Reasons for delay in the management of patients with pulmonary tuberculosis

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أسباب تأخر معالجة مرضى السل الرئوي

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الخلاصة: تم في هذه الدراسة تقييم أسباب طول الفترة بين ظهور أول أعراض مرض السل وبين بدء تقديم المعالجة. وتمت دراسة 50 حالة من حالات السل الرئوي الحديثة التشخيص التي أُدخلت المعهد الوطني لبحوث السل وأمراض الرئة في طهران. وقُدِّرت الفترة المتوسطة بين ظهور الأعراض واستشارة الطبيب بنحو 12.5 ± 10 أيام، مع زيادة ملموسة في هذه الفترة في حالة الرجال عنها في النساء. أما الفترة المتوسطة بين أول ظهور للأعراض وبين تشخيص الطبيب للحالة فقد كانت 93 ± 80 يوماً، وكانت في حالة النساء أعلى كثيراً من الرجال. ولم يلاحظ تأخُّر في تقديم المعالجة (إذ تراوحت الفترة بين 4 ± 4 أيام بعد التأكد من تشخيص الحالة). وكان التأخر الرئيسي هو في الفترة التي يستغرقها الطبيب في تشخيص السل في المرضى الحاملين للأعراض. وتحتاج جمهورية إيران الإسلامية إلى برنامج وطني نشط وفعّال لمكافحة السل، على أن يتم إدماج هذا البرنامج في مناهج كليات الطب وفي التدريب المهني المستمر بعد التخرج.

ABSTRACT The study assessed reasons for delay between patient's first symptoms of tuberculosis and initiation of therapy. Fifty newly diagnosed cases of pulmonary tuberculosis admitted to the NRITLD in Teheran were studied. Mean patient delay before consulting a physician was 12.5 ± 10 days, significantly higher among men than women. Mean delay until the physicians' diagnosis was 93 ± 80 days, significantly higher for women than for men. Almost no treatment delay was observed (mean 4 ± 4 days after diagnosis had been confirmed). The major delay was the time taken by physicians to diagnose tuberculosis in symptomatic patients. An active and effective national tuberculosis programme is needed in the Islamic Republic of Iran, with integration of the programme in medical school curricula and in continuing professional training.

Raisons du retard dans la prise en charge des patients atteints de tuberculose pulmonaire
RESUME Cette étude a évalué les raisons du délai entre les premiers symptômes de la tuberculose chez les patients et la mise en route du traitement. On a étudié cinquante cas de tuberculose pulmonaire nouvellement diagnostiqués admis au Centre de recherche national sur la tuberculose et les maladies pulmonaires à Téhéran. En ce qui concerne les patients, le retard moyen à consulter un médecin était de 12,5 ± 10 jours ; il était significativement plus élevé chez les hommes que chez les femmes. Le retard moyen pour le diagnostic du médecin était de 93 ± 80 jours ; il était significativement plus élevé pour les femmes que pour les hommes. Il n'y avait pratiquement pas de retard observé pour le traitement (moyenne 4 ± 4 jours après la confirmation du diagnostic). Le temps mis par les médecins à poser le diagnostic de tuberculose chez les patients symptomatiques constituait le principal retard. Un programme national de lutte contre la tuberculose dynamique et efficace est nécessaire en République islamique d'Iran, avec intégration de ce programme dans le cursus des écoles de médecine et dans la formation professionnelle continue.

Introduction

Despite improvements in the diagnosis and treatment of tuberculosis (TB), the disease still poses a serious health problem worldwide. In the present decade, the number of cases of TB reached 88 million and deaths from TB exceeded 30 million [1,2]. Each smear-positive patient can infect on average 20 other persons during the course of their disease, although more widespread dissemination has recently been reported [2].

Patients are the only natural reservoir of the disease and patients suffering from active pulmonary TB are most likely to transmit TB bacilli to healthy individuals during the period from the start of symptoms to two weeks after initiation of chemotherapy [3–5]. We can divide this period into three consecutive phases: 'patient delay', the time elapsed between onset of symptoms to the first medical consultation; 'physician delay', the time taken by the physician or medical centre to diagnose TB; and 'treatment delay', the time after diagnosis before chemotherapy is started.

There seem to be different reasons for each type of delay. Patient delay may reflect, among other things, the cultural attitude of the society towards health care, while physician delay is mainly related to the quality of medical school training in diagnosis and treatment for TB, and to the accessibility and efficiency of diagnostic facilities such as sputum microscopy. Treatment delay is rooted in the ability of the national programme of TB control to establish technical and therapeutic facilities and provide an efficient control system around the country.

This study recorded the time delays defined above in a group of patients attending the National Research Institute for Tuberculosis and Lung Disease (NRITLD) in Teheran. The aim was to assess the reasons for delay between the start of active pulmonary tuberculosis (patient's first symptoms) and the control of dissemination (two weeks after initiation of therapy).

Methods

This descriptive study was carried out on all confirmed cases of pulmonary TB admitted for the first time to the NRITLD between August 1995 and February 1996.

The inclusion criteria were as follows:
- The patient was diagnosed for the first time.
- The patient could remember his/her disease course accurately.
- The diagnosis of pulmonary TB was confirmed by a positive sputum smear.
- The history given by the patient could be correlated with the date of prescriptions and laboratory test results, to verify the reliability of the patient's account.

The patients were all questioned by a single physician to establish the date of: onset of symptoms, first visit to a physician, diagnosis of the disease (first positive sputum smear), and initiation of chemotherapy. Every patient suffering from pulmonary TB was hospitalized for at least one week and all interviews were carried out on a fixed day of the week (Thursday). All newly diagnosed patients satisfying the above mentioned criteria were included.

To compare groups, the non-parametric Kruskal–Wallis test for quantitative parameters and chi-squared test for qualitative parameters were used. A probability value of less than 0.05 was considered significant.

Results

A total of 50 patients were eligible for inclusion in the study: 30 (60%) female and 20 (40%) male. The mean age was 42 ± 19 years (range 13–75 years). The age distribution of patients is shown in Figure 1. Two-thirds (34) were of Iranian origin and one-third (16) were Afghan refugees (23% of the women and 45% of the men). Regarding marital status, 60% were married, 24% single and 16% widowed. Twenty-five patients (53%) were illiterate, 11 (23%) had primary education, 5 (11%) had secondary school education, 2 (4%) had finished high school and 4 (8%) were university graduates (6% non-respondents). Sixty-eight per cent of patients were urban and 25% were rural residents (7% non-respondents).

The mean patient delay was 12.5 ± 7.5 days (range: 1–41 days), with no significant difference between Iranians and Afghans, nor was there any difference between patients of different educational levels. However, men delayed significantly longer than women (15.5 ± 12.4 and 10.5 ± 8.4 days respectively). Fifty-two per cent of patients consulted a physician within a week of their symptoms starting, but 12% took more than a month (Figure 2). Patient delay was almost the same for urban and rural residents.

Patients gave the following reasons for their delay in consulting a physician:

- Underestimated their symptoms: 19 patients (38%)
- Too busy: 3 patients (6%)
- Poor access to health care: 1 patient (2%)
- No reason given: 7 patients (14%).

Additionally, inability to get medical advice due to dependency on their husbands was the underlying reason for 13% of women (9% of the total number of patients).

The mean physician delay was 93 ± 80 days overall (range 2–332 days); 89.3 ± 77 days for Afghans and 94.5 ± 81 days for
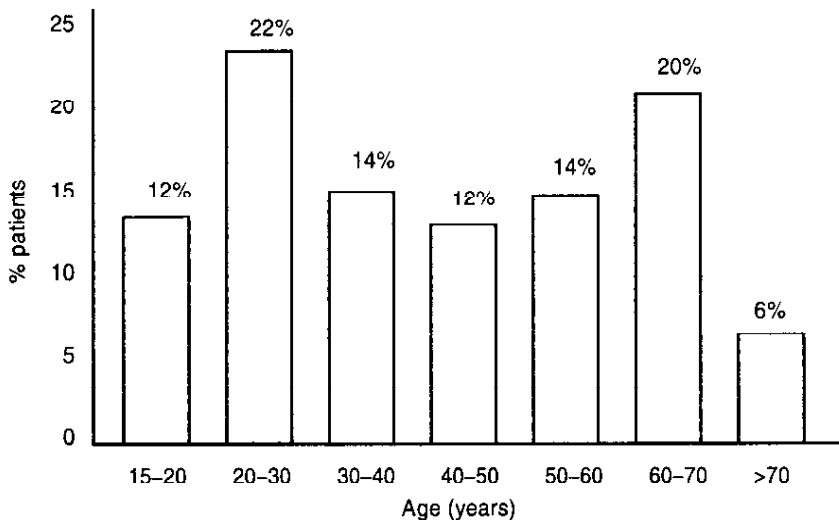

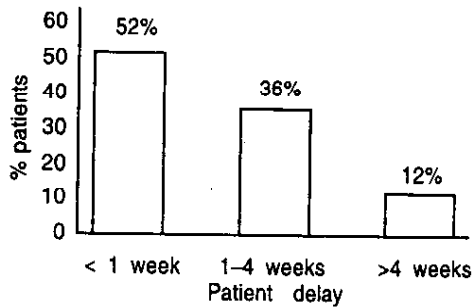Figure 1 **Age distribution of the 50 newly diagnosed patients with active pulmonary TB**

Figure 2 **Patient delay: time elapsed between first symptoms and consulting a physician**
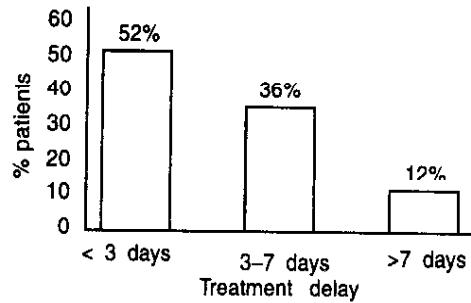

Figure 4 **Treatment delay: time between diagnosis of TB and start of chemotherapy**

Iranians which was not significant. The mean delay was 108 ± 93 days for females and 70 ± 60 days for males, a significant difference ($P < 0.05$) (Figure 3).

The mean delay before treatment started was 4 ± 4 days (range 1–24 days). Most patients started chemotherapy in less than seven days (Figure 4). The longest interval (24 days) occurred with a patient who had been diagnosed at another medical centre and referred to the NRITLD for therapy.

Figure 3 **Physician delay: time between patient first visit and diagnosis of TB**

The symptoms of patients during the course of their disease were as follows: cough (98% of patients), weight loss (88%), sputum (85%), sweating (83%), fever (72%), chest pain (60%), and haemoptysis (34%). There were no significant differences in delay times at any stage between patients with or without any of these symptoms.

Drugs that had been prescribed before TB diagnosis was confirmed included: ampicillin (70% of patients), analgesics and antipyretics (36%), antitussives (28%), gentamicin (4%), vitamin B complex (4%), and tetracycline (2%).
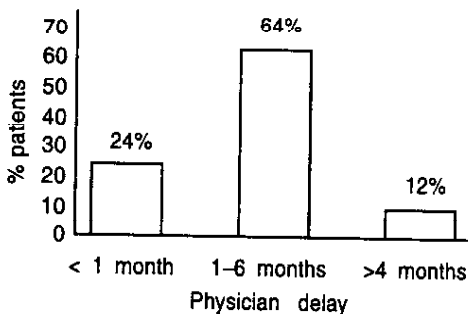
Discussion

TB is a contagious infectious disease of major importance, transmitted principally through the respiratory tract via infectious particles expectorated from patients coughing, sneezing and speaking. Any delay in diagnosis of contagious patients can lead to the infection of other healthy people, some of whom will develop active disease and disseminate it further.

The present situation has forced international and national organizations such as

the World Health Organization (WHO) and International Union Against Tuberculosis and Lung Disease (IUATLD) to take seriously the dissemination of TB in industrialized and developing countries, and to recommend efficient and effective plans for TB control. Countries all over the world should establish a control and management programme appropriate to their own socio-economic and health system infrastructure [6].

It is important to note that more than 80% of TB patients in industrialized countries are over 50 years of age, while in the developing world more than 75% are still under 50 years, the most productive age group for society [7].

Studies in developing countries have revealed that less than half of TB patients have easy access to medical centres or health care facilities, and also that systems for following treatment outcome are inadequate [8].

Generally it is easy to diagnose, treat and prevent the spread of TB if all the requirements of a basic control system are in place [8]. As a first step, the general health culture of the society must be reformed so that anyone developing signs or symptoms suggestive of TB is referred immediately to a medical facility. The general population must have easy access to primary medical care. Medical staff should have sufficient knowledge to diagnose TB, and there should be appropriate standard therapeutic regimens and an efficient supervision system in place. Inadequacies in this system will result in a worsening and potentially devastating situation for the country. The WHO-recommended DOTS strategy [Directly Observed Treatment, Short-course] is the only feasible means by which every nation, whether industrialized or developing, can overcome the inadequacies of the existing TB control systems.

Although this study has been carried out on a small number of patients, its results indicate improvements that are needed in our current strategies. As TB has no characteristic sign or symptom, proper diagnosis depends on the physicians' suspicion of TB in high prevalence areas; suspecting TB and further workup leads to diagnosis in 50% of cases [9]. Large family size and low economic status have been proposed as two major factors predisposing to the disease which the physician must bear in mind when considering the diagnosis of TB.

The finding that there is no difference between patients with and without haemoptysis in either patient or physician delay is interesting and prompts further investigation, because bloody sputum is generally thought to be taken seriously by both patients and physicians.

According to our study, the mean patient delay is less in women than men, which suggests that women take their health problems more seriously than men and are prepared to consult a physician earlier.

Our data showed no significant difference in delay between Iranian patients and Afghan refugees. This finding suggests that our physician did not assume that being Afghan is a risk factor for developing TB, although TB is more prevalent in Afghans due to their lower socioeconomic status, harsher working conditions and poor nutritional state. More of the Afgahan patients with TB were men than the Iranians, which might be attributed to the higher rate of immigration of men compared to women.

It is important to note that 88% of patients consulted a physician within a month of the onset of symptoms, whereas the time to diagnosis was less than a month in only 24% of patients. Therefore it seems

that medical staff bear some of the responsibility for the continued spread of TB in society. They need to make their diagnoses on a more rational and comprehensive basis. This will not be achieved unless medical schools in the Islamic Republic of Iran revise the current academic training system, devoting more time to TB and incorporating information and data from our own society into the academic curricula.

In this study only 12% of cases had a treatment delay of a week, and in most patients treatment started less than three days after diagnosis. These relatively small delays are unlikely to have an impact on controlling disease spread.

Finally, wrongly prescribed antibiotics (some with hazardous side-effects, such as gentamicin) and other drugs, such as analgesics, antipyretics and antitussives, may be used to relieve the symptoms of TB without any beneficial result. Physicians should be instructed not to prescribe such drugs before confirmation of diagnosis.

In conclusion, any delay in detecting patients suffering from active pulmonary TB is important, as it will assist in the continuous dissemination of TB among the population. According to our study the main delay seems to be due to physicians' lack of awareness of the symptoms of TB, which in turn originates in shortcomings in the medical curriculum. An absence of standard diagnostic systems may also contribute. Poor access to health care for patients is a factor in patient delays.

To overcome all these problems, an active and effective national TB programme is needed in the Islamic Republic of Iran to provide a detailed and comprehensive strategy covering every level of TB control, with emphasis on the integration of the programme in both medical school curricula and in continuing professional training of medical graduates.

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