

Original Article

CLINICAL EVALUATION OF INPATIENTS WITH TUBERCULOSIS
DIAGNOSED AFTER ADMISSION

— Comparison of Characteristics of Patients Diagnosed With and Without the Acid-Fast Bacillus Test —

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Abstract [Purpose] To evaluate the clinical characteristics of patients in whom tuberculosis was not suspected before admission but was diagnosed after admission.

[Methods] We enrolled 39 inpatients who were diagnosed with tuberculosis between April 2007 and March 2011 at Jichi Medical University Hospital. The patients were divided into 2 groups as follows: those who underwent a preadmission acid-fast bacillus (AFB) test (AFB group) and those who did not (non-AFB group). We retrospectively evaluated the clinical characteristics of these 2 groups of patients.

[Results] A total of 22 patients and 17 patients comprised the non-AFB and AFB groups, respectively. The prevalence rates of malignancy (9 vs. 2 patients, $p=0.04$), extrapulmonary tuberculosis without pulmonary tuberculosis (9 vs. 2 patients, $p=0.04$), and smear-negative tuberculosis (16 vs. 7 patients, $p=0.04$) were higher in the non-AFB group than in the AFB group. In contrast, the computed tomographic findings of the patients with pulmonary tuberculosis revealed that compared with the AFB group, the non-AFB group had less consolidation (2 vs. 11 patients, $p<0.01$) and fewer cavitary lesions (0 vs. 6 patients, $p<0.01$) and more nodular lesions (8 vs. 2 patients,

$p<0.01$). We then divided the inpatients into groups with and without malignancy and compared their clinical characteristics. The mean interval from admission to diagnosis of tuberculosis was significantly longer in the patients with malignancy as an underlying disease than in those without malignancy (23.5 vs. 10.5 days; $p<0.01$).

[Conclusion] Malignancy was the most frequent underlying disease in the tuberculosis inpatients in the non-AFB group and could be the reason for the delayed diagnosis of tuberculosis.

Key words: Tuberculosis, Doctor's delay, Malignancy, Underlying disease, Nosocomial infection

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Original Article

COMPARATIVE STUDY OF THE EFFICACY OF THE COBAS® TaqMan AND LAMP ASSAY FOR THE RAPID DIAGNOSIS OF TUBERCULOSIS

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Abstract [Objective] The COBAS® TaqMan real-time polymerase chain reaction (PCR) assay (TaqMan assay) is a well-accepted and widely distributed molecular-based diagnostic test for tuberculosis. In the present study, we evaluated the efficacy of the LAMP assay (loopamp® MTBC detection kit) as an alternative molecular-based diagnostic kit for tuberculosis, through comparison with the TaqMan assay.

[Study Period and Methods] This study was conducted over a period of approximately 2 months, between May and July 2012. We collected 48 samples (43 sputum, 2 gastric fluid, 2 pleural fluid, and 1 pus fluid samples) from patients who had been diagnosed with tuberculosis through the culture method, but had not received any treatment for more than one week. All samples were processed using the CC-E pre-treatment reagent (Japan BCG) prior to performing the TaqMan and LAMP assay. For the TaqMan assay, 100 μ L of supernatant was used after centrifugation at 1,000 rpm for 1 minute, whereas 60 μ L of the precipitate in the same sample was used for the LAMP assay.

[Results] In total, 23 out of 48 samples were identified as positive for tuberculosis according to smear microscopy tests, among which 15, 4, and 4 samples had smear test scores of 1+, 2+, and 3+, respectively. All the samples that tested positive in the smear test, regardless of the score, also tested positive in both the TaqMan and TB-LAMP assays (100%). Of

the 25 smear-negative samples, we noted that 16 tested positive by the TaqMan assay (64%), whereas 20 tested positive by the LAMP assay (80%).

[Discussion] Compared with the TaqMan assay, the LAMP assay showed a higher positive rate among the smear-negative samples. We believe that this is because substances in the samples acted as co-precipitating agents, resulting in the presence of a larger number of bacteria in the precipitates than in the supernatants. Thus, the findings indicate that the application of the LAMP method to precipitates obtained following CC-E pre-treatments may lead to prompt diagnosis of tuberculosis, with a level of sensitivity comparable to that of culture tests.

Key words: Rapid diagnosis of tuberculosis, Smear negative, Molecular-based diagnostic test, LAMP, TaqMan

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A CASE OF PLEURAL TUBERCULOMA WITH NEW PULMONARY INFILTRATION DURING ANTI-TUBERCULOSIS THERAPY

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Eriko ASTUMI, Masao TATEYAMA, and Jiro FUJITA

Abstract A 61-year-old woman who had received treatment for tuberculous pleurisy for 2 months visited our outpatient clinic. Chest computed tomography (CT) showed the presence of a lens-shaped pleural mass with pulmonary infiltration, despite the decreased pleural effusion. Two weeks later, chest CT showed an increase in the size of the mass and expansion of the intrapulmonary shadow. Percutaneous CT-guided lung biopsy was performed, and histopathological examination revealed granulomatous inflammation without caseous necrosis or acid-fast bacilli. Sputum culture was negative for acid-fast bacilli. Anti-tuberculosis medication was continued, and the lesions eventually resolved. These lesions were diagnosed as pleural tuberculomas, and the intrapulmonary infiltration was considered to be due to the paradoxical worsening of the

patient's condition.

Key words: Tuberculous pleurisy, Pleural tuberculoma, Paradoxical worsening

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Field Activities

**PUBLIC HEALTH NURSE SUPPORT AT INITIAL COMMUNITY DOTS MEETINGS
WITH NON-HOSPITALIZED TUBERCULOSIS PATIENTS**

— Comparison of Patients Who Did and Did Not Complete Treatment —

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Abstract [Purpose] This study focused on the initial meeting between public health nurses and TB patients to investigate the detection of patients' needs and the support provided by public health nurses during the meeting, with the aim of successfully implementing a directly observed treatment short course (DOTS) strategy for the community.

[Methods] A self-administered questionnaire was sent to nurses responsible for community DOTS strategy for TB in Aichi, Gifu, Mie, and Shizuoka prefectures in the Tokai region in order to collect the following information concerning the initial meeting between public health nurses and TB patients: nurses' characteristics, patient characteristics, information collected by the nurses, concerns expressed by patients, and specific support provided by the nurses. Data collected were compared between patients who completed TB treatment (complete treatment group) and those who did not (incomplete treatment group).

[Results and discussion] Valid responses were obtained from 42 public health nurses regarding 158 TB patients. The incomplete treatment group had a high proportion of patients who received no support from their families, had irregular lifestyles, or had financial problems. There were discrepancies between the information collected by public health nurses and patients' concerns. It was also revealed that public health nurses

provided more specific support and a wider range of support to the incomplete treatment group, suggesting that public health nurses give specific support in the initial meeting to patients who were likely to discontinue TB treatment, thereby motivating them to complete the treatment.

[Conclusions] It is essential to arrange initial public health nurse-patient meetings at an early stage to build patients' awareness of the disease and the importance of treatment adherence. Continuous support is crucial until the patients complete treatment.

Key words: Community DOTS, The initial meeting, Public health nurse, Treatment support, Outpatient with TB

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— The 88th Annual Meeting Educational Lecture —

CLINICORADIOLOGICAL DIAGNOSIS OF PULMONARY TUBERCULOSIS
THAT UNDERSTOOD THE LIFE OF A PATIENT

Jiro FUJITA

Abstract This review discusses the clinicoradiological diagnosis of pulmonary tuberculosis. To make a differential diagnosis between pneumonia and mycobacterial infections, it is very important to analyze the radiological findings of inflammatory lung diseases based on normal anatomical structures. If clinicoradiological analyses could make these differentiations, the appropriate treatment strategy for respiratory infections could be established. To accomplish this, exact orientations of pulmonary lobulus, acinus, and miliary nodule are very important. Then, through analyzing chest CT findings and distribution patterns based on normal anatomical structures, estimation of *Mycobacterium tuberculosis* infection could be possible. To differentiate infections caused by *Mycobacterium tuberculosis* from other respiratory diseases, several important criteria have been demonstrated. In addition, activity of pulmonary tuberculosis as well as smear-positivity could be analyzed radiologically. The HRCT patterns described allow classifica-

tion of disseminated tuberculosis according to the mechanism of spread (haematogenous and/or bronchogenic).

Key words: Lobulus, Acinus, Pulmonary tuberculosis, Activity, Miliary tuberculosis

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