

---

**Original Article**

---

**PROBLEMS OF TUBERCULOSIS PATIENTS UNDER DIALYSIS  
IN TAMA AREA, TOKYO**

Chihiro FUKUSHIMA, Youko WATANABE, and Tamotsu AKAHO

**Abstract** [Objectives] Patients undergoing renal dialysis (dialysis patients) are generally known to have a higher risk of tuberculosis (TB). In order to address this problem effectively, analyses were made of the characteristics of active TB patients under dialysis in the Tama Area of Tokyo.

[Subjects and Methods] Dialysis patients were selected from the list of TB patients who were newly registered at seven public health centers in the Tama Area between 2007 and 2009. The incidence rate of TB in dialysis patients was calculated. Their personal profiles such as age, affected organs, results of sputum smear, modes of case detection, and delay in case detection, were reviewed in comparison with those in TB patients not undergoing dialysis.

[Results] Dialysis patients had 8.34 times higher TB incidence rate than non-dialysis subjects. They were more likely to have extra-pulmonary TB. The dialysis patients visited doctors sooner after the appearance of symptoms, which resulted in a

higher proportion of smear-negative TB among them. Periodic chest X-ray examination at dialysis clinics played an important role in early TB diagnosis.

[Conclusion] It is important for dialysis clinics to maintain a high index of TB, since dialysis patients are at a higher risk of TB. In addition, careful attention should be paid to a patient's past history of TB infection, as well as to the findings of periodic chest X-ray examinations.

**Key words:** Tuberculosis, Chronic renal failure, Dialysis

Tokyo Metropolitan Minamitama Public Health Center

Correspondence to: Chihiro Fukushima, Machida City Public Health Office, 2-13-3, Nakacho, Machida-shi, Tokyo 194-0021 Japan. (E-mail: c.fukushima@city.machida.tokyo.jp)

## Original Article

FACTORS RELATED TO THE OCCURRENCE OF  
MULTI- (EXTENSIVELY-) DRUG RESISTANT TUBERCULOSIS (M/XDR-TB)  
IN OUR HOSPITAL

Masao OKUMURA, Takashi YOSHIYAMA, Hideo OGATA, Kozo MORIMOTO,  
Hiroyuki KOKUTO, Atsuyuki KURASHIMA, and Shoji KUDOH

**Abstract** [Objective] To analyze the clinical characteristics of multi- (extensively-) drug-resistant tuberculosis (M/XDR-TB) in our hospital.

[Materials and Methods] One-hundred and forty-one cases diagnosed with MDR-TB and thirteen cases with XDR-TB admitted to our hospital over the last nine years were enrolled in this study.

[Results] The gender distribution was: ninety-nine males and forty-two females in MDR-TB and nine males and four females in XDR-TB. The mean age was 52.0 years in males and 43.1 years in females in the MDR-TB patients, and 49.1 years in males and 42.0 years in females in the XDR-TB patients. There were 11 Chinese patients and 7 Koreans, as well as 8 patients from other countries abroad. Eighty-four (59.6%) MDR-TB patients and 9 (69.2%) XDR-TB patients had a smoking history. Diabetes mellitus was seen in 30 MDR-TB and 3 XDR-TB patients. The period from manifestation to the first visit to our hospital was 41.5 months on average in the MDR-TB patients, and 79.6 months in the XDR-TB patients. The average period from first diagnosis of TB to that of M/XDR-TB was 30.9 months in the MDR and 56.8 months in the XDR. Thirty (21.3%) MDR-TB patients and one (7.7%) XDR-TB patient were first diagnosed in our hospital.

One-hundred and fifteen patients (81.6%) with MDR-TB and 6 (46.1%) with XDR-TB achieved negative sputum bacteriological conversion. Fifty-six cases (48.7%) of 115 MDR-TB and all (100%) of the XDR-TB patients underwent

surgical treatment. Sixteen (11.3%) MDR-TB and 3 (23.1%) XDR-TB patients died.

Thirty of the MDR-TB and 1 of the XDR-TB patients had never been previously treated for tuberculosis. Twelve (8.5%) MDR-TB and 5 (38.5%) XDR-TB patients had been treated with four drugs including isoniazid (INH), rifampicin (RFP), pyrazinamide (PZA), and either ethambutol (EB) or streptomycin (SM) in previous hospitals. Twenty-five (17.7%) MDR-TB and 5 (38.5%) XDR-TB patients had been treated with three drug regimens not including PZA in previous hospitals.

[Conclusion] M/XDR-TB is a man-made disease and can be infectious. Even the current standard regimens can produce M/XDR-TB, if they are used improperly and carelessly. Great care should be taken to prevent XDR and MDR-TB.

**Key words** : MDR-TB, XDR-TB, Chemotherapy, Surgical treatment, Factors of resistance

Department of Respiratory Medicine, Fukujuji Hospital, Japan Anti-Tuberculosis Association (JATA)

Correspondence to: Masao Okumura, Department of Respiratory Medicine, Fukujuji Hospital, Japan Anti-Tuberculosis Association (JATA), 3-1-24, Matsuyama, Kiyose-shi, Tokyo 204-8522 Japan. (E-mail: okumuram@fukujuji.org)

## Original Article

## COMPARISON OF CONVENTIONAL TUBERCULIN SKIN TEST AND QFT-2G®, A NEW METHOD FOR DIAGNOSIS OF TUBERCULOSIS INFECTION, WITH THE USE OF THE CONTACT SCORE

<sup>1,5</sup>Riyo FUJIYAMA, <sup>1</sup>Junko HIGUCHI, <sup>1</sup>Chica SHIRAI, <sup>1</sup>Yasuto KAWAKAMI  
<sup>2</sup>Tomotada IWAMOTO, <sup>3</sup>Katsuhiko SUZUKI, <sup>3</sup>Zenji OKADA, <sup>3</sup>Mitsunori SAKATANI,  
<sup>4</sup>Toru MORI, and <sup>5</sup>Ichiro WAKABAYASHI

**Abstract** [Background] QuantiFERON®TB-Gold (QFT) has recently been developed as a new method for diagnosing tuberculosis (TB) infection. To evaluate the usefulness of QFT, we analyzed the relationship between QFT and the closeness of contact with a source of infection, in comparison with that of the tuberculin skin test (TST).

[Methods] Male (n=322) and female (n=340) subjects (4–75 years old) who had contact with an index case received QFT and TST. The diagnostic criterion for TB infection with TST was defined as a test with an erythema diameter of  $\geq 30$  mm. The closeness of contact with an index case was quantified in the “contact score,” based on the information obtained with a questionnaire.

[Results] There was a significant positive correlation between the contact score and QFT-positive rate, while there was no such relationship for TST positivity. The odds ratios for positive QFT rate for the subjects in the 3rd and 4th quartile groups of contact score (taking the QFT-positive rate in the lowest score quartile as unity) were 3.40 (95% confidence interval: 1.07–10.76,  $p < 0.05$ ) and 7.62 (95% confidence interval: 2.60–22.37,  $p < 0.01$ ), respectively. These odds ratios were also significantly greater than unity after adjustment for age, sex, history of BCG vaccination and history of health care-

related jobs. There was a wide difference in the QFT-positive rates between the 2nd and 3rd quartiles of contact score (3.5% vs. 11.9%). The borderline value of the contact score between these two quartiles corresponded to 200, which could be a cut-off value for defining a high-risk contact.

[Conclusion] The QFT-positive rates correlated well with closeness of contact, while TST showed a poor correlation. Thus, QFT is considered more useful than TST for diagnosing tuberculosis infection.

**Key words :** Contact score, Interferon-gamma release assay, QuantiFERON, Tuberculosis infection, Tuberculin skin test, Contact examination

<sup>1</sup>Kobe City Public Health Center, <sup>2</sup>Kobe Institute of Health, <sup>3</sup>National Hospital Organization Kinki-chuo Chest Medical Center, <sup>4</sup>Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association, <sup>5</sup>Department of Environmental and Preventive Medicine, Hyogo College of Medicine

Correspondence to: Riyo Fujiyama, Kobe City Public Health Center, 6-5-1, Kano-cho, Chuo-ku, Kobe-shi, Hyogo 650-8570 Japan. (E-mail: riyo\_fujiyama@office.city.kobe.lg.jp)

## DEVELOPMENT OF CERVICAL TUBERCULOUS LYMPHADENITIS IN A PATIENT WITH CROHN'S DISEASE RECEIVING INFlixIMAB DESPITE OF CHEMOPROPHYLAXIS WITH ISONIAZID

Tatsuyoshi IKEUE, Atsushi NAKAGAWA, Kenjiro FURUTA, Kyohei MORITA,  
Takakazu SUGITA, and Hideki NISHIYAMA

**Abstract** We herein report a case of a 41-year-old female with a 14-year history of Crohn's disease who had been treated with diet and mesalazine. Because of inadequate control, therapy with infliximab was planned. She had a positive result on the interferon-gamma release assay (QuantiFERON®TB). After active tuberculosis was ruled out by chest x-ray and computed tomography, she was started on a six-month course of isoniazid 7 weeks prior to starting infliximab. After 10 doses of infliximab (15 months of therapy), she presented with pain of cervical lymphadenopathy. A biopsy of the lymph nodes revealed Langhans' giant cells from granulomas and a positive result of polymerase chain reaction for *Mycobacterium tuberculosis*. The treatment with infliximab was discontinued and anti-tuberculosis therapy was started. Although treatment for latent tuberculosis infection lowers the risk of reactivation of tuberculosis due to tumor necrosis factor alpha-blockers, it cannot completely inactivate tuberculosis. Despite the completion of chemoprophylaxis, patients receiving such

agents should be instructed to watch out for any symptoms associated with pulmonary and extrapulmonary tuberculosis such as fever, cough, malaise, body weight loss, night sweating and lymphadenopathy, and they should also be closely followed up.

**Key words :** Infliximab, Tumor necrosis factor-alpha inhibitor, Cervical tuberculous lymphadenitis, Latent tuberculosis infection, Crohn's disease

Department of Respiratory Medicine, Japanese Red Cross Society Wakayama Medical Center

Correspondence to: Tatsuyoshi Ikeue, Department of Respiratory Medicine, Japanese Red Cross Society Wakayama Medical Center, 4-20, Komatsubara-dori, Wakayama-shi, Wakayama 640-8558 Japan. (E-mail: tikeue@iris.eonet.ne.jp)

---

**Report and Information**

---

**TUBERCULOSIS ANNUAL REPORT 2009**  
— Series 7. Condition of TB (2)—

## Tuberculosis Surveillance Center

**Abstract** We report on the TB surveillance data for 2009 in Japan regarding HIV infection, diabetes, and drug susceptibility test results, which were added to the central TB surveillance database from 2007.

In the present TB surveillance system, we cannot obtain reliable data about whether or not HIV tests were done in each case. Thus, we report only the number of TB patients diagnosed as having HIV infection. The number of newly notified TB cases reported as having HIV from 2007–2009 is 176. Of those, 155 (88.1%) were male and 21 (11.9%) were female, and 39 (22.2%) were foreigners.

The frequency of TB-associated diabetes in newly notified TB cases in 2009 was 12.6% (3,043/24,170) in total, 14.5% in males, and 9.5% in females.

Drug susceptibility test results were obtained in 6,920 culture-positive pulmonary TB cases through the surveillance system in 2009. This figure accounted for 63.5% of all culture-positive pulmonary cases. In primary cases, the frequencies of MDR, any INH resistance, and any RFP resistance were 0.5%,

4.4%, and 0.8%, respectively, and in re-treatment cases, they were 3.6%, 11.6%, and 5.0%, respectively. In primary pulmonary cases these drug resistance rates have been stable over this 3-year period (2007–2009), but in pulmonary cases undergoing re-treatment, the frequency has decreased (for example, the MDR rate in re-treatment pulmonary cases was 7.2% in 2007, 5.1% in 2008, and 3.6% in 2009). Of all MDR pulmonary cases, 17.9% (10/56) were foreigners in 2009.

**Key words:** Tuberculosis, Sex, Age, Foreigner, HIV, Diabetes, Drug resistance test, MDR

Research Institute of Tuberculosis, JATA

Correspondence to: Tuberculosis Surveillance Center, Research Institute of Tuberculosis, JATA, 3-1-24, Matsuyama, Kiyose-shi, Tokyo 204-8533 Japan.

(E-mail: [tbsur@jata.or.jp](mailto:tbsur@jata.or.jp))