Original article

Pulmonary tuberculosis: Diagnostic delay in Tunisia

Tuberculose pulmonaire : causes du retard diagnostique en Tunisie

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Abstract

Objective. – Early diagnosis and prompt effective therapy are crucial to fight against tuberculosis (TB), particularly in regions with a high prevalence. We aimed to evaluate TB diagnostic delays and identify the associated risk factors.

Methods. – We conducted a survey in various health facilities in Tunisia between March 24th and October 30th, 2014. We included all patients aged $\geq$ 18 years who presented with pulmonary TB (PTB) and who had been initiated on an anti-TB treatment. We evaluated the time between respiratory symptom onset and treatment initiation. Treatment delays were divided into three categories: delays due to the patient, to the healthcare system, and overall delays.

Results. – We included 352 patients in the study (242 men and 110 women). The mean age was 42.2 years $\pm$ 17.7. The median time from symptom onset to treatment initiation was 52.56 days. Patient delays were longer for men, for patients presenting with alcohol dependence, and for patients who already knew they were sick. Healthcare system delays were associated with older age, female patients, patients consulting a private physician, and outpatients.

Conclusion. – TB symptoms should be better explained to the population and healthcare professionals should be better trained to both reduce such delays and initiate treatment as early as possible.
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Keywords: Diagnostic delay; Tuberculosis; Diagnosis

Résumé

Objectif. – Un diagnostic précoce de tuberculose (TB) et un traitement efficace et rapide sont nécessaires pour lutter au mieux contre la maladie. L'objectif de cette étude était de décrire et d'évaluer les retards diagnostiques de la TB et d'identifier les facteurs associés à ce retard.

Méthodes. – Enquête dans différents centres de santé tunisiens du 24 mars au 30 octobre 2014. Nous avons inclus tous les patients âgés $\geq$ 18 ans atteints de TB pulmonaire (avec ou sans documentation bactériologique). Nous avons mesuré le délai entre l'apparition des premiers symptômes respiratoires et l'instauration du traitement. Trois catégories de retard ont été définies : retard dû au patient, retard dû au système de santé, retard global.

Résultats. – Nous avons inclus 352 patients dans l'étude (242 hommes et 110 femmes). L'âge moyen était de 42,2 ans $\pm$ 17,7. Le retard médian entre l'apparition des premiers symptômes et l'instauration du traitement était de 52,56 jours. Les retards dus aux patients étaient plus fréquemment observés chez les hommes, les patients alcooliques et les patients se sachant malades. Les retards dus au système de santé étaient plus fréquemment observés chez les personnes âgées, les femmes, les patients ayant consulté dans un cabinet privé et chez les patients traités en ambulatoire.

Conclusion. – Une meilleure sensibilisation de la population quant aux symptômes de la TB est recommandée et une meilleure formation des professionnels de santé devrait être mise en place afin de réduire ces retards et d'instaurer un traitement aussi vite que possible.
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Mots clés : Retard diagnostique ; Tuberculose ; Diagnostic

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1. Introduction

In 2012, the World Health Organization (WHO) estimated at 8.6 million the number of newly diagnosed tuberculosis (TB) case patients and at 1.3 million the number of deaths due to TB [1]. The highest prevalence was observed in Asia and Africa (24%) with most of these case patients in India and China (40%). Tunisia is an intermediate TB endemic country with a 2012-reported incidence of 30/100,000 population.

A partnership program with the Global Fund was established in 2008. It aims at reducing the incidence of TB and at reaching the objectives set by the Stop TB strategy by 2015 (i.e., reducing prevalence and deaths due to TB by 50% compared with the 1990 baseline, building on existing achievements to eliminate TB as a public health problem by 2050, ensuring detection of at least 70% of TB patients excreting BK in sputum, and successfully treating at least 85% of them. The Tunisian TB plan is a three-fold strategy:

- early TB detection of presumptive patients, household and close contacts, and at-risk groups;
- implementation of the directly observed treatment control strategy (DOTS) until complete recovery;
- BCG vaccination.

Identifying and treating TB patients are defined as the most effective measures to combat the disease. Controlling TB epidemic can indeed only be achieved by limiting the transmission of the bacillus [2].

Diagnostic delays result in individual (increased morbidity and mortality) [3] and collective consequences (increased contagiousness) [4]. This is why time to diagnosis is a key indicator of the quality of TB control programs.

Many TB studies focused on diagnostic delays as it is one of the main factors preventing disease eradication [5,6].

Patients at an early stage of the disease produce very few bacteria. The risk of transmission is therefore limited. As the disease progresses, the number of excreted bacteria increases and patients become increasingly contagious.

Our aim was to evaluate the extent of TB diagnostic delays in Tunisia and to identify associated risk factors to effectively adapt TB control measures.

2. Patients and methods

We conducted a questionnaire-based study between March and October 2014 with newly diagnosed pulmonary TB (PTB) patients consulting in all Tunisian treatment facilities entitled to diagnose and provide care to TB patients. Bacteriological confirmation was not required for inclusion in the study but all patients had to be initiated on an anti-TB treatment.

2.1. Inclusion criteria

We included patients aged $\geq$ 18 years who received a PTB diagnosis during the study period, with or without bacteriological confirmation.

We did not include patients presenting with latent TB or patients who had already been on an anti-TB treatment for more than a month. We also did not include patients who did not hold the Tunisian nationality. Patients were recruited in pulmonology wards and TB clinics.

2.2. Data collection

We collected data from the patients' medical records and using a standardized patient questionnaire administered by a trained healthcare worker. The questionnaire was designed on the basis of a literature review aiming at identifying existing factors associated with diagnostic delays. Collected data included patient- and disease-related data as well as any consequences due to substantial diagnostic delays (hospitalization, severe clinical presentations).

Questions related to symptoms frequently associated with PTB were included in the questionnaire (cough, hemoptysis, night sweat, etc.). Two types of diagnostic delays were identified (Fig. 1 [7]):

- diagnostic delay due to the patient (PD) corresponds to the time between symptom onset and the first consultation;
- diagnostic delay due to the healthcare system (HSD) corresponds to the time between the first consultation and treatment initiation.

We also made a distinction between:

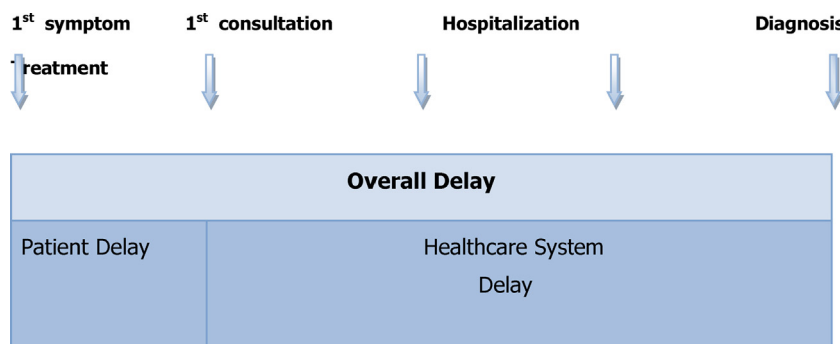- treatment delay (TD): time between diagnosis and treatment initiation;

Fig. 1. Diagnostic and treatment delays for TB patients according to Okür et al. [7].
Retard de prise en charge de la tuberculose selon Okür et al. [7].