serum were prepared and aliquoted for use in the neutralization screening test. Virus titration is continuing and initial neutralization screening tests and FRA studies are in progress. Final results are pending completion of the latter procedures.

SUMMARY: Fifty-six of 60 selected rabies virus isolates were recovered from storage and aliquots prepared from weanling mouse suspensions. Virus titers were determined for 26 and others are in progress. Initial mouse neutralization screening tests and FRA studies are underway.