

BODY OF REPORT

SEATO Medic Study No. 99 Eosinophilic Meningoencephalitis in Thailand. I. Clinical manifestations and epidemiological studies of eosinophilic meningoencephalitis in man.

Project No. 3A 025601 A 811 Military Medical Research Program
S. E. Asia

Task 01: Military Medical Research Program
S. E. Asia

Subtask 01: Military Medical Research Program
SEASIA (Thailand)

Reporting Installation: US Army-SEATO Medical Research Laboratory
APO San Francisco 96346

 Division of Medical Research Laboratories

 Department of Geographic Pathology

Period Covered by Report: 1 February 1965 to 31 March 1965

Principal Investigator: Major Sompone Punyagupta, RTA *

Associate Investigators: Major Pipat Juttijudata, RTA *
Captain Sylvanus W. Nye, USAF, MC
Lt Colonel Edward H. Johnston, MC

Reports Control Symbol: MEDDH-288

Security Classification: UNCLASSIFIED

Objective: The objective of this study is to do complete clinical studies of eosinophilic meningoencephalitis including all indicated laboratory tests and special investigations and to study the epidemiology of eosinophilic meningoencephalitis in certain areas of Thailand.

Description: Until the present time, eosinophilic meningoencephalitis has been regarded as rare in Thailand. Since the work of Rosen et. al. (1) and Alicata (2) in Honolulu and Tahiti, showing that Angiostrongylus cantonensis was the caus-

* Department of General and Tropical Medicine, Royal Thai Army Hospital

ative organism, Punyadasni and Punyagupta (3) have reported 2 preliminary cases and additional 9 cases (4) of eosinophilic meningitis probably caused by A. cantonensis. Increasing numbers of reports have come from many provinces from the northeast of Thailand. As yet no complete clinical and epidemiologic studies have been attempted here. Preliminary evidence suggests that this is an important public health problem.

Questionnaires regarding food habits and symptoms suggestive of eosinophilic meningoencephalitis are completed on medical patients who come to selected hospitals during survey periods. These clinical surveys will cover a period of a whole year to watch for possible seasonal variations in the occurrence of disease. Lumbar punctures will be done in suspected cases, as suggested by symptoms of acute severe headache, facial palsy, meningitis, ocular signs, recurrent mental symptoms or in neurological cases. Cerebrospinal fluid will be collected and examined for cells and if there are more than 20 cells per cu mm. the fluid will be centrifuged and stained to differentiate types of cells. If there are over 10% eosinophiles, the diagnosis of eosinophilic meningoencephalitis will be made and the patient included in the clinical series. Some patients will be treated as outpatients in provincial hospital, others will be admitted to local hospitals. A few cases will be referred to the Royal Thai Army Hospital in Bangkok for more detailed and special studies. Certain endemic areas will be selected for full epidemiologic study on the basis of ease of communication and high attack rates. Questionnaires will be completed in the villages in the area and lumbar punctures will be done in the villages in suspected cases. Other parts of a projected series of studies on eosinophilic meningitis include pathology, animal host experimental studies and immunology.

Progress: During January 1965, visits were made to the Prachinburi, Korat and Ubol Provincial Hospitals and the Ubol Mental Hospital and it was agreed that a cooperative study could be performed. The Udorn Provincial Hospital has also agreed to cooperate. Plans were made for collecting autopsy specimens and doing clinical and epidemiologic surveys at these hospitals.

The first field trip was made to Korat from 8 to 12 March 1965. The field team was composed of 2 physicians, 2 nurses, 2 technicians and 2 field workers. At the Korat Provincial Hospital, 41 patients, 27 male and 14 female who visited in the outpatient department, were questioned and lumbar punctures were performed in 23 cases, 13 male and 10 female. Six cases of eosinophilic meningitis were discovered among this group.

Two of the patients from the provincial hospital came from the village of Ban Kao, Tumbol Dan Kuntod, about 80 km from Korat. The team therefore went to the village for a day, 103 questionnaires were filled out on 56 men and 47 women. Sixteen lumbar punctures were done on 14 men and 2 women. Six men proved to have eosinophilic meningitis.

Questionnaires were also completed on 215 newly enlisted men in the 2nd Army

Division in Korat. Fifty lumbar punctures were performed on this group. Unfortunately, 9 lumbar punctures attempts failed and 12 were traumatic taps. The failure was felt to be due to the large gauge needle used (No. 18) and the fact that these enlisted men were extremely frightened as they had never been exposed to any modern medicine and were even very frightened by simple injections. Among the 29 successful lumbar punctures, 4 cases of eosinophilic meningitis were found.

Rats and snails were also collected during the field trip. Only 12 rats were trapped and none contained adult Angiostrongylus cantonensis. A large number of pila snails were collected and examined by a digestion technique. The infective stage larvae of A. cantonensis were found in the snails supporting the belief that A. cantonensis is a causative agent for eosinophilic meningitis.

Summary: Sixteen cases of eosinophilic meningitis were detected from 68 successful lumbar punctures done among 359 persons who were surveyed in the area of Korat. This is a high incidence in spite of the fact that the disease had not been previously reported in the province. In addition, it was interesting to note that visual impairment, including permanent blindness were important manifestations in 5 patients.

Conclusions: None.

REFERENCES

1. Rosen et. al.: Eosinophilic Meningoencephalitis Caused by a Metastrongylid lung worm of Rats. J.A.M.A., 1962, 174; 620.
2. Alicata, J. E.: Angiostrongylus cantonensis (Nematoda: Metastrongylid) as a Causative Agent of Eosinophilic Meningoencephalitis of Man in Hawaii and Tahiti. Canad. J. Zoo., 1962, 40:5.
3. Punyadasni, V. & Punyagupta, S.: Two Cases of Eosinophilic Meningitis Following Ingested Raw Pila Snails Probably Caused by Angiostrongylus cantonensis. Presented to the Meeting of Thai Medical Association, Bangkok, October 26, 1962.
4. Punyagupta, S.: Eosinophilic meningoencephalitis in Thailand. Summary of 9 Cases and Observation on Angiostrongylus cantonensis as a Causative Agent and Pila ampullacea as a New Intermediate Host. Am. J. Trop. Med. & Hyg. 1965. May Issue.

Other Studies in Geographic Pathology:

The Department of Geographic Pathology is currently engaged in some research studies which are not formalized into Medic Study projects. They are:

1. Complete histopathology and histochemistry studies as support to a US Army R&D Project to Dr. Bundham Sundharagiati and Dr. Prapont Piyaratn, School of Tropical Medicine on: "Renal Pathology of Bangkok Canine Leptospirosis".

a. Three microscopic slides were prepared on each kidney of 40 dogs and stained by H & E, PAS and Warthin Starry stains. Total slide preparation - 400. (Lt Colonel Edward H. Johnston, MC).

2. Histopathology and Histochemistry studies on effects of cholera on baby rabbits. This is a partially completed study on about 20 animals covering the major organs except the brain with emphasis on the gastrointestinal tract. (Lt Colonel Edward H. Johnston, MC).

3. Autopsy, histopathology and histochemistry studies on 97 human autopsies obtained from Udorn in the study of the liver fluke Opisthorchis viverrini, with Udorn Provincial Hospital. Mutual study. (Captain Sylvanus W. Nye, MC & Dr Dhira S. Comer).

4. Autopsy, histopathology and histochemistry of 50 fatal cases of Thai hemorrhagic fever. This study is almost complete. Study was in association with Pathology Department of Children's Hospital, Bangkok. (Captain Sylvanus W. Nye, MC & Dr Dhira S. Comer).

5. Autopsy, histopathology and histochemistry studies of 40 tree shrews as a part of SEATO Medic Study No. 84 (Captain Sylvanus W. Nye, MC & Dr Dhira S. Comer).

6. Autopsy, histopathology and histochemistry studies on deaths in the Chonburi Provincial Hospital, Chonburi and the Sriracha Red Cross Hospital, Sriracha, which are related to CNS symptoms. Emphasis being placed on Encephalitis and Cerebral malaria. Two autopsies have been performed to date in these 2 hospitals. (Lt Colonel Edward H. Johnston, MC & Captain Sylvanus W. Nye, MC).