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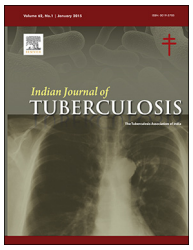

Original Article

Frequency and outcomes of new patients with pulmonary tuberculosis in Hatay province after Syrian civil war

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ARTICLE INFO

Article history:
Received 14 April 2016
Accepted 25 November 2016
Available online xxx

Keywords:
Syrian refugees
Tuberculosis
Refugee
Immigrant
Primary care

ABSTRACT

Objective: It is known that tuberculosis is frequently seen among refugees. Hatay province is one of the cities that substantially expose to migration of refugees after Syrian civil war. In this study, it was aimed to compare frequency of new pulmonary tuberculosis (PTB) cases and treatment success/cure rates between Turkish and Syrian patients.

Findings: The study included 211 patients with PTB (178 Turkish and 33 Syrian patients) registered to Hatay Tuberculosis Outpatient Clinic between 2010 and 2013. On the basis of years, number of PTB patients registered was 53 (Turkish/Syrian: 52/1) in 2010, 44 (44/0) in 2011, 41 (39/2) in 2012, and 73 (43/30) in 2013. There were no significant differences between Turkish and Syrian patients regarding age groups, gender, marital status, contact history, smear result, and drug sensitivity assays when treatment success was considered ($p > 0.05$). Directly observed therapy (DOT) rate was higher in patients who achieved successful treatment (97.6% vs. 2.4%; $p < 0.001$). Number of patients successfully treated was smaller among Syrian patients (63.6% vs. 88.8%; $p < 0.001$). Leaving the treatment and/or transfer rates were higher among Syrian patients (30.3% vs. 3.9%; $p < 0.001$). During the study period, drug-resistant tuberculosis was detected in one Syrian and 3 Turkish patients.

Conclusions: Although PTB frequency has increased in Hatay province within prior 4 years, treatment success among local population is still within limits established by World Health Organization (WHO). However, the treatment goal could not be achieved when considered together with refugees. To improve treatment success in refugees, implementation of a new national tuberculosis is needed control program in this population.

1. Introduction

After Syrian civil war, thousands of Syrian citizens immigrated to Turkey as refugees. Refugees first arrived to Turkey in March 2011. There are 200,386 refugees in refugee camps in the supervision of AFAD (Disaster and Emergency Management Presidency) and 350,000 refugees out of these camps.[1] Hatay province is one of the cities which received a substantial number of immigrants since it is the neighbor city to Syria and considerable portion of local community can speak Arabian. Refugees began to settle in Hatay in March 2011. In Hatay

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http://dx.doi.org/10.1016/j.ijtb.2016.11.034

Please cite this article in press as: Doğru S, Döner P. Frequency and outcomes of new patients with pulmonary tuberculosis in Hatay province after Syrian civil war, *Indian J Tuberc.* (2017), http://dx.doi.org/10.1016/j.ijtb.2016.11.034

province, there are 15,400 Syrian refugees in camps and 60,000 refugees residing out of camps by 2013. The population of Hatay province was increased by 5% after migration, which is higher than inherent increase.[1]

During civil wars, TB reactivation and transmission have increased among refugees due to crowded life conditions, immigration, difficulty to access healthcare, nutrition, and shortage of medication and healthcare staff, resulting in increased TB prevalence and mortality.[2–4] In Europe, 19,912 (0.4%) TB cases in Norway and 4643 (0.1%) TB cases in London were detected among refugees.[5,6] TB was the cause of death in 16% of refugees after Somalia civil war while it was the cause of 30–50% of adult deaths in refugee camps in Sudan.[7] TB reactivation is generally seen; however, de novo cases are also encountered within first years after migration.[8,9] In a study using DNA fingerprint in Norway, it was found that refugees were infected prior to migration.[10]

TB prevalence was 23:100,000 in Syria.[11] TB prevalence in Turkey and Hatay province is 26:100,000 and 11.3:100,000, respectively.[12] During Syrian civil war, problems have been experienced in diagnosis, treatment, and prevention of TB due to challenges in access to healthcare services and supply of drugs.[13] In 2013, PTB prevalence has increased to 51:100,000 in Syria.[11]

The most important issue in controlling tuberculosis is early diagnosis and prompt treatment after diagnosis to achieve cure.[14] The World Health Organization (WHO) has established a treatment success rate of 85% in new TB cases.[15]

In Turkey, the diagnosis and treatment of TB is executed by Tuberculosis Outpatient Clinics without any fee. In Hatay, there are two Tuberculosis Outpatient Clinics (1 in Hatay and 1 in İskenderun) and 3 laboratories. In the Tuberculosis Outpatient Clinic of Hatay, TB patients from provincial center and 7 towns of Hatay are being followed. Since 2006, directly observed therapy (DOT) has been employed for treatment of TB in Hatay, which was continued after arrival of Syrian refugees in 2011.

In this study, it was aimed to compare frequency of new pulmonary tuberculosis (PTB) and treatment success/cure rates between Turkish and Syrian patients. This is the first study comparing PTB frequency after the arrival of Syrian refugees.

2. Materials and methods

In Hatay Tuberculosis Outpatient Clinic, 708 patients with pulmonary and extra-PTB had been followed between 2010 and 2013 including 185 cases (74 former and 111 new cases) in 2010, 178 cases (73 + 105) in 2011, 150 cases (65 + 85) in 2012, and 195 cases (62 + 133) in 2013. The study included 211 new PTB patients (178 Turkish and 33 Syrian patients) registered to Hatay Tuberculosis Outpatient Clinic between 2010 and 2013 who completed therapy. This is a retrospective, descriptive study.

Data regarding demographic and disease characteristics were collected by using ''Data sheet for patients with tuberculosis'' which includes 25 questions. By data sheet, demographic characteristics of the patients registered to Tuberculosis Outpatient Clinic (age, gender, marital status, insurance, employment status) and data regarding diagnosis and management disease (presenting complaint, DOT status, history of contact with a PTB patient, degree of relationship with contact, case definition, symptoms, presence of bacille calmette-guerin), scar, status of disease, status of HIV (human immunodeficiency virus) positivity, presence of comorbid disease, result of tuberculin skin test, smear result, tissue diagnosis, results of chest radiography, culture results, results of drug sensitivity tests and outcome) were questioned in the patients. Case definitions include new patient, relapse patient, patients with treatment failure, patients with treatment left, chronic patients, transferred case, and death. New patients are defined as those have never been treated for TB or have taken anti-TB drugs less than one month while relapse patients are defined as those have previously received anti-TB drug one month or more in the past. Patients with treatment failure are defined as those have been previously treated for TB and whose treatment failed at the end of their most recent course while patients with treatment left are defined as those have previously been treated for TB and were declared lost to follow-up at the end of their most recent course of treatment with TB-positive bacteriological studies after withdrawal of therapy beyond 2 months, and the patients who were transferred to another facility to maintain therapy are classified as transferred case.[16] Disease status is classified as PTB and extra-PTB which is defined as TB involving other organs such as pleura, lymph nodes, pericardium, abdomen, joints, bones, and PTB plus extra-PTB. Treatment outcome is classified as cured, treatment completed, treatment failed, treatment defaulted, and died. Outcome is defined according to WHO criteria. Cured is defined as a PTB patient with positive sputum who had 2 negative sputum in addition to clinical and radiological recovery. Treatment completed is defined as a TB patient who completed treatment and had clinical and radiological recovery while treatment failed is defined as a TB patient whose sputum smear or culture is positive at month 5 or later during treatment. Treatment defaulted is defined as a TB patient who did not start treatment or whose treatment was interrupted for 2 consecutive months or more. Died is defined as a TB patient who dies for any reason before starting or during the course of treatment. Multi-drug resistant (MDR) TB is defined as a TB case resistant to at least both isoniazid and rifampicin in drug-sensitivity assays.[16]

2.1. *Statistical analysis*

Statistical analyses were performed by using SPSS version 13 (SPSS Inc., Chicago, IL, USA). Normal distribution of data was assessed by using Shapiro–Wilk test. Continuous variables with normal distribution were compared by using *t* test, while continuous variables with skewed distribution were compared by using Mann–Whitney *U* test. Nominal variables were compared by using Chi-square test. A p value <0.05 was considered as statistically significant.

3. Findings

Between 2010 and 2013, 211 patients with PTB (178 Turkish and 33 Syrian) were included to the study. Of these patients, PTB

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