Pulmonary Tuberculosis in the University of Malaya Students

Z. N. KADRI, M.D., F.C.C.P.
Singapore, Malaya

The University of Malaya was established in October, 1949, as a national institution to serve the higher educational needs of the Federation of Malaya and Singapore. A scheme for routine clinical examination of all freshmen, on a voluntary basis, was initiated in October 1952, whereas compulsory radiographic examination of the chest at the time of entry into the University was introduced in October 1954. In the absence of any controlled survey in either territory, it is not possible to indicate the incidence of tuberculosis in the general population. But it is common knowledge that morbidity and mortality from this disease, despite increasingly widespread use of antibacterial therapy, is much higher in this part of the world than in any western country, irrespective of the age. As in America, it is our impression that the greater number of active cases is found in older age groups who form the reservoir of infection.

In this paper, we report the incidence of tuberculosis and its rate of recurrence of activity in students of all faculties of the University, over a five academic year period beginning in September 1953, and ending in May 1958. Freshmen who gained entry in the 1953 academic session were subjected to radiographic examination soon after admission. All successive batches of students entering from 1954 to 1957 submitted chest films prior to admission, through their respective private physicians. Most of the entrance skiagrams were large films. It has been our policy to examine all the students with photofluorographs (4" x 5") twice or thrice during their University career, full size films being made of cases showing doubtful shadows. Every suspicious-looking new shadow was fully investigated for tuberculosis, the activity of which was determined by close radiological follow up, sputum or gastric lavage cultures for tubercle bacilli, blood sedimentation rates and tomograms. In the absence of any sanctions, it is not possible to enforce compulsory periodic x-ray film examinations. Nevertheless, response from the students has been increasing steadily, and a greater number of them are coming forward voluntarily every year. All follow-up photofluorographs or large films in this study were initially interpreted by a radiologist in the X-ray Department of the Government Tan Tock Seng Chest Hospital, and rechecked by the author.

Within the past five years 1834 freshmen have come under surveillance and 3450 films have been obtained. All 1834 students have had at least one x-ray film, either before matriculation or during the course of their academic career. In this study, almost all the students who were enrolled in 1953 and 1954 sessions, have by now left, after completing University education. They therefore came under surveillance for the entire span of their academic career, whereas freshmen admitted in 1957 have been observed for a period of only one year.

Department of Student Health, University of Malaya.

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In a study of tuberculosis in foreign students entering Ohio State University, W. T. Palchanis found 11.7 per cent had inactive pulmonary lesions at the time of their enrolment. During his 17 months study of the group, 18.7 per cent of foreign students, mainly of Asian extract, harboring inactive disease, developed activity; while during the same period, none of the 0.44 per cent of students from the United States having inactive tuberculosis at the time of entrance became active. In a study conducted at the Florida State University beginning in September 1949 and ending in July 1952, the overall incidence of tuberculosis was estimated to be in the region of 0.4 per cent. In Verney's Survey of tuberculosis in the student population of British Universities, the average incidence was found to be 0.25 per cent. Data on the rate of recurrence of activity are not available in this report.

On the basis of our study by x-ray films plus the application of additional diagnostic measures wherever indicated, 49 (2.67 per cent) of 1834 freshmen admitted during the five year period were known to have inactive lesions at the time of entry, whereas nine (0.48 per cent) students with known clear lungs developed new lesions during the course of study. Among 49 known inactive cases 13 reactivated while at the University. In short, 26.5 per cent of old cases relapsed under the usual stress and strain of college education, requiring treatment in the form of rest, antibacterial chemotherapy, and in two cases surgical intervention. Education was interrupted in most of the active cases for periods varying from three to 12 months, but none was obliged to quit the University permanently. Some of these inactive cases are still attending the University and are under observation and it is therefore not possible to make a final assessment of the rate of recrudescence of tuberculosis at this stage. Nevertheless, the relapse rate of 26.5 per cent may be considered quite high, in view of the fact that all precautions were taken to exclude active cases from participating in University education, and entry was confined to those cases which fulfilled the criteria of inactivity for at least six months as laid down by the American National Tuberculosis Association.

Of the three main races inhabiting the Federation of Malaya and Singapore, the Malaysians are the indigenous people of Polynesian extract and constitute about half the population of Malaya.* If both the territories were taken into consideration, the numerical strength of Malaysians would be in the region of 42.7 per cent, the majority of whom are paddy farmers living in villages (kampungs) in the rural districts. Among the immigrant races, the Chinese, who tend to be urban dwellers, form 44.2 per cent of the combined population of both the territories, while 11.6 per cent of the inhabitants belong to the stock whose origin can be traced to India, Ceylon or Pakistan. Compared to the well-established western universities, our institution is young and small, nevertheless, its multi-racial character extends an interesting opportunity for the study of ethnic influences on tuberculosis. Although the Malaysians constitute the majority of the population in the Federation of Malaya, their percentage in the University over the period of this study has been in the region of 13 to 14 per cent. By contrast, Indians, under which heading Ceylonese and Pakistanis are

*Population percentages are based on mid 1955 statistics.
included, despite their smaller number in the general population, have contributed a commensurately higher number of students to the University education. As far as the figures in our study go, there is clearly no significant difference in the incidence and relapse rate of tuberculosis in the different ethnological groups. Furthermore, although it is the author's impression, gathered from study of tuberculosis in the general population, that the Malaysians mostly develop exudative lesions, whereas in the Chinese the lesions are inclined to exhibit fibrotic features, no significant variation in the pattern of reaction to disease was found in students belonging to various races.

Palchanis, discovered that 81.2 per cent of South East Asian students at the Ohio State University were tuberculin reactors, this being in sharp contrast to only 16.5 per cent of American students mostly from Ohio, who reacted to tuberculin. According to Verney 66 to 75 per cent of British University students were found to yield a positive response to tuberculin.

In the program of testing tuberculin sensitivity conducted in Singapore in 1951 on school children and adults by the U.N.I.C.E.F./WHO team, 48 per cent were found to react at the age of seven years, and as many as 77 per cent at the age of 15 years. It was also noted that by the age of 30 years nearly all individuals were Mantoux positive. Tuberculin sensitivity tests were first introduced in the University of Malaya in 1953, but were confined to medical students about to embark on clinical work. Mantoux tests, consisting of 10 tuberculin units, that is 0.1 cc. of 1/1000 old tuberculin units were employed during the early part of the study. Those who did not react were retested with higher concentration. All reactions with a diameter of induration less than 5 mms. were deemed to fall into the negative group. For the past three years this method has been replaced by Heaf's multi-puncture method, which in our opinion, is safe, more reliable and faster to execute. Since 1957, the program has been extended to include freshmen of all the faculties studying in the Singapore Division of the University, and medical students in all the years. In all 488 students have thus far been subjected to either method, out of whom 460 or 94.3 per cent were found to be positive reactors, the 28 negative reactors received BCG.

SUMMARY

The overall incidence of clinical pulmonary tuberculosis in the University of Malaya students was found to be 3.15 per cent.

This higher incidence of clinical tuberculosis is in keeping with the general morbidity and mortality figures of tuberculosis in the general public.

Among students who were originally enrolled as inactive cases 26.5 per cent developed activity while in university and required treatment.

No significant difference was found in the incidence and rate of reactivation of disease in students of various races.

No student was obliged to quit studies permanently on account of the breakdown.

RESUMEN

La incidencia general de la tuberculosis pulmonar clínica en los estudiantes de la Universidad de Malaya, se encontró de 3.15 por ciento. Esta más alta incidencia de la tuberculosis clínica está en relación con la morbibilidad más alta y la mayor morbibilidad por tuberculosis en el público.

Entre los estudiantes que originalmente empezaron sus estudios como casos inactivos, 26.5 por ciento se tornaron activos mientras estaban en la escuela y requirieron tratamiento.

No se encontró diferencia significante entre la frecuencia de la reactivación de la enfermedad en estudiantes de diversas razas.

Ningún estudiante fue obligado a abandonar los estudios a causa de su reactivación.
On a constaté que la fréquence moyenne de tuberculose pulmonaire clinique chez les étudiants de l'Université de Malaya était de 3,15%. Cette grande fréquence de la tuberculose clinique est en relation avec les chiffres de morbidité générale et de mortalité par tuberculose dans la population.

Sur les étudiants qui furent d'abord recensés comme cases inactifs, 26,5% se montrèrent évolutifs alors qu'ils étaient en période scolaire et nécessitèrent un traitement. Il n'y eut pas de différence profonde entre la fréquence et le taux de réactivation de la maladie chez les étudiants de races différentes. Aucun étudiant ne fut obligé de renoncer définitivement à ses études par suite de l'interruption due à la maladie.

ZUSAMMENFASSUNG

Unter den Studierenden, die ursprünglich als inaktive Fälle geführt wurden, entwickelten sich 26,7% aktive Befunde während der Ausbildung und benötigten Behandlung. Es wurden keine ins Gewicht fallende Differenzen ermittelt im Vorkommen und in der Zahl von Reaktivierungen bei Studierenden der verschiedenen Rassen. Kein Student war genötigt, wegen seiner Erkrankung die Ausbildung für immer aufzugeben.

REFERENCES
4 Singapore Medical Department Annual Reports—1952 and 1953.