

Prevalence Of Tuberculosis Among Asiatic Migrant Workers In North Lebanon

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Abstract

Objective: To study the prevalence of tuberculosis among a group of Asian migrant workers in North Lebanon.

Methods: Retrospective cohort study was conducted between June 1, 1994 and December 31, 1999 in 415 Asian migrant workers who were subjected to tuberculosis screening tests.

Results: 415 Asians migrants workers were skin tested for tuberculosis. The majority of subjects (77%) were from Srilanka. Thirteen percent of Sri lankans workers tested positive for tuberculosis, while 20% of non-Sri lankans workers had positive tuberculin skin tests. There was no statistical difference in positivity rates with respect to the country of origin, age groups and sex. None of the subjects tested had an sexually transmitted diseases.

Conclusion: Prevalence of TB reactivity is relatively high among Asians migrant workers. Preventive measures for early diagnosis of latent infection should be regularly performed especially in migrant worker from high-prevalence countries.

INTRODUCTION

Today, tuberculosis is a major cause of morbidity in the world, particularly in developing countries. More than one billion individuals are infected with *Mycobacterium tuberculosis* and more than 3.5 million people die annually worldwide [1,2,3]. In addition to HIV-infected persons, certain groups have a higher rate of TB than the general population. These groups include minorities, the homeless, prisoners, alcoholics, the poor and migrant workers [4]. In Lebanon, the Central Administration for statistics estimates that annually there are 75.000 legal migrant workers holders of work permits and 500.000 seasonal Syrian workers unregistered in the Labor Ministry.

The majority of workers often live in crowded conditions and have numerous and complex health problems that frequently include communicable diseases such as tuberculosis and sexually transmitted diseases. Control of tuberculosis in migrant workers presents special problems. The workers often fear deportation and are therefore reluctant to seek medical care. Furthermore, their mobility between Lebanon and their country of origin, as well as their migration within Lebanon, makes it difficult to provide

continuity of health care [6,7,8]. The aim of this study was to determine the prevalence of TB in Asian migrant workers in North Lebanon between June 1, 1994 and December 31, 1999.

METHODS

From June 1, 1994 to December 31, 1999, tuberculin testing was conducted in 415 Asiatic migrant workers in North Lebanon. After informed consent, participants were screened for tuberculosis and latent TB infection by chest X-ray and tuberculin skin testing (TST) with an intradermal injection of 5 international units of purified protein derivative (PPD) in the volar surface of the left forearm. Subjects with skin indurations of 10 mm and above after 72 hours were considered to have latent infection regardless of the history of prior BCG vaccination. In addition, a symptom questionnaire and a thorough physical examination were performed. Subjects that reported previous treatments for TB were not included in the study. Subjects with a positive PPD had a chest radiograph performed with sputum smear examination. If the chest radiograph was normal and the sputum smear examination was negative, the remaining required tests were performed (Serological analysis for

HBsAg, HIV-test, and VDRL) in order to obtain a work permit from the Lebanese General Security department. The presence of radiological signs compatible with TB in PPD positive subjects resulted in the denial of the work permit and deportation to the country of origin. Data were compared using χ^2 test of Significance.

RESULTS

415 Asian migrant workers in North Lebanon have positive tuberculin skin test. 62 (15%) had a positive PPD reaction (Table 1). The majority of subjects (77%) were Srilankans. Thirteen percent of Srilankans workers tested positive for TB, while 20% of the non-Srilankans had positive tuberculin skin tests. No statistical difference was found in PPD positive rates with respect to country of origin ($p=0.31$). TB skin testing results were then stratified by age and sex. No significant difference in positivity rates was found among age groups ($p=0.39$) nor between males and females ($p=0.44$). 9 of 62 (15%) patients had positive tuberculin skin reaction, negative sputum smear examination and chest radiograph suggestive of active TB. None of the subjects tested had an sexually transmitted diseases.

Figure 1

Table 1: TB skin reactivity among Sri Lankan and non-Sri Lankan workers

Country of origin	Number tested	%	Negative	%	PPD reactive			
					< 10mm number	%	≥ 10mm number	%
Sri Lankans	317	77	261	83	14	4	43	13
Non-Sri Lankans	98	23	76	78	2	2	19	20
Total	415	100	337	81	16	4	62	15

Figure 2

Table 2: TB skin testing by age and sex

Age	Negative			PPD reactive < 10mm			PPD reactive ≥ 10mm			Total
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
18-24	10	140	150	1	9	10	1	24	25	185
25-34	8	85	93	0	3	3	2	18	20	116
35-44	9	48	57	0	1	1	2	6	8	66
45-54	7	30	37	0	2	2	1	8	9	48
Total	34	303	337	1	15	16	6	56	62	415

DISCUSSION

Immigrants from countries endemic for TB account for a significant proportion of tuberculosis cases in industrialized countries [9,10,11,12,13]. Factors that influence the risk of TB among immigrants include the prevalence of TB in the country of origin, the duration of residence in the host

country and the efficiency and quality of curative and preventive services [14]. Screening for latent tuberculosis infection is considered a high cost, low yield strategy for controlling the TB epidemic. This concept is certainly true in populations with a low incidence of tuberculosis [11]. Immigrants, however, develop active TB mainly as the result of reactivation of latent infection: the presence of tuberculin skin reactivity on immigration increases the likelihood of developing active TB [15], although increased incidence of primary TB has also been reported [16]. National guidelines therefore recommend screening recent immigrants from countries with a high prevalence of TB [12, 17, 18].

One geographic area where the impact of immigration is well studied is the Arab Gulf area. In fact, variants of mycobacterium tuberculosis were found for the first time in Saudi Arabia. African and Asian variants were isolated from both Saudi and non-Saudi patients, the former being more numerous. Mycobacterial species other than *M. tuberculosis* were also fully identified with *Mycobacterium fortuitum* and *Mycobacterium chelonae* being the two most prevalent [19].

Furthermore, Asians Hindu workers had a substantially higher incidence of TB than white Muslims people, particularly at extra pulmonary sites [20]. The increased susceptibility to TB of Hindus, particularly Hindu women, may be related to a culturally acquired immunodeficiency caused by Lactovegetarianism and associated vitamin deficiencies [20, 21]. Many studies have shown that the vegetarian diet is an independent risk factor for TB in Asian immigrants with increasing risk of TB with decreasing frequency of meat and fish consumption [22]. Vitamin D deficiency, also common among Asians vegetarians, is known to affect immunological competence [22, 23].

Asian workers constitute about 55% of the foreign workforce registered in Lebanon. 59% come from Sri Lanka, 18% from India, 14% from Philippines, and 9% from other countries [5]. Tuberculosis in migrant workers mirrors the TB epidemiology in the country of origin with predominance of young adults being infected [10].

The population represented in our paper is a unique migrant population. They live in one house with the family and close to the children, remaining then in one geographic area in contrast to most migrant and seasonal farm workers.

In our study, 15% of the Asians workers studied had positive PPD reaction. Of these, 15% had chest X-rays suggestive of active TB. It is thus valuable to screen this high risk

population. In order to identify those workers with latent infection with TB who pose a threat of to the receiving families [24, 25].

Although previous BCG administration can make the interpretation of the PPD test more complex, in 1979 CDC recommendation is that positivity is based on the size of indurations, regardless of the patient's BCG vaccine status [26]. Persons with positive reactions but no active disease should be considered candidates for prophylaxis [27]. HIV infection, diabetes mellitus, other chronic medical conditions, as well as the use of immunocompromising or suppressive medications (including steroids) exacerbate TB risk.

Most legal migrants will bring chest radiographs with them from their country of origin. Those films should be sent for formal reading by a radiologist if any active disease is suspected. If radiographs are of poor technical quality, new ones should be taken, with appropriate use of protective lead aprons. If an adult patient does not have a chest radiograph and is PPD-positive (>5 mm) [28, 29], a single posteroanterior view radiograph of the chest should be taken, with additional views (lateral, apical, or lordotic) obtained as indicated. If the chest radiograph shows abnormalities, a sputum specimen should be obtained. Many immigrants return home regularly to their country of origin. Primary care practitioners may wish to do more frequent TB screening in persons who travel back and forth to countries where TB is prevalent.

Isoniazid remains the standard of prophylaxis for inactive disease, although practice varies when prophylaxis is being administered to patients from areas where multiple-drug-resistant TB is prevalent. Preventive therapy generally consists of Isoniazid (10mg/kg for children, to a maximum dose of 300 mg per day for children and adults) given either daily for 6 to 9 months. When therapy is directly observed, Isoniazid can be given twice a week in a dose for adults of 15 mg/kg (up to 900 mg) [30].

Screening and prophylactic therapy are recognized as key tools for the prevention and control of tuberculosis among immigrants from TB endemic countries [17, 18]. The practical difficulties of tuberculosis screening among immigrants have been the object of several studies and extensive debate [31,32,33].

In Lebanon, screening for TB is obligatory. However, without a national effort to provide basic health services for

these workers through outreach screening and primary health care, migrant populations will remain a significant reservoir for TB in Lebanon.

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