

## Evaluation of Patients Undergoing Latent Tuberculosis Treatment in Ankara no. 4 Tuberculosis Dispensary between 1981-2011

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### Abstract

It has been reported by WHO that more than one-third of world population is infected with tuberculosis, implying that around 2 billion people are infected. There are two approaches used to prevent the spread of TB. The first one is the early diagnosis and treatment of active TB patients. Another approach is to identify and treat people at the stage of latent TB infection. Tuberculosis dispensaries are units where early diagnosis, outpatient's treatment and follow-up of tuberculosis patients in Turkey are carried out. The aim of the present study was to review retrospectively the patients who underwent LTBI treatment between 1981-2011 in Ankara no four tuberculosis dispensary.

**Keywords:** Latent Tuberculosis Infections; Tuberculosis Hospital; Chemoprophylaxis

### Introduction

It has been reported by WHO that more than one-third of world population is infected with tuberculosis, implying that around 2 billion people are infected. Of these people with latent TB infection (LTBI), 200 million are expected to have active TB disease at any stage of their lives. In addition, 80% of these are also expected are having contagious active TB.

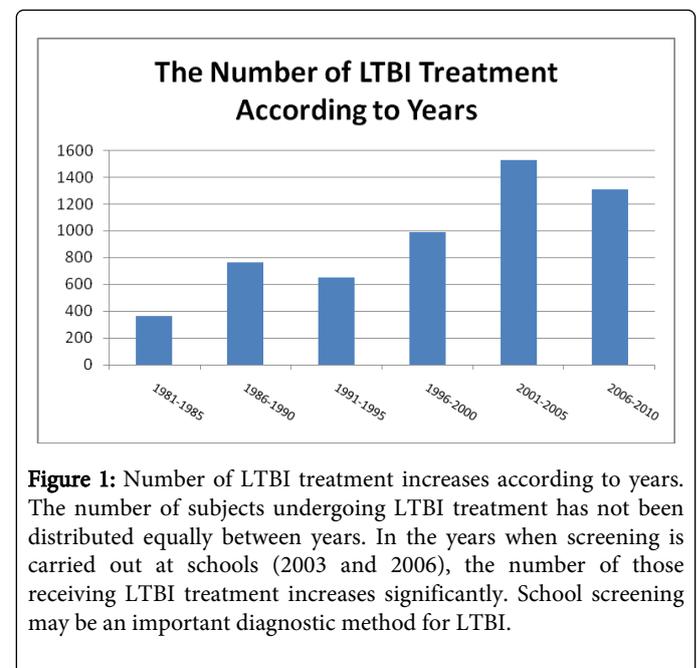
There have two approaches used to prevent the spread of TB. The first one is the early diagnosis and treatment of active TB patients. However, in view of the data reported by WHO that only 50% of active TB patients have access to treatment; this is not an appropriate approach to eradicate the disease. A patient who does not undergo treatment can carry the diseases for approximately two years and during this period; the disease will have been transmitted to mean 20 people [1-5].

Another approach is to identify and treat people at the stage of latent TB infection. It was proved in randomized studies performed in many countries with overall 100 000 cases that following at least six months of INH monotherapy, the incidence of cases with LTBI decreased by 25%-92%.

However, as there are problems with INH treatment such as long duration of drug use, the probability of side effects such as hepatitis, and patient compliance to treatment, studies on short-term treatment options are underway [6-10].

Tuberculosis dispensaries are units where early diagnosis, outpatient's treatment and follow-up of tuberculosis patients in Turkey are carried out. With the aim of providing 1 dispensary for each 500000 population, 198 tuberculosis dispensaries have been set up and serve in Turkey [11]. Ankara no: 4 Tuberculosis Dispensary has offered service for approximately 50 years. At present, it serves a population of approximately 1.5 million. In addition, the inmates of the largest prison in Ankara are within its area of responsibility. When

an active TB patient resident in our responsibility area presents to our dispensary, a registration procedure is completed and then contacts are examined. After training is offered on disease and its treatment, monthly periodic examinations are made until the end of treatment process. Meanwhile, cases planned to undergo LTBI treatment are registered and their monthly periodic examinations are also arranged. Post treatment follow-up of the patients are also carried out in our clinic. In case one of the people moves to another district during a treatment process, his/her file is transferred to the relevant regional clinic and treatment is maintained there.



**Figure 1:** Number of LTBI treatment increases according to years. The number of subjects undergoing LTBI treatment has not been distributed equally between years. In the years when screening is carried out at schools (2003 and 2006), the number of those receiving LTBI treatment increases significantly. School screening may be an important diagnostic method for LTBI.

The aim of the present study was to review retrospectively the patients that underwent LTBI treatment between 1981-2011 in Ankara no 4 tuberculosis dispensary. As there was no LTBI treatment archive system between 1981-2004, only quantitative information could be

reached. However, for years after 2005 detailed information could be obtained. According to these results, the number of LTBI treatment constantly rises in five year sections (Figure 1).

## Material and Method

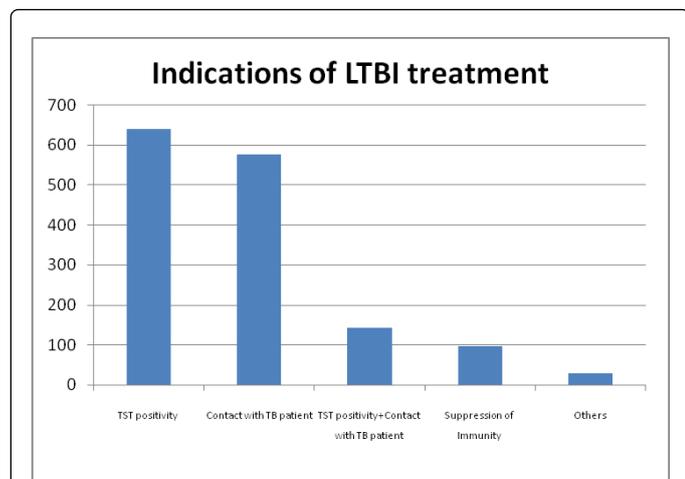
Information between 1981-1993 could be obtained only quantitatively from monthly, yearly statistic forms. LTBI treatment recording cards could be found between the years 1994-2004, but they were inadequate for evaluation. From 2005 onwards, records including mode detailed information were investigated and LTBI treatment indications and outcome could be evaluated.

According to registration system, the causes of initiations of LTBI treatment were as follows; contact with TB patients, Tuberculin Skin Test (TST) positivity, suppression of immunity, TST conversion, fibrotic sequels and others.

According to registration system again, the outcomes of LTBI treatment are as follows; completion of LTBI treatment, discontinuation of LTBI treatment, moving to another region, development of tuberculosis, death and other.

## Results

The leading indication among 1481 cases undergoing LTBI treatment between 2005-2010 is TST positivity with 638 cases. School screening was carried out with 838 subjects in 2003.

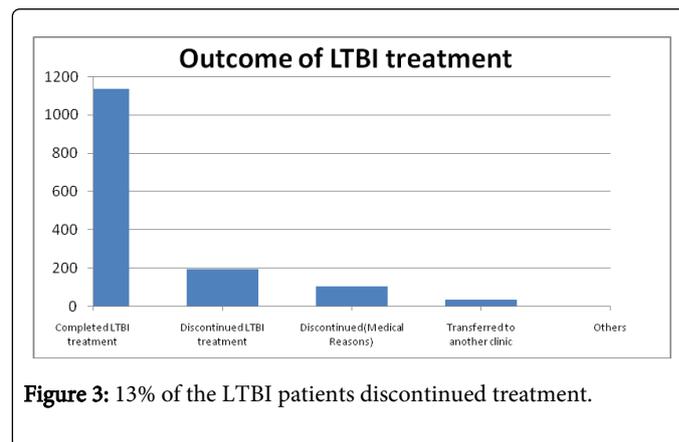


**Figure 2:** The most common indications of the initiation of LTBI treatment are as follows: 43% TST positivity, the majority of which is in pediatric age group (27%-75%), 38.9% history of contact with active contagious TB patient, according to Turkish national tuberculosis guideline, contacts of active contagious TB patients under the age of 35 are initiated LTBI treatment and according to control results 2 months later, treatment is continued or interrupted. (37%-45%), and 9.65% TST positivity + contact with TB patient. The number of those undergoing LTBI treatment on account of the suppression of immunity constantly increases (20.5% in 2010).

In the years when school screening is carried out, the number of subjects in whom LTBI treatment is initiated rises markedly. Second most common indication is contact with TB patient with 576 subjects. Recently, LTBI treatment has been instituted commonly due to the

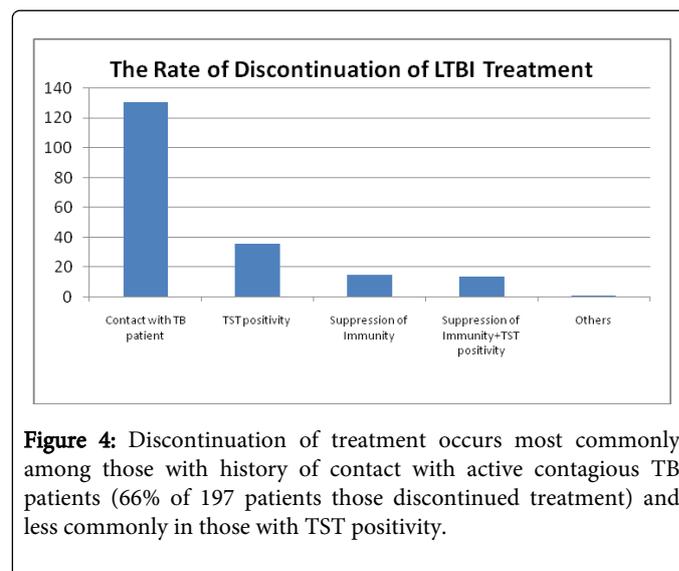
suppression of immunity. Especially the uses of TNF- $\alpha$  antagonist are among the most frequent causes of this suppression (Figure 2).

Of 1481 subjects in whom LTBI treatment is initiated, 1136 completed the treatment within the recommended time period (77% of all LTBI patients). The causes of other subjects not completing treatment are as follows: 197 subjects discontinued LTBI treatment, in 108 subjects treatment was interrupted due to medical reasons, 35 subjects were transferred to another clinic because of moving to another place, in 4 subjects LTBI treatment was terminated since active TB disease was identified and 1 subject died (Figure 3).



**Figure 3:** 13% of the LTBI patients discontinued treatment.

Of 197 cases that discontinued LTBI treatment, 131 started treatment after contact with TB patients. 36 received such treatment due to TST positivity. 15 subjects received treatment due to suppression of immunity and 14 owing to suppression of immunity + TST positivity. The population with the lowest rate of compliance to LTBI treatment is the group undergoing treatment due to contact with active contagious TB patients, with 66%. According to Turkish National Tuberculosis Guide, everybody under 35 years old who had a contact with active contagious TB patient should take LTBI treatment [12] (Figure 4).



**Figure 4:** Discontinuation of treatment occurs most commonly among those with history of contact with active contagious TB patients (66% of 197 patients those discontinued treatment) and less commonly in those with TST positivity.

The ratio of subjects undergoing LTBI treatment in our clinic to the number of active contagious TB patients is higher than the general average of Turkey [11] (Table 1).

| Region   | TB patient | Pulmonary TB patient | LTBI Treatment | LTBI Treatment per TB patient | LTBI Treatment per lung Tb patients |
|--|------------|----------------------|----------------|-------------------------------|-------------------------------------|
| Ankara no. 4 Tuberculosis Dispensary (6 Years) | 793        | 474                  | 1.481          | 1.86                          | 3.1                                 |
| Ankara 2009                                    | 653        | 375                  | 1.180          | 1.8                           | 3.1                                 |
| Marmara region 2009                            | 8.123      | 5.452                | 7.914          | 1.03                          | 1.5                                 |
| Turkey 2009                                    | 17.402     | 11.554               | 21.326         | 1.2                           | 1.8                                 |

**Table 1:** The rate of LTBI treatment per TB patients and per pulmonary TB patients is consistent with that in Ankara and higher than Turkey in general and Marmara region.

## Discussion

LTBI treatment is an important part of tuberculosis control program followed in order to prevent reactivation tuberculosis. It was demonstrated that between 2005-2009, 77% of TB cases in USA was reactivation tuberculosis cases [13].

LTBI treatment requires long term antibiotic employment. The rate of completing 6 months treatment course in which subjects self-administer their drug is between 20-30% in many studies. In LTBI treatment regimes in which drug use is recommended for 9 months, this rate is lower [14-19]. In the present study, this rate was found to be %77. The groups with the highest rate of discontinuation of treatment are the group of those who have contact with infectious tuberculosis patients (66%).

Mean rate of the groups with TST positivity is lower than that of other groups. These cases are usually children who undergo diagnostic TST in pediatric clinics and found to be positive and they receive treatment under the supervision of their parents. In order to increase the completion rate of LTBI in contacts of TB patients, it may be suggested that this group also should receive treatment under supervision.

## Conclusion

In the management of TB control program, treatment of primary patients should be carried out regularly, and LTBI patients should be treated. The number of LTBI patients in whom treatment is initiated increases with years. . This may be attributed to the fact that population increases in our region and subjects with LTBI can be detected more readily. The ratio of primary tuberculosis cases to reactivation tuberculosis cases decreases in our region over years, indicating that tuberculosis control program in our region is implemented successfully by our dispensary. Whatever the indication of LTBI treatment is, successful completion of the treatment is important. In the present study, treatment completion rate was found to be 77% and this rate should be increased further. In order to increase LTBI treatment rates especially in active contagious TB patients contacts, directly observed treatment (DOT) strategy may be implemented. In addition, in order to increase the compliance of selected LTBI patients to treatment, shorter treatment regimes may be preferred. As the number of interviews with the patients during treatment increases, their compliance with treatment increases. Therefore, planning interviews as frequently as possible will increase the success of the LTBI treatment.

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