Diagnosis Delay among Newly Tuberculosis Patients Admitted in a Community Hospital

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Abstract

Objective: To determine the diagnostic delay in newly diagnosed tuberculosis (TB) patients admitted to a community hospital in Qatar.

Design: The study was conducted from January 2013 today 2016. The following information was collected from patient file: Age, sex, nationality, tuberculosis type, time of symptoms onset, time of the confirmatory test, and the time of visiting an HCP before the admission encounter.

Results: Of the 390 TB patients included in the study, 281 (72.1%) were from South East Asian countries, 325 (83.3%) patients were males and 65 (16.7%) were females, mean age was 32.4 years. Of the 390 patients, 89.7% (350 patients) had pulmonary tuberculosis and 40 (10.3%) patients had non-pulmonary localization. The median total delay was 30 days (15;60 days), while the patient delay was 10 days (4;27 days) and the system delay was 3 days (3;73 days). For pulmonary tuberculosis, the total delay was 30 days and for non-pulmonary localization was 15 days.

Conclusion: The study provides an insight about the delay in the diagnosis of TB at a community hospital in Qatar. Additional studies should be conducted to evaluate the delay in a representative national sample and to identify the factors associated with patients’ delays, which could be used to strengthen the national program for tuberculosis control.

Keywords: Tuberculosis; Diagnosis Delay; Qatar

Introduction

In Qatar, around 750 new tuberculosis patients are confirmed every year, being more than 95% expatriate workers for the construction and oil industries [1,2]. This immigrant population came from countries with high incidence of TB, with the majority being from South East Asian countries [3]. As per national regulations, all the expatriates workers are screened (chest X ray for all, PPD test, Quantiferon, AFB smear or additional test if required) to rule out tuberculosis upon arrival in the country, without further evaluation regardless the time living in Qatar.

The risk of community transmission is influenced by multiple factors including the incidence of tuberculosis in the population, living condition, ventilation, nutritional status and smoking among others [4]. The risk of community transmission has not been clearly assessed in Qatar. Nevertheless, specific factors that could possibly be related to the incidence of tuberculosis in the countries of origin include nutritional status, overcrowded living conditions and other socioeconomic factors [4–6]. Also, important are health care seeking behavior, delay in diagnosis and treatment, including the patient and the healthcare system delay. Published reports describe the diagnostic delay (mean or median) in Afghanistan (356 days), India (65 days), Iran (73 days), Nepal (39.5 days) and Pakistan (56 days) [7–11]. According to a multinational study about diagnostic delay carried out in the Eastern Mediterranean Region (EMR) in 2003-2004 the mean duration of delay between the onset of symptoms until treatment with anti-tuberculosis drugs ranged from one and a half months to four months in different countries [12]. The mean delay was 46 days in Iraq, 57 in Egypt, 59.2 in Yemen, 79.5 in Somalia, 80.4 in the Syrian Arab Republic, 100 in Pakistan, and 127 in the Islamic Republic of Iran. There are no previous published studies about diagnosis delay in Qatar.

The population living in Qatar is 2.2 million with around 2/3 of expatriates mainly from South East Asian Countries, which stay in the country during a variable time before travel back to their home countries but usually every two years [1,4]. The Cuban Hospital provides secondary healthcare services to a community located in Western Qatar and receive patients with tuberculosis from local areas or transfer from other facilities due to beds crisis. The aim of this study was to determine the diagnostic delay in newly diagnosed tuberculosis patients admitted to The Cuban Hospital in Qatar.

Method

The study was conducted from January 2013 today 2016, among newly confirmed tuberculosis patients (325 males and 65 females) admitted to the Cuban Hospital (TCH) in Qatar. TCH is a 75-beds facility located in Western Qatar, which admits patients with tuberculosis from any location in the country.

Patient delay was considered as the period of time from onset of symptoms related to TB to the first contact with a healthcare professional (HCP). Health-system delay is the period from the first visit to an HCP until the confirmation test was performed and appropriate treatment was initiated. The total delay is the time from the symptom onset until the confirmation test was performed.

The following information was recorded: age, sex, nationality, tuberculosis type (pulmonary, extrapulmonary), time from symptoms onset, time of the confirmatory test (acid-fast bacilli smear, PCR for mycobacterium tuberculosis complex or histopathological study), and the time of visiting an HCP before the admission encounter. The nationalities of the patients were grouped according to the World Health Organization classification of countries (http://who.int/en/).

All the information was collected from the patient’s files. The study was approved by the hospital board. This retrospective study meets the criteria for exemption from ethics review.

Analysis

All the information was entered in an excel sheet and analyzed in JMP 10.0 (http://www.jmp.com/). Descriptive statistical techniques were used including proportion and percentile distribution.

Results

The study population comprised 390 TB patients, of which 281 (72.1%) were from South East Asian countries. The predominant
nationalities were the Nepalese (30%), Indian (22.8%) and Bangladeshi (11.8%). Of the study population, 83.3% were males; the mean age was 32.4 years (16–86 years). Pulmonary tuberculosis was found in 89.7% of the study population (Table 1).

Information about the total delay was collected from all the patients included in the study, while information about patient and system delay was collected from the available 164 patient’s files. The median total delay (25th percentile, 75th percentile) was 30 days (15; 60 days), while the patient delay was 10 days (4; 27 days) and the system delay was 3 days (3; 7.8 days). For pulmonary tuberculosis, the total delay was 30 days (15; 60 days) and for non-pulmonary localization it was 15 days (7; 60 days) (Figure 1).

Discussion

The early diagnosis and prompt treatment are essential elements for tuberculosis control. The delay in the diagnosis poses a significant risk of transmission in the community, related to patient or system factors. In Qatar, in addition to the screening during the hiring of new workers, the test to rule out tuberculosis which is AFB smear, PCR, Culture is only available in hospital facilities, where the patients should be referred from primary healthcare facilities.

This study provides information about the delay in diagnosis of tuberculosis in our community with higher patient delay and for pulmonary tuberculosis, in comparison with system delay and non-pulmonary localization. The diagnostic delays observed in the studied patients are lower than those reported from EMR and countries of origin of the patients [7–13]. A systematic review of the Indian literature found that the patient, diagnostic and treatment delay were 18.4, 31.0 and 2.5 days, respectively, and the median total delay of 55.3 days [14].

Our results could be related with the resources and performance of the national program of TB. Nevertheless, it is important to consider the higher median delay in pulmonary tuberculosis which could be associated with increased risk of community transmission. Immigrants could acquire tuberculosis in their countries and this could be diagnosed months or years after the entry into the country, or due to local transmission from infectious cases living in the same environment [6, 15]. Also, the longer patient delay could be related to socio-demographic, clinical and financial factors [16], although these factors could differ among different countries and the patient’s population. A population-based study is required to identify the specific contribution of these factors in the diagnostic delay in Qatar. In addition, the availability of screening test at primary care facilities, currently available in few facilities, will contribute to reduce the diagnostic delay and the risk of community transmission.

There are some limitations in our study. Overall, general information is documented (e.g. date of symptom onset) in patients files but few details about the previous history of contact with healthcare system during the symptomatic period is available, which explains the differences in total delay and patient/system delay. This bias could be addressed with a prospective survey using

<table>
<thead>
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<th>Variables</th>
<th>Results of 390 patients</th>
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<tr>
<td>Nationality</td>
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<tr>
<td>South East Asia</td>
<td>281 (72.1%)</td>
</tr>
<tr>
<td>Africa</td>
<td>54 (13.8%)</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>42 (10.8%)</td>
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<tr>
<td>Eastern Mediterranean Region</td>
<td>12 (3.1%)</td>
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<td>Europe</td>
<td>1 (0.3%)</td>
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<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>325 (83.3%)</td>
</tr>
<tr>
<td>Female</td>
<td>65 (16.7%)</td>
</tr>
<tr>
<td>Age (years) *</td>
<td>324 (10.8)</td>
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<tr>
<td>Localization</td>
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<tr>
<td>Pulmonary</td>
<td>350 (89.7%)</td>
</tr>
<tr>
<td>Pleural</td>
<td>20 (5.1%)</td>
</tr>
<tr>
<td>Ganglionar</td>
<td>8 (2.1%)</td>
</tr>
<tr>
<td>Meningitis</td>
<td>7 (1.8%)</td>
</tr>
<tr>
<td>Milary</td>
<td>5 (1.3%)</td>
</tr>
<tr>
<td>Diagnostic performed</td>
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<tr>
<td>Acid fast bacilli</td>
<td>298 (76.4%)</td>
</tr>
<tr>
<td>PCR</td>
<td>77 (19.7%)</td>
</tr>
<tr>
<td>Histopathological</td>
<td>4 (1.0)</td>
</tr>
<tr>
<td>Others</td>
<td>11 (2.8%)</td>
</tr>
</tbody>
</table>

Table 1: Socio-demographic and clinical characteristics of the study patients. (* mean (SD) ** PCR for mycobacterium tuberculosis complex)

Figure 1: Box plot for diagnostic delay among tuberculosis patients (days).
standardized questionnaires. Also, even when the patients came from other facilities in Qatar, the studied patient did not represent the overall picture of tuberculosis patients in the country. The number of patients studied could be considered as strength of this study taken into consideration the annual number of newly diagnosed cases reported in the country.

In conclusion, the study provides insight about the delay in diagnosis of tuberculosis in a community hospital in Qatar. Additional studies should be conducted to evaluate the delay in a representative national sample and identify the factors associated with patients’ delays that could be used to strengthen the national program of tuberculosis.

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Conflict of Interest

No conflict of interest to declare for all the authors

References


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