

SEATO MEDICAL RESEARCH STUDY ON MYCOTIC DISEASES

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GENERAL INFORMATION

The emphasis on mycotic diseases was of necessity decreased following the return of LTC Taylor to CONUS in June 1967. It was decided that the Medical Mycology Section he established should be retained for the immediate future and that the technicians he trained are capable of identifying most mycotic specimens likely to be submitted.

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** LTC Taylor departed Thailand for PCS duty at WRAIR on 15 June 1967

STUDY REPORT

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Objective The objective of these studies is to gather information on the prevalence and distribution of mycoses in this area of the world. In addition to these survey activities a study has been initiated to determine the roles of avitaminosis, anemia, hypoproteinemia and circulating antibodies in the pathogenesis of superficial dermatophytoses in Thai nationals.

Description This study was prompted by the major medical problems the dermatophytic fungi can present to the military in times of stress. Specimens were usually collected from patients with dermatologic problems by a member of this department. Cultures were prepared by first cleansing the area of the lesion with 70 per cent ethanol and transferring material (hair, skin, nail) directly to 2 plates of Sabouraud-Cycloheximide-Chloramphenicol medium. The plates were sealed with paper tape to prevent contamination, and periodically examined during a 21 day incubation at 25 C. Blood agar plates were also inoculated and incubated at 37 C when the clinical appearance of the lesion indicated bacterial infection.

In a study attempting to relate malnutrition to mycotic infections, routine procedures were employed to determine hemoglobin, hematocrit, serum iron, serum iron-binding capacity, and serum protein of patients with chronic or acute dermatophyte infections. The indirect fluorescent antibody technique is being evaluated as a procedure for qualitative and quantitative analyses of antibodies to specific fungi.

Progress During the period covered by this report 429 specimens were received for mycological examinations. Included were 294 from Women's Hospital and 135 from the U.S. Embassy Medical Unit and other local sources. In addition 324 lungs from rats trapped in Viet Nam were examined for the presence of adiaspores of Emmonsia spp. Results in Table 1 clearly indicate the importance of fungi in dermatologic lesions in the tropics. The most frequently isolated organism was Pityrosporum orbiculare (Malassezia furfur) followed in order of decreasing frequency of isolation by Trichophyton rubrum, Candida albicans and Epidermophyton floccosum.

Four of 23 dermatologic specimens from U.S. personnel were positive for pathogenic fungi. Organisms isolated were C. albicans, Microsporum canis, Microsporum gypseum and T. rubrum. Other specimens from which C. albicans was isolated were urine (6) throat culture (5), sputum (5) and vaginal discharge (3).

Four of 20 animal specimens were positive for pathogenic fungi. M. gypseum was isolated from two specimen of dog hair and M. canis was isolated from one specimen of dog skin and one specimen of gibbon hair.

Results in Table 2 indicate that adiaspiromycosis (haplomycosis) is present in at least one genus of rats in Viet Nam. This disease is caused by either of 2 similar species of fungi, Emmonsia parva or Emmonsia crescens. This disease is remarkable because inhaled spores increase up to 1,000,000 times their original volume and eventually die without reproducing in vivo. The disease has not been observed in man.

The study relating malnutrition to acute and chronic mycotic diseases was interrupted shortly after it was initiated because of prolonged hospitalization of Dr. Renoo Kotrajaras. Insufficient data preclude evaluation at this time.

Summary Studies on patients with dermatologic problems indicate that pathogenic fungi are present in Thailand and could represent a major problem to the military in times of stress. *C. albicans* was the mycotic agent most frequently isolated from specimens obtained from U.S. nationals residing in Thailand. A new study was initiated to determine the roles of avitaminosis, anemia, hypoproteinemia and circulating antibodies in the pathogenesis of superficial dermatophytoses in Thai nationals.

Table 1. Mycology Specimens from Patients at Women's Hospital

| Body Area | Negative for Fungus | Non-pathogenic Fungi isolated | Positive culture | Total |
|---------------------------------|---------------------|-------------------------------|--|-------|
| Body (Trunk, Face, Arms & Legs) | 23 | 74 | Trichophyton mentagrophytes 1 Epidermophyton floccosum 4 T. rubrum 20 Pityrosporum orbiculare 32 Candida albicans 4 Microsporum gypseum 1 | 159 |
| Feet | 22 | 36 | C. albicans 2 T. rubrum 4 Allescheria boydii 1 | 65 |
| Groin | 2 | 6 | T. rubrum 2 E. floccosum 1 C. albicans 2 | 13 |
| Hands | 4 | 7 | C. albicans 2 T. rubrum 1 | 14 |
| Nails | 8 | 8 | T. mentagrophyte 1 C. albicans 8 | 25 |
| Scalp | 6 | 12 | — | 18 |
| Total | 65 | 143 | 86 | 294 |

Table 2. Examination of Viet Nam Rats' Lungs for Adiaspore of Emmonsia sp.

| Rat Groups | Total Examined | Positive | Negative |
|-------------------|----------------|----------|----------|
| Rattus norvegicus | 122 | 0 | 122 |
| Rattus exulans | 21 | 0 | 21 |
| Suncus marrinus | 181 | 3 | 178 |