2. Current Tuberculosis Problem in Japan and its Control

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The level of tuberculosis epidemics in Japan is much higher than that in the USA and other industrialized countries. This is due to the gap that already existed when tuberculosis control programs commenced using modern technology in both Japan and other countries around 1950. However, it is possible that this gap will widen unless the situation is improved in the next several years (Fig. 1).

The long-lasting decline of epidemics from the 1950s to around 1980 divided tuberculosis in Japan primarily into three population segments: the elderly, immunocompromised hosts, and socio-economically deprived persons. This characterizes the clinical picture of tuberculosis today and may also suggest special requirements for a control strategy.

The proportion of elderly people who were massively infected with tuberculosis in their youth, during pre-war time, or soon after the war has increased significantly during the rapid

aging of the population. These generations have always exhibited the highest level of tuberculosis cases from the 1960s until now, and their growth in proportion in the overall population has caused an increase in the case rate of the entire population. The age-specific rate of tuberculosis development and the risk of clinical breakdown can be derived by dividing the age-specific case notification rate by the corresponding estimated prevalence of infection (1) (Table 1). The risk of clinical breakdown of aged people is clearly lower than that of adolescent age groups. This indicates that the high incidence of tuberculosis among older age groups is primarily due to the high prevalence of infection in these people, which can lead to development of the disease (endogenous reactivation).

In a study of newly registered tuberculosis patients, diabetes was found in 14% of the patients, and a history of gastrectomy in 12%. Other medical factors found to be common in tuberculosis patients included renal hemodialysis, pneumoconiosis, corticosteroid therapy, gastric ulcers, and heavy drinking. Patients with at least one of these risk factors constituted about 30% of all the patients.

The factor known to predispose a person to the highest risk of tuberculosis is HIV/AIDS. Though still very few in Japan, tuberculosis patients with HIV infection are gradually increasing. Our study of the clinical characteristics of HIV-infected tuberculosis patients in Japan indicates that 31% have generalized dissemination, another 30% have extra-pulmonary dis-

Figure 1. Secular trend of tuberculosis, Japan and USA (Mortality and Case rate).

Table 1. Estimated Age-specific Risks of Clinical Breakdown Based of Estimates of Prevalence of Infection and Case Notification Rates for 1998, Japan

Age	Prevalence of Infection (A)	Case rate (B)	Risk of clinical breakdown (B/A)
0-19	0.3%	2.6	1.03%
20-29	1.6%	20.9	1.28%
30-39	4.4%	19.8	0.45%
40-49	13.5%	24.8	0.18%
50-59	35.6%	37.7	0.11%
60-69	56.8%	60.9	0.11%
70-79	71.0%	105.0	0.15%
80+	80.6%	140.3	0.17%

Prevalence of infection: estimated for mid-point age of age group.
Case rate: per 100,000.

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ease, and the remaining 39% have tuberculosis limited only to the lungs. HIV/AIDS-associated tuberculosis may be considered to be an extreme example of tuberculosis occurring in immuno-compromised hosts, with its generally severe disease and atypical clinical characteristics more or less common to the existing tuberculosis patients in general.

A study was conducted of newly registered cases of tuberculosis in socio-economically poor people, taking the state of being jobless and under social welfare among male tuberculosis patients aged 30–59 years as a proxy for homelessness. These patients corresponded to 5% of the male middle-aged patients in 1987, and increased to 10% by 1998. The proportion was very high in 13 metropolitan cities, i.e., big cities with populations exceeding a million. It was 20% in the big cities and only 5% in the remaining prefectures. However, it is encouraging that tuberculosis treatment service using the DOTS strategy has been introduced in some cities, though on a small scale.

Outbreaks of tuberculosis, or small epidemics, are considered to be inevitable in the decline of tuberculosis, along with a widening gap of infection between young and old generations and an excessive indifference of the people and medical professions to tuberculosis. Out of 108 cases reported to the Ministry of Health and Welfare from 1998 through 2000, 37% occurred in schools, while others involved people in companies, hospitals, various other institutions and facilities. This suggests that the outbreaks are becoming more common in youths that are relatively older and involve ill-defined groups, such as clients in amusement or leisure facilities and bars.

The clinical condition of patients at the time of diagnosis is becoming more severe, presumably because tuberculosis is likely to infect medically or socially compromised people. This also makes tuberculosis a disease with a poor prognosis. Despite the progress of chemotherapy, the treatment outcome for tuberculosis is not excellent. A collaborative study of tuberculosis hospitals of Japan indicated that 12% of smear-positive initial treatment patients die within nine months of treatment, 5% of them as a result of the tuberculosis and 7% from causes other than tuberculosis. Only 78% are successfully cured, and the remaining 10% become either absconders or failure cases.

The poor treatment results cause acquired drug resistance that eventually leads to primary drug resistance. A nationwide drug resistance survey in 1997 (2) revealed that primary drug resistance to streptomycin was 7.5%, isoniazid 4.4%, rifampicin 1.4%, and ethambutol 0.4%. The resistance to any of these drugs was 10.3, and multi-drug resistance was 0.9%. These rates are generally higher than those in a previous survey in 1992.

The author and a colleague tried to predict the future case rate (Fig. 2), and the result indicates that the rate will decrease slowly at a rate of 2 to 3% per year after 1999, and that it will pass the level of 30 per 100,000 around 2003 and 20 per 100,000 around 2013 (3). The control priority must be shifted from a mass approach to a more individualized one to most effectively

Figure 2. Future projection of TB case rate (Japan, All forms).

accelerate the decline. For example, chemoprophylaxis and contact examinations should be prioritized over mass BCG vaccination and mass screening. Similarly, priority should be given to treatment programs rather than to primary prevention services. The following are the crucial foci to be addressed immediately in the treatment program: 1) Securing tuberculosis beds for the infectious patients; in particular, a facility attached to the general hospital, 2) Retaining and improving the public subsidy system for tuberculosis treatments in an expansion of the DOTS strategy and case management services, and 3) Securing the provision of anti-tuberculosis drugs through appropriate pricing and a flexible approval policy. In addition, tuberculosis should be given proper weight in medical education programs, in order to keep the medical profession alert to this problem.

Finally, it is not possible to eliminate tuberculosis within a country. As seen in many European countries, tuberculosis patients immigrate from high-prevalence countries. Thus, international cooperation in tuberculosis control is not only a matter of social justice, but has a very solid epidemiological basis in a national tuberculosis program.

References

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