Persistent tuberculous disease among inmates of common lodging houses

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SUMMARY The initial chest x ray films in a series of sputum positive hostel dwellers showed considerably more advanced disease than in an age matched sputum positive population living under more conventional conditions. Furthermore, the mortality rate from tuberculosis was greatly increased among hostel dwellers. All organisms were found to be sensitive to standard antituberculosis drugs.

Analysis of disease trends shows that the environment is the primary determinant of the state of general health of any population.¹ The improvement in health of the general population resulting from improved housing and good sanitation is well illustrated by the reduced mortality and morbidity associated with tuberculous disease that has occurred irrespective of the introduction of antituberculous chemotherapy. Certain patients remain high risk groups, such as those from the Indian subcontinent and those who reside in common lodging houses. The former are an easily identifiable population,² the latter are less readily identifiable but are an equally high risk group.³⁻⁵ There are conflicting reports as to the severity of tuberculous disease among hostel dwellers. Elwood in 1961 reported increased incidence of more advanced tuberculous disease among inhabitants of common lodging houses at the time of notification than in those living under more conventional circumstances.⁶ The Joint Tuberculosis Council recognised the homeless as an important group in that many harbour resistant strains of tubercle bacilli.⁷ Alstrom *et al* reported an increased mortality rate from tuberculosis among homeless people in Stockholm.⁸ Moreover, it has been reported that the mean duration of survival after diagnosis is three years.⁹ More recently, however, an influential report¹⁰ maintained that the radiographic extent of tuberculosis was no greater in a sample of homeless alcoholics than in other patients but that some did carry resistant mycobacteria. Furthermore, Davies *et al* reported that 53% of their patients (mainly elderly, recalcitrant alcoholics) had micro-organisms resistant to one or more antituberculous drugs.¹¹

This study sets out to estimate from the latest figures available the severity and mortality from tuberculous disease among a homeless group in a large inner city area and to assess the degree of drug resistance of the infecting organisms.

Method

Using the notification details and the case records of the Central Manchester Chest Clinic we have examined, blindly, the nature and extent of consecutive sputum positive hostel dwellers referred to the Manchester Chest Clinic over the period 1975-80. We have compared the extent of radiographic disease using the Madras classification system¹² with a random age matched group of sputum positive patients referred to the Manchester Chest Clinic but who were all living in more conventional home circumstances, including patients from the Indian subcontinent. In addition, a comparison of the death rate from tuberculosis between hostel and non-hostel dwellers was carried out from the records of the Environmental Health Department, City of Manchester (1979-80). All organisms were cultured and assessed routinely for sensitivity to streptomycin, para-aminosalicylic acid, (PAS), isonicotinic acid hydrazide, (INAH), rifampicin, and ethambutol. All patients were carefully questioned about their medical history and if they had ever received antituberculous treatment.

Results

A total of 47 patients were available for complete detailed analysis.

Culture of the organisms universally grew *Mycobacterium tuberculosis* and in no patient were the organisms found to be resistant to streptomycin, PAS, isoniazid, rifampicin, or ethambutol.

Only three patients gave a history of previous tuberculous disease.

Discussion

Table 1 shows that half the hostel dwellers had a Madrus extent of tuberculous disease of grade 4 or above, whereas half of the non-hostel dwellers were graded 1 or 2, and this difference was statistically significant. Table 2 shows that the ensuing mortality rate was significantly greater among hostel dwellers than in an age matched population living under more conventional circumstances. In this study no resistant organisms were isolated. This may reflect the small numbers of reactivated cases. This population, however, does pose a serious potential problem in that drug resistance when it occurs does so more readily in areas of overcrowding with inadequate hygienic facilities.¹³ Such conditions are still substantially extant in lodging houses in Britain.³

Table 1 A comparison of the severity of tuberculous disease between hostel and non-hostel dwellers

Madras classification system	1	2	3	4	5	6	Total
Non-hostel dwellers	6	18	14	7	2	0	47
Hostel dwellers	5	10	9	11	7	5	47

($\chi^2 = 11.3$, $p < 0.05$)

Table 2 Comparison of the death rate from tuberculosis in Manchester between hostel residents and those living under normal conditions (1979–80)

	Survived	Died	Total
Hostel	20	14	34
Non-hostel	273	10	283
Total	293	24	317

(Fisher's exact test = $p \leq 0.00001$).

With the relaxing of previous social and health precautions the present method of detection and treatment has failed to influence the reservoir of infection among the homeless population.¹⁴ Because they have more advanced disease they are more likely to disseminate infection to others at their level of society. Indeed, the low incidence of reactivation is in keeping with this. Such uncontrolled disease is important in the perpetuation of tuberculosis among the lodging house population,¹⁵ and the distinct lack of cooperation from most habitués adds considerably to the problem. They frequently elude measures to detect disease,^{16 17} although successful attempts to identify and treat this group of patients have been described previously.^{18 19} There is increasing concern that they may arrest the

downward trend in notification of tuberculous disease,²⁰ for many are unresponsive to normal methods of treatment or persuasion and their life style puts at a disadvantage even those who are cooperative. But whether a ruling should be adopted of rewarding those who cooperate or of compulsarily screening, isolating, and treating the inhabitants of common lodging houses is a matter for further investigation.

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