

Screening and treatment for latent tuberculosis infection among asylum seekers entering Switzerland

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Summary

Aim of the study: To evaluate the compliance of doctors and patients with the current recommendations for screening and preventive treatment of immigrants with a positive tuberculin skin test (TST) suggestive of latent tuberculosis infection (LTBI).

Methods: Retrospective cohort study of all asylum seekers entering Switzerland between 1 January 1993 and 31 December 1993 and assigned to the cantons of Aargau, Fribourg, Geneva, Neuchâtel, Valais and Vaud, who underwent a TST at the border. The medical documents of all individuals with a TST size suggestive of LTBI (≥ 10 mm in children < 15 years, ≥ 18 mm in young adults aged 15–25 years) were reviewed for final diagnosis, therapeutic decision, compliance with treatment if prescribed, and notification for tuberculosis within the next 3 years.

Results: Among 2515 asylum seekers, 172 had a positive TST suggestive of LTBI. The documents of 93 persons were available. The final diagnosis was LTBI in 71 cases, possible tubercu-

losis in 10 cases, an effect of BCG immunisation in 10 cases, and other diagnoses in 2 cases. Among 82 individuals with normal chest X-ray or no radiological examination, only 37 (46%) received a preventive treatment and one a full course of anti-tuberculosis drugs. Among 11 persons with an abnormal chest X-ray, 2 received a full course of antituberculosis drugs, 7 a preventive therapy and 2 had no treatment prescribed. Among the 44 subjects in whom a preventive treatment was prescribed, 30 adhered to the treatment regimen. One case (without prescribed treatment) was notified for tuberculosis two years after entry.

Conclusions: Compliance of doctors and patients with current recommendations for examination and treatment of immigrants with a TST suggestive of LTBI is unsatisfactory. New guidelines are needed to provide a clearer definition of the indications and explain the benefits of treating LTBI.

Key words: tuberculosis; latent tuberculosis infection; preventive chemotherapy; immigrants; screening

Introduction

An increasing proportion of cases notified for tuberculosis in industrialised countries are seen among foreign-born people and in particular immigrants from countries with a high incidence of tuberculosis [1]. Therefore, screening for tuberculosis by chest X-ray is generally recommended in this population to prevent transmission of the disease within the immigrant group and to the local population [2], although the screening yield is usually low. Screening for latent tuberculosis infection by tuberculin skin test (TST) detects a higher proportion of persons who could benefit from preventive treatment [3] but is more controversial because it involves screening of symptom-free individuals and prescription of preventive treatment to

many in order to prevent the future development of the disease in a few. Furthermore, the main test used for detection of tuberculosis infection is of questionable validity and its predictive value is unsatisfactory. In spite of these limitations, the size of the TST correlates with the risk of TB among immigrants [4, 5] and the benefit and cost-effectiveness of treating latent tuberculosis infection have been demonstrated in several studies [6–8], although it may decrease with age [9]. Therefore, screening for LTBI is considered cost-effective in populations with a high incidence of tuberculosis, provided treatment is offered to the individuals at highest risk of reactivation [10].

Most persons seeking asylum in Switzerland

come from countries where the incidence of tuberculosis is higher than in western Europe. Some have a positive TST resulting from prior infection by *M. tuberculosis*. Assuming that the risk of further development of tuberculosis is related to the size of the test [11], the time elapsed since infection [12], the subject's age [12] and immunological status [13], tuberculin testing for immigrants from high-incidence countries and preventive treatment (or treatment of latent tuberculosis infection) for individuals at risk of reactivation have been recommended [2]. These recommendations have recently been reiterated by the Centers for Disease Control and the American Thoracic Society [7].

Since 1992, all asylum seekers (AS) entering Switzerland have been required to undergo screening at the border, including a TST and a miniature chest X-ray (except for children and pregnant women) in special screening centres run by the Swiss Office for Refugees [14]. All AS with a positive TST suggestive of tuberculosis infection, and all carriers of a radiological abnormality, are notified for further examination to the health

authorities of the cantons (county) to which they are assigned after entry. According to the current recommendations, children under 15 years with a TST ≥ 10 mm and young adults aged 15–25 years with a TST ≥ 18 mm should receive preventive treatment after ruling out active tuberculosis or a full course of therapy if active disease is proven or suspected [15].

In 1993, the incidence of tuberculosis in Switzerland was 10.8/100,000 (8.4/100,000 among Swiss citizens and 21.1/100,000 among foreign-born residents, excluding asylum seekers for whom no incidence can be calculated owing to the changing numbers of this population).

The aim of this study was to assess retrospectively, in a sample of asylum seekers entered during the year following implementation of the new screening procedure at the border, whether the guidelines for the treatment of persons with a potential tuberculosis infection or untreated tuberculosis were followed by the examining doctors and the degree of compliance with the prescribed treatment.

Method

From the database of the Border Health Control we selected all asylum seekers arrived between 1 January and 31 December 1993 who were found to have a positive TST possibly indicative of LTBI and in whom preventive treatment should have been considered [15]. A written request was then sent to the local health authorities of 7 cantons, representing one-third of the country's population, asking for permission to study the medical reports of these AS in hospitals, outpatient clinics, or medical offices where the first medical examination had been performed.

From the available medical reports in the cantons

where permission was given we collected information by questionnaire to screening centres on the results of medical and radiological examinations (if performed), the final diagnosis (tuberculosis, tuberculosis infection or other diagnosis), the decision to treat, and compliance with treatment if prescribed. The original medical records and the X-rays were not checked. We also checked in the tuberculosis notification files of the Swiss Federal Office of Public Health whether any of these AS had been notified for tuberculosis during the 3 years following entry.

Results

In 1993, 21,664 asylum seekers were screened in border centres of the Federal Office for Refugees. A TST was performed and read in 17,546 subjects, of whom 9,328 were aged <26 years. Of these, 2,515 (27%) were assigned to the 6 cantons where we received permission to study the medical files (Aargau, Fribourg, Geneva, Neuchâtel, Valais and Vaud). In this group, 172 AS satisfied the definition of possible LTBI. The local health authorities of one canton declined to send the information (on confidentiality grounds). Complete medical documentation was available for 93 AS (54%). For the remaining 79 cases the information was unobtainable, either because the AS never appeared for the scheduled visit or because the information was no longer available.

Among the 93 AS with complete documentation, 72 also had a chest X-ray. 61 of them were considered normal and 11 showed some radiolog-

ical abnormality (suggestive of tuberculosis or not). 21 underwent no radiological examination (18 children and 3 young adults). Three AS were notified for tuberculosis shortly after entry (one for extrapulmonary tuberculosis with a normal chest X-ray and two for culture-negative pulmonary tuberculosis with a radiological abnormality).

The diagnosis mentioned in the records of the remaining 90 AS was LTBI in 71 (79%), tuberculosis in 7 (8%), and positive skin test reaction due to prior BCG immunisation in 10 (11%). In 2 cases no final diagnosis was mentioned.

Among 82 AS with a normal chest X-ray or no radiological examination at the border, 36 (46%) received some form of preventive treatment (12 of 32 children and 24 of 50 young adults) and one a full course of antituberculosis drugs. Among 11 AS with a radiological abnormality, 2 were prescribed

Table 1

Treatment prescribed by age groups and results of radiological examination among 93 AS.

	Radiological examination at the border						Total
	Normal		Any abnormality		No X-ray		
	Children <15 years	Young adults 15 to 25 years	Children <15 years	Young adults 15 to 25 years	Children <15 years	Young adults 15 to 25 years	
Preventive treatment	5	23	1	6	8	1	44 (47%)
Full course of TB treatment	1			2			3 (3%)
No treatment	8	24	1	1	10	2	46 (50%)
Total	61		11		21		93

a full course of tuberculosis treatment, 7 a preventive treatment and 2 received no treatment (table). Prescription of treatment varied between cantons from 11% to 87%.

Of 44 AS in whom preventive treatment was prescribed, 34 (77%) were regularly followed and considered compliant, 7 (16%) defaulted and 3 (7%) missed the final appointment. No treatment was modified or halted because of side effects or intolerance.

One AS in this group was notified for tuberculosis to the SFOPH two years after entry into Switzerland. The subject had had a positive TST and a normal chest X-ray but no preventive treatment was prescribed. Among AS in whom preventive treatment was prescribed, no case was notified for tuberculosis.

Discussion

Our study suggests that management of AS with a positive TST does not comply with current recommendations. Only 77% of AS with a possible LTBI underwent chest X-ray and treatment was prescribed in 40% of children and 48% of young adults with a positive TST and a normal chest X-ray. On the other hand, preventive or curative treatment was prescribed in 9 out of 11 individuals (82%) with an abnormal chest X-ray.

In our study adherence to treatment, once prescribed, was satisfactory (77%) and no intolerance or side effects were reported. We assume that the cases without preventive treatment were not offered it and that treatment was not actively refused. Although anecdotal, it is interesting to note that one among 46 AS who did not receive preventive treatment was later notified for tuberculosis, while none of the 47 immigrants treated preventively was notified within 3 years after entry.

Since a large proportion of cases of tuberculosis notified in western countries are observed among persons already known to have latent tuberculosis infection but left untreated, the prescription of treatment for latent tuberculosis infection could contribute to a decrease in incidence in future years [16]. There is controversy about the feasibility of carrying out so prolonged a treatment in symptom-free recent immigrants. According to one Swiss study, the treatment of latent tuberculosis infection is unrealistic since compliance with the treatment is unsatisfactory [17]. Another Swiss study demonstrated that even recent immigrants may be compliant with the prescribed treatment if cared for in an appropriate environment [18]. The same study observed a 4% rate of tuberculosis re-

activation within 4 years among infected subjects not prescribed treatment or refusing it. A study conducted in Italy demonstrated that the outcome of preventive treatment among immigrants was associated with the quality of medical management and was better in specialised services than in general health services [19].

This study has several limitations. The size of the population studied was small, representing only 27% of the AS arriving in Switzerland in 1993. Selection of the cantons where the study was performed was not random but based on the local health authorities' agreement to cooperate. We cannot rule out that the results in other cantons would have been even less satisfactory. Even so, only 54% of the medical records of the immigrants with a possible latent tuberculosis infection were available 3 years after entry. Possible explanations are the divided responsibilities at local level between local authorities and doctors, the high mobility of the AS population and the frequent departure or disappearance of individuals facing denial of refugee status.

Another limitation is the use of incorrect definitions of tuberculosis. We have to assume that the four cases where a diagnosis of tuberculosis was mentioned with normal chest X-ray, and in whom only preventive treatment or no treatment at all was prescribed, had tuberculosis infection and not tuberculosis. We consider that there were only three true cases of tuberculosis (one extrapulmonary and two culture-negative pulmonary). Moreover, in some children the diagnosis of tuberculosis infection was mentioned without performing a chest X-ray. We assume that they were

medically examined before prescription of preventive treatment. No person was put on a full course of tuberculosis treatment without a chest X-ray.

In spite of these limitations, screening for latent tuberculosis infection among a population at high risk of infection and later development of tuberculosis may be justified if a positive TST is followed by adequate examination and if the examiners are aware of the benefit of preventive treatment. In Switzerland the TST is performed at the border and further investigations are performed by another medical team in the cantons. A possible strategy for improving this situation would be to have TSTs performed by the physicians who will be in charge of further treatment, if the test is found to be positive. Furthermore, the tests should be restricted to the age groups where the benefit

of preventive treatment appears to be greatest, i.e. to children and young adults, and to persons who would be willing to follow a treatment if indicated. As very rightly mentioned in the recent recommendations of the ATS and CDC, "intention to tuberculin test is intention to treat" [7]. We endorse this statement and recommend that screening, if performed, be followed by correct management of the cases.

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