Preliminary Study

Tuberculosis Among Seamen

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IN THE WORDS of Allen Krause many years ago (*1*), in tuberculosis we deal with at least three factors: the seed (the tubercle bacillus), the soil (the patient), and the environment (the sum total of factors making for evolution of the clinical disease). It has since become popular, however, to think of the environment in social and economic terms, and that tuberculosis flourishes almost exclusively among poverty-stricken persons living in substandard housing and suffering from malnutrition. Moreover, it is usually accepted that additional diagnostic and treatment facilities must be provided universally for early detection and proper treatment of tuberculosis.

The ultimate eradication of tuberculosis will probably not be accomplished spectacularly; it will most likely entail a large number of individually applied maneuvers designed to determine why tuberculosis persists, despite adequate chemotherapy, and what must be done for certain population groups that are particularly vulnerable to small epidemics of the disease. One such group is composed of seafaring men, among whom tuberculosis is still rife despite the fact that generally they are not poverty stricken, economically or socially at great disadvantage, underfed, or deprived of free and widely known medical facilities.

From our experiences with tuberculous seamen, we have learned that as a group they are uniquely difficult to treat. This observation has been confirmed in a few contributions to the literature, but, to our knowledge, there are no reports in the literature of an attempt to compose a profile of the tuberculous seaman. Because the personal characteristics of seafaring men seem to be remarkably independent of their countries of origin and because these characteristics bear greatly on the hope of ultimate eradication of tuberculosis, we essayed the preliminary study reported here.

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Methods

The charts of 150 merchant seamen admitted to the Public Health Service Hospital in New Orleans from 1950 to 1963 for active pulmonary tuberculosis were analyzed. General characteristics (age, race, national origin), social factors (marital status, occupation, financial resources), smoking habits and alcohol intake, physical factors (injuries, venereal infection, gastroduodenal ulceration), and personality factors (cooperation in continuing therapy, response to hospital discipline, litigation concerning their disease) were studied in an effort to learn which features distinguish the tuberculous seaman.

Findings

The average age of the 150 seafarers was 47.5 years; the youngest was 23 years old and the oldest 72 years. Their racial distribution was consonant with the rest of this hospital's population. Seventy-seven (51 percent) were either single or divorced, an unusually high proportion of "unattached" men in view of their median age. Thirty-two were foodhandlers, 45

were engineers or below-deck workers, and 73 were ordinary seamen or deck officers. All had access to prompt hospitalization without charge, and 98 had additional financial benefits. All the men had physical examinations before signing on ship, and all supposedly had annual chest X-rays. Delay in treatment, therefore, was not due to lack of resources.

Seventy-seven patients (51 percent) had suffered serious traumatism, as evidenced by fractured bones, craniocerebral injuries, and gunshot or knife wounds. Seventy-two (48 percent) volunteered a history of earlier venereal disease, 10 had peptic ulcers, and 13 had diabetes mellitus. Only four patients did not smoke cigarettes.

Fifteen patients had formally diagnosed psychiatric abnormalities, and 31 others had behavioral problems. Treatment was abandoned prematurely by 48 patients, and 60 had been discharged from the hospital at least once against medical advice. Of 505 discharges among the 150 patients, 127 discharges were against medical advice.

Seventy-eight patients had entered into litigation, presumably concerning the onset of their active tuberculosis. Twenty patients were so uncooperative their seaman's papers were revoked as a disciplinary measure.

Of the 150 patients, 52 (35 percent) admitted a heavy intake of alcohol and 39 (26 percent) a moderate intake, and 71 of these had acid-fast bacilli in their sputum on admission. Only 15 (10 percent) declared themselves abstainers, 41 (27 percent) said they were light drinkers, and the intake of 3 was unknown. Of the 91 heavy or moderate drinkers, 70 had moderate or far advanced tuberculosis and 45 had cavities demonstrable by radiography (table 1). Alcoholism was noted in 61 percent of the total group, but in 83 percent of the patients who were discharged against medical advice. Only seven patients are known to have died of tuberculosis; six were alcoholics who repeatedly interrupted their courses of treatment and were otherwise uncooperative. That alcoholism imposes a large but not unsurmountable obstacle in returning a man to good health is indicated by the fact that 53 percent of the alcoholics and 75 percent of the light drinkers or abstainers were restored to full duty.

When a chest X-ray was taken as part of a routine examination, tuberculosis was seen in 73 of the 150 patients; yet 31 of those who admitted symptoms of the disease had not voluntarily reported for examination, and 37 had tubercle bacilli in their sputum on admission to the hospital (table 2). Of 42 asymptomatic patients, 22 had positive sputum. Of 77 patients who voluntarily reported to a physician

Table 1. Alcoholism in relation to tuberculosis among 147 merchant seamen, Public Health Service Hospital, New Orleans, 1950–63

Patient status	Alcohol intake			
	Moderate to heavy (N=91)		None or light (N=56)	
	Number	Percent	Number	Percent
Positive sputum on admission	71	78	32	57
Moderate to far advanced tuberculosis	70	77	32	57
Minimal tuberculosis	21	23	24	43
Cavities demonstrable by X-ray	45	49	19	34
Died of tuberculosis	6	7	1	2
Restored to full duty	48	53	42	75
Discharges against medical advice	76	83	10	17

Table 2. Factors in diagnosis of tuberculosis among 150 merchant seamen, Public Health Service Hospital, New Orleans, 1950–63

Diagnostic factors	Patients	
	Number	Percent
Diagnosed by routine chest X-ray	73	49
Asymptomatic	42	28
Sputum positive	22	---
Sputum negative	20	---
With symptoms	31	21
Sputum positive	15	---
Sputum negative	16	---
Self-referred (with symptoms)	77	51
Sputum positive	66	---
Sputum negative	11	---
Total with positive sputum on admission	103	69
Admission classification:		
Far advanced	40	27
Moderately advanced	66	44
Minimal	44	29

because they were ill, 66 had already advanced to the stage of having positive sputum.

On admission to the hospital, 40 patients had far advanced tuberculosis; 66, moderately advanced; and 44, minimal (table 2). A total of 103 patients had acid-fast bacilli in their sputum. Severe reactions to the antibiotics usually used against tuberculosis were experienced by 30 patients. Excisional surgery was performed on 21 seamen, primarily to restore them to full duty with relative freedom from the likelihood of disseminating infectious sputum.

As to their current status, 89 seamen have returned to full-time duty; 14 remain under treatment, and 1 of these has suffered an obvious relapse; 14 abandoned treatment before being declared fit for duty; 34 discontinued necessary therapy after returning to full duty; 21 were transferred to other institutions, and their status has not been reported to us; and 7 are known to have died of tuberculosis (table 3). Significantly, six of the seven seamen who died of tuberculosis were alcoholics.

Discussion

Because physicians experienced in treating tuberculous patients learned long ago the futility of trying to apply a rigid therapeutic plan to all patients, they now try to mold, when feasible, the treatment program to the individual needs and personalities of their patients. For seamen this is not easy. The risks of permitting seamen to leave the hospital on weekend passes exceed those for civilians. The seaman, especially if being treated somewhere remote from home, is likely to congregate (usually from sheer boredom) with others where alcohol intake becomes excessive. Consequently, he fails to return to the hospital on time. Because of this and because of the fear that such seamen may return to work prematurely aboard a ship on which precautions are not observed, hospital physicians are usually more stringent in giving passes than are those in other tuberculosis hospitals.

Table 3. Current status of 150 tuberculous merchant seamen admitted to Public Health Service Hospital, New Orleans, 1950–63

Status	Seamen	
	Number	Percent
On full-time duty	89	59
Still under treatment	14	9
Abandoned treatment before declared fit for duty	14	9
Abandoned necessary treatment after declared fit for duty	34	23
Transferred to other institutions	21	14
Died of tuberculosis	7	5
Died of other causes	9	6

The fear of precipitating a small-scale epidemic of tuberculosis aboard ship when an incompletely treated seaman returns to work in close quarters (perhaps excreting antibiotic-resistant organisms) is valid. This consideration leads to further hospital restrictions on a group of patients who by their very nature are roaming personalities and scornful of discipline. Even more than land-based patients, seamen regard hospitalization as incarceration.

Whether a seaman's conduct is independent of his country of national origin and whether his alcohol intake is greater away from home or at home require statistical analysis. Further studies are being projected to compare patterns of alcohol intake among American seamen visiting in foreign ports with their intake in American ports, and to compare alcohol intake among married seamen with that of "unattached" seamen. Also planned are additional comparisons of personality traits of seamen who do not have tuberculosis with the tuberculous group reported here.

This preliminary study was undertaken because we were unable to find in the literature a similar analysis of tuberculosis among seamen. Perhaps if such observations made elsewhere are recorded, it will be possible to determine whether our impressions result from singular experience, from error of sampling, or from epidemiologic trends that need further elucidation. It is appalling to reflect on the possible effects of dissemination of antibiotic-resistant *Mycobacterium tuberculosis* by persons whose occupations may take them into close association within confined areas with previously uninfected men and whose escape from the tensions of living bring them into the convivial yet pugnacious atmosphere of the waterfront barroom.

We must establish better communications with this rather distinctive group; we may not be able to change a man's inherent personality, but we may be able to persuade him that he will benefit by early diagnosis and therapy, and that this therapy needs to be prompt and sustained. Perhaps we also need to revise some of our own concepts so that we may better cope with the exigencies described.

Conclusions

The tuberculous seaman is a relatively young man who is single or divorced and who has difficulty in accepting the discipline needed for detection and inactivation of tuberculosis. He postpones medical attention, although it is available without charge, and he suffers from alcoholism. Despite these factors, however, he can still be restored to full physical, social, and economic usefulness if treatment is provided early enough.

Alcoholism has been termed an occupational hazard of seamen. From our observations, it appears to be associated with far advanced tuberculosis, with conduct not predisposing to the discipline of therapeutic regimens, and with the grave public health hazard created when patients leave the hospital against medical advice at a time when they are still excreting acid-fast bacilli.

If tuberculosis is to be eradicated, special measures must be devised for distinctive groups such as seafarers. The obvious values of routine examinations and of antibiotic therapy are demonstrated, but the need for understanding why seamen resist these two measures must be studied. Intensive social research is essential.

REFERENCE

(*1*) Krause, A. K.: Environmental factors in tuberculosis. Amer Rev Tuberculosis 4: 713, November 1920.

Student Response to "Smoking and Health"

Copies of the January report of the Surgeon General's Advisory Committee on Smoking and Health accompanied a questionnaire on smoking behavior sent in June 1964 to approximately 11,000 students of medicine, dentistry, and osteopathy throughout the United States. The mail survey, one phase of a cooperative project of the Public Health Service and the Student American Medical Association, sought especially to determine possible changes in student attitudes since the January report.

The Student American Medical Association was responsible for contacting students on their register and encouraging participation in the survey, as well as for collecting, collating, and forwarding the returned questionnaires to the Public Health Service for analysis.

When PHS physicians, psychologists, and statisticians have completed a detailed study of the results, they hope to have a more accurate picture of current smoking behavior among an important group within the health profession. This in turn will help guide the development of future professional education and information programs and materials.