

## Original Article

## A Long Delay from the First Symptom to Definite Diagnosis of Pulmonary Tuberculosis

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**Background:** Despite the recent advances in medicine, still many people suffer from long-standing tuberculosis. Delay in the diagnosis may result in further mortality and morbidity. Because of the importance of delay in the diagnosis, we decided to study and evaluate the patient delay and physician delay.

**Methods:** A descriptive analytical study was done on 97 patients referred to the National Research Institute of Tuberculosis and Lung Disease in Tehran from September 2002 through March 2003. Those individuals who fulfilled the inclusion criteria underwent a face to face interview. The questionnaires were filled out. The interval between the first appearance of the clinical manifestation and the first visit to the physician was calculated (patient delay). Also, the period between the patient's first visit to the physician and the final diagnosis was worked out.

**Results:** The mean patient delay time was  $15 \pm 13$  days with a median of 13 days. The mean physician delay time was  $93 \pm 72$  days with a median of 75 days. The mean total delay time was  $108 \pm 71$  days with a median of 96 days.

**Conclusion:** The patient delay in our country is at an acceptable level compared with other countries, but our physician delay time has not been shortened during the last eight years. Improving and upgrading the mycobacteriological courses for general physicians and specialists during their academic years should be accompanied by short-term teaching courses after the graduation.

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**Keywords:** Lung • treatment delay • tuberculosis

### Introduction

Despite the recent advances in medicine, still many people suffer from long-standing tuberculosis (TB). According to the latest estimate given by WHO, the number of “new cases” of TB in 1999 was approximately 8.9 million. This figure would rise to 10.2 million

by the year 2005.<sup>1</sup> Regardless of the successful medical treatment, different reasons have been proposed to explain TB-related deaths.

One of these reasons is the delay in the diagnosis and treatment.<sup>2</sup> Delayed treatments could be either because of treatment failure or delayed diagnosis made by physicians. Both of the above conditions can have a direct effect on the outcome and can lead to an increased and prolonged transmission period. On the basis of previous findings, during the illness period, each patient who has positive smear for TB can infect approximately 20 individuals.<sup>3</sup> With delayed treatment this rate can rise further.

Because of the importance of delay in diagnosis, we decided to study and evaluate the patient delay and physician delay.

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## Materials and Methods

This study was conducted in National Research Institute of TB and Lung Disease (NRITLD), which is a tertiary center. Duration of study was from September 2002 through March 2003. The study pattern was a descriptive analytical type.

The inclusion criteria consisted of: being diagnosed as a "new case" of TB; having a positive mycobacterial test for pulmonary TB; possessing at least two positive smear tests for acid fast bacilli; recalling the time of the first clinical manifestation and the first referring time to a physician; confirmation of the above periods by the first-degree relatives, and those whose dates of the prescriptions and laboratory investigations matched the above-mentioned dates.

The exclusion criteria consisted of chronic TB (receiving at least two courses of anti-TB treatment in more than six months), mental retardation, and unconsciousness.

Those individuals who fulfilled the inclusion criteria underwent a face to face interview. The questionnaires were filled out. The interval between the first appearance of the clinical manifestation and the first visit to the physician was calculated (patient delay). Also, the period between the patient's first visit to the physician and the final diagnosis was worked out (physician delay). Because all the patients diagnosed as having TB were admitted in the TB unit and had received anti-TB medications, the interval between making the final diagnosis and the initiation of treatment was omitted.

The mean, median, and variance were calculated. Kruskal-Wallis test was used for the quantitative parameters. Chi-square test was applied for the qualitative parameters. A  $P < 0.05$  was considered significant.

### Operational definitions

#### *Patient delay*

The interval between the first symptom and the first consultation.

#### *Physician delay*

The interval between the first consultation and the first diagnosis.

#### *Total delay*

The sum of patient delay and physician delay.

## Results

Totally 97 patients were included in this study.

There were 64 (66%) males and 33 (34%) females. The mean age of the patients was  $46 \pm 21$  years, with a range of 16 – 82 years. There were 76 (78%) Iranian and 21 (22%) Afghan patients. Also, 78 (80%) of them lived in urban areas while 19 (20%) patients lived in rural areas.

From the occupational point of view, there were 12 (12%) professional laborers, 3 (3%) employees, 12 (12%) farmers, 34 (35%) housekeepers or retired, and the remaining patients were unemployed. Regarding the patients' literacy, 55 (56%) patients were illiterate, and only two of them (2%) had a university degree. The remaining patients had a literacy level between the above two extremes.

The mean patient delay time was  $15 \pm 13$  days with a median of 13 days. The mean physician delay time was  $93 \pm 72$  days with a median of 75 days. The mean total delay time was  $108 \pm 71$  days with a median of 96 days.

There was no significant statistical difference in the patient, physician, and total delay times in regard to age, sex, nationality, place of living (urban or rural), occupation, and the literacy level of the patients.

## Discussion

It is necessary for the health and treatment system of the country to determine the patient and physician delay times for the patients diagnosed as having TB. Patient delay can be a symbol of people's cultural outlook towards physician and also to the availability of primary health care and medical treatment. On the other hand, physician delay shows the level of knowledge of TB in physicians and the efficacy of National TB Program in the early diagnosis of this disease. Thus, the importance and significance of these evaluations in the education and treatment systems of the country can be clearly seen.

According to the results of this study, patient delay is quite short. About 70% of the patients usually visit the physician within 16 days after the onset of their initial symptoms. On the other hand the physician delay is quite long. Only 30% of cases have been diagnosed in less than two months. This shows the weakness of the system at this stage. These delays resulted in correct diagnosis in only 50% of the patients three months after the onset of their symptoms.

Similar studies have been conducted throughout the world with interesting and noteworthy results.

Gulbaran and coworkers<sup>4</sup> evaluated the physician delay in the French population. They showed that 54% of the patients who had pulmonary TB had a physician delay time of 28 days. Liam and Tang in a study on 97 Malayan, estimated the patient, physician, and total delay times as 2, 7, and 12.5 weeks, respectively.<sup>5</sup> The above figures were similar to our results, which were 2, 10, and 13 weeks, respectively.

Thus, it seems that firstly, by increasing the knowledge of TB among general physicians, especially those working in the private sector, and secondly by early referral of TB suspected cases to TB centers, early diagnosis and treatment can be achieved. The above two recommendations are under consideration in our country.

Nijima and coworkers showed that the patient delay is more commonly seen in male cases.<sup>6</sup> Also, they observed that older patients visited the physician much earlier, compared to the younger ones. Such points were not demonstrated in our study. Nijima et al carried out the study in 1990 when the public knowledge of TB was probably less than today, thus the above-mentioned difference is not of great importance. Rather, it is regarded as a "historical bias".

In a study conducted by Wandwalo and Morkve in Tanzania, these educational and cultural differences could be observed.<sup>7</sup> They showed that in Tanzania, patient delay was much longer than physician delay. The mean patient delay and physician delay were 162 and 23 days, respectively. These figures in our study were 15 and 93 days, respectively, showing an inverse pattern with Wandwalo and Morkve's study.

The reason for patient delay in Tanzania could be either due to inaccessibility and unavailability of medical equipment or the absence of proper health and treatment centers and services. Also, the above fact is further confirmed by the presence of a significant difference in the patient delay time of rural and urban population of Tanzania. We did not find such a difference in our country, illustrating that all the individuals had a direct access to the physician and medical services. On the other hand, the shorter physician delay time seen in Tanzania is due to the long patient delay resulting in the appearance of typical clinical manifestations of TB, which help the physicians to make a quick diagnosis.

In a recent study conducted by Lienhardt and colleagues in Gambia, there was no significant sex difference in the patient delay, physician delay,

and total overall delay.<sup>8</sup> However, they reported that younger patients had a shorter patient delay time compared with the older cases. Meanwhile, individuals living in rural areas had a longer patient delay time, although no significant statistical difference was observed. In our study, we had similar results showing that there was no significant difference between the two sexes in regard to the various delay times. Furthermore, with respect to the accessibility to medical services, there is no sex discrimination in our country.

Madebo and Lindtjorn evaluated the status of TB long before the onset of TB treatment in Ethiopia.<sup>9</sup> They showed that illiterate patients living in rural areas had a longer prediagnosed stage. On the contrary, we could not distinguish this difference, which seemed to be due to the low population of the literate cases vs. illiterate in our study. In our study, the diagnosis delay observed in the older age group was not much higher. However, Beyers and coworkers<sup>10</sup> showed that diagnosis delay in the South African children is much longer compared with that of the adults. They demonstrated that the patient delay and physician delay were 4.3 and 5 weeks, respectively. The reason for the prolonged patient delay seen in South African children (twice as many as that of our patient delay time) could be due to nonspecific clinical manifestations of pulmonary TB and the lack of attention and awareness of the parents.

Masjedi and colleagues carried out a similar study in 1995.<sup>11</sup> The research was conducted in NRITLD, on 50 patients who had positive smear for pulmonary TB with similar inclusion and exclusion criteria. The patient delay time of that study was  $10 \pm 12$  days, which was similar to our research. This fact shows that during the last eight years there has been no significant reformation in the level of TB education and its availability to the individuals of the society. Nevertheless, both of the patient delays (the one in our study and the above-mentioned one) were in an acceptable range. The physician delay time in Masjedi et al's study was  $93 \pm 80$  day, which is nearly similar to our delay time. Despite the increase in the number of physicians and health-care centers, the logic behind this similarity and resemblance could be explained by the fact that TB-related knowledge and information of the medical system has not progressed significantly during the last eight years. Although we believe that the physician delay is a

combination of scientific eligibility, efficiency of the National TB Program, effective cultural teaching of the individuals in the society, and their outlook towards this disease, the delay is still a long one.

The important point in comparing our study and the research conducted eight years ago is the absence of any discrimination between the Iranian and Afghan nationality in regard to the physician delay. This shows that the medical and health-care systems of our country have a positive approach towards the Afghan refugees during the last eight years.

Finally, we recommend a more extensive and comprehensive study to be conducted over a wider-range of the society, including larger sample size, by which we can prepare a thorough and complete agenda for the future evaluation of TB.

The results of this study showed that patient delay in our country is in acceptable levels compared with other countries. However, our physician delay time has not only not been shortened, but also no specific measures and steps have been taken for its improvement. It seems that, in spite of quantitative improvement in the medical services, there is still a long way to improve the quality of these services in order to reach a correct diagnosis of TB. For this purpose, improving and upgrading the mycobacteriological courses for general physicians and specialists during their academic years, should be accompanied by short-term teaching courses after graduation. In this way the above-mentioned aims and objectives can be achieved.

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