Original Article

FACTORS ASSOCIATED WITH CHANGES IN THE NUMBER OF LATENT TUBERCULOSIS INFECTION NOTIFICATIONS IN JAPAN: NATIONWIDE SURVEY FINDINGS

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Abstract [Purpose] To investigate factors contributing to the drastic increase and subsequent decrease in latent tuberculosis infection (LTBI) notifications in 2011 (n=10,046) and 2012 (n=8,771), respectively, in Japan.

[Methods] We conducted cross-sectional surveys in all 495 health centers in Japan in 2012 and 2013 using a semi-structured questionnaire that contained questions regarding the number of contacts listed for contact investigation, interferon-gamma release assay (IGRA) results, and incident of possible false positive IGRA results.

[Results] Both the numbers and proportion of patients investigated using IGRA tended to increase from 2009 to 2012. However, the numbers and proportion of IGRA-positive patients, as well as that of those with borderline IGRA results, increased in 2011 and have decreased since 2012. In the 2012 survey, only 34 health centers (8%) reported questionable IGRA results.

[Discussion] The removal of the age limit for LTBI treatment in 2010 may have contributed to the increase in the number of LTBI notifications in 2011, as the increase was particularly remarkable in the elderly age group. The increase in the proportion of positive and borderline IGRA results was likely partly due to expanded IGRA coverage that included more medical staff and the older population, which have a relatively high prevalence of tuberculosis infection, as well as a change from second-generation to third-generation QuantiFERON (QFT®) IGRA that offered increased sensitivity. The decrease in the number of outbreak incident cases and infectious patients may have contributed to the decrease in the number of LTBI notifications in 2012.

[Conclusion] Factors such as the increase in the number of patients undergoing IGRA, increase in the number of positive or borderline results due to QFT changes, and decrease in the number of tuberculosis outbreak incidents and infectious patients likely contributed to the increase and decrease in the number of LTBI notifications in 2011 and 2012, respectively.

Key words: Tuberculosis, Latent tuberculosis infection, Surveillance, Public health center, Interferon-gamma release assay, Survey

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Original Article

CLINICAL EFFECTS OF TREATMENT FOR *MYCOBACTERIUM TUBERCULOSIS* INFECTION IN PATIENTS AT A SPECIALIZED HOSPITAL IN 2011

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Abstract [Objective and Methods] We analyzed the clinical effects of treatment for *Mycobacterium tuberculosis* infection for 1 year in our specialized hospital in 2011. Two hundred and ninety-six (296) patients were admitted and received treatment.

[Results] Two hundred and fifty-six patients (86.5%) were started on the standard treatment with 3 drugs (isoniazid [INH], rifampicin [RFP], and ethambutol [EB] or streptomycin [SM]) or 4 drugs (INH, RFP, EB or SM, and pyrazinamide [PZA]). One hundred and seventy-one patients (66.8%) continued receiving the standard treatment during the admission period. Of 160 cases who could continue 4 drugs, under 80 year-old patients were 127 cases (76.0%), but over 80 year-old patients were 33 cases (49.3%). The mean duration for negative conversion of sputum culture was 40.6 days. Liver dysfunction due to 4 drugs (INH, RFP, EB, and PZA) was noted in 8.5% of patients. Eighteen of the 296 patients had multi-drug resistant tuberculosis (MDR-TB). Each MDR-TB patient received individualized treatment. Moreover, 7 of the MDR-TB cases were treated surgically.

[Discussion] Treatment of TB had taken long time, and some patients could not continue the treatment owing to the adverse effects of drugs. Hence, it is important to monitor adverse effects of drugs in each patient.

Key words: Pulmonary tuberculosis, Standard treatment, Drug-sensitivity test, Side effect

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Case Report

A CASE OF MILIARY TUBERCULOSIS ASSOCIATED WITH HEPATOSPLENIC ABSCESSES APPEARING DURING ANTI-TUBERCULOUS TREATMENT

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Abstract A 27-year-old man with a 4-month history of treatment for miliary tuberculosis at another hospital was admitted to our hospital for continued treatment. Computed tomography showed new lesions in the S_8 area of the liver and spleen, despite resolution of chest radiographic findings. Because these new lesions were still present after 8 months of treatment, we performed laparoscopic drainage of the liver abscess. Purulent material drained from the lesion revealed positive polymerase chain reaction results for *Mycobacterium tuberculosis*, and identification of granuloma with infiltrating lymphocytes and plasma cells confirmed the diagnosis of tubercular liver abscess. Pathological changes in the spleen over the clinical course were also regarded as representing tubercular abscess. Postoperative course was good, and tuberculosis treatment ended after 12 months. Tubercular liver abscess subsequently showed prominent reduction, and the tubercular splenic abscess disappeared on abdominal ultrasonography. Tubercular hepatosplenic abscesses appearing during tubercular treatment are rare. We report this valuable case in which laparoscopic drainage of a liver abscess proved useful for diagnosis and treatment.

Key words: Paradoxical response, Tubercular liver abscess, Tubercular splenic abscess, Miliary tuberculosis, Laparoscopic drainage

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Field Activities

TUBERCULOSIS SCREENING BY CHEST RADIOGRAPHY AMONG INTERNATIONAL STUDENTS AT JAPANESE LANGUAGE SCHOOLS IN OSAKA CITY

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Abstract [Purpose] With a broader aim of controlling pulmonary tuberculosis (TB) among foreigners, here, we have reported the findings of chest radiography screening for TB among international students at Japanese language schools in Osaka city.

[Methods] Between April 2011 and December 2013, 4,529 international students from 19 Japanese language schools in Osaka city underwent chest radiography for TB screening. The chest radiographs were studied in reference to the student's sex, age, nationality, and date of entry to Japan as well as any health conditions present at the time of screening. We further analyzed the bacterial information and pulmonary TB classification based on chest radiography findings of students who were identified to be positive for TB. Information on the implementation of health education was also gathered.

[Results] The results revealed that 52.5% of the students who underwent chest radiography came from China, 20.3% from South Korea, and 16.3% from Vietnam. Of the students, 52.9% were male and 47.1% were female. The median age of students was 23 years (range: 14−70 years). The median number of days from the first date of entry to Japan up until the radiography screening was 63 days. Based on the chest radiography findings, 71 students (1.6%) were suspected to have TB; however, further detailed examination confirmed that 19 students (0.4%) had active TB. This percentage is significantly higher than the 0.1% TB identification rate among residents in Osaka city of the same time period ($P < 0.001$), which was also determined by chest radiography. The median age of the 19 TB positive patients was 23 years. Among them, 14 (73.7%) were male. The median time from the date of entry to Japan to the date of the chest radiography screening was 137 days. For 16 of those students, the entry to Japan was within 1 year of the radiography. Of the 19 TB positive patients, 16 (84.2%) did not have respiratory symptoms, 15 (79.0%) had sputum smear negative results, and 17 (89.5%) had no cavity. Health education was conducted in 11 schools (for a total of 12 times) in the 3-year period. A total of 257 language school staff and students attended the health education seminars.

[Discussion] The identification rate of TB positive students in Japanese language schools was higher than that of the general residents in Osaka city. In addition, most of these students came to Japan within 1 year. It is also important to note that the majority of TB positive students had sputum smear negative results. This study proves that medical examination after entry to Japan would be useful for early detection of TB positive patients. Furthermore, it would be beneficial to conduct chest radiography screenings among students at language schools on a continuous basis. It is also necessary to provide health education to the staff and students in Japanese language schools. Effective methods of disseminating health education, especially on the topic of TB, should be considered.

Key words: Tuberculosis, International students, Japanese language school, Medical screening, Chest X-ray, Health education

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