EXAMINATION OF TUBERCULOSIS OUTBREAK INDEX CASES IN OSAKA CITY

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Abstract [Objective] To analyze tuberculosis outbreak index cases in order to improve preventative measures.

[Methods] Outbreaks reported in Osaka City between 2008 and 2014 were investigated. The index cases were examined according to category group, sex, age, chest radiograph findings, sputum smear examination, patient delay, doctor delay, total delay in case finding, and adherence to regular health examinations. As controls, 467 patients in Osaka City with newly registered sputum smear-positive pulmonary tuberculosis in 2011 were included.

[Results] Thirteen outbreaks occurred. The group categories included enterprises (9 outbreaks), preparatory schools (2), a junior high school (1), and other (1). The group of index cases consisted of 12 men (92.3%) and one woman (7.7%), with a mean age of 39.1 years; 11 (84.6%) were 30 to 50 years of age. Their ages ranged from 15 to 54 years. Of the control group of patients with sputum smear-positive pulmonary tuberculosis, 69.2% were 60 years or older, with a mean age of 65.4 years. These results suggest that the index case group was significantly younger ($p<0.001$). There were ten cases (76.9%) of patient delay (initial visit 2 months or more after onset), and 8 (61.5%) of total delay (diagnosed 3 months or more after onset). These rates were significantly higher than those in the control group ($p<0.001$). There were regular health examinations in four cases; among those, one did not see a doctor and another did not receive further examination. Chest radiographs revealed cavities in 12 cases (92.3%). All sputum smears were positive, with grades of 1+ in one case (7.7%), 2+ in two cases (15.4%), and 3+ in 10 cases (76.9%). These cases had a significantly higher rate of smear positivity than those in the control group ($p<0.001$).

[Discussion] The index cases were predominantly male, in their prime, and had higher infectivity rates. These findings suggest the importance of preventing delays in case findings and receiving regular and adequate health examinations.

Key words: Pulmonary tuberculosis, Tuberculosis outbreak, Index case, Patient delay, Regular health examination, Infectivity

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Short Report

CLINICO-MICROBIOLOGICAL CHARACTERISTICS OF *MYCOBACTERIUM KANSASII* PULMONARY DISEASE AT A SPECIALIZED MYCOBACTERIOSIS HOSPITAL IN TOKYO, JAPAN

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Abstract [Background] *Mycobacterium kansasii* is the second most common nontuberculous mycobacterial pulmonary disease pathogen in Japan. Fibrocavitary disease is characteristic of *M.kansasii* pulmonary disease in male patients.

[Objective] To clarify the clinico-microbiological characteristics of *M.kansasii* pulmonary disease in recent years in a Tokyo hospital specializing in mycobacteriosis.

[Methods] A retrospective chart review was performed on 77 *M.kansasii* culture-positive cases from January 2003 to December 2010. Sequence analysis of the *hsp*65 gene using PCR-restriction enzyme pattern analysis (*hsp*65-PRA) was used to identify bacterial genotypes.

[Results] Seventy-four cases fulfilled the diagnostic criteria for inclusion. Female patients comprised 22% of cases (16 cases, 63.2±24.6 years of age) and were older than male patients (58 cases, 55.5±17.5 years of age). Although the peak distribution among men was patients in their 50s, female patients showed a bimodal distribution with increased occurrence in older women. Radiological examination showed that approximately 90% of male and younger female patients had fibrocavitary disease. However, elderly female patients tended to have nodular bronchiectatic disease. Genotype analysis revealed that all bacterial strains from both genders were subtype I.

[Conclusions] Compared to previous reports, the number of female patients with *M.kansasii* pulmonary disease had increased, with an unusual age distribution. These different age-related radiological findings might be due to host factors.

Key words: *Mycobacterium kansasii* pulmonary disease, Nontuberculous mycobacterium, Female, Nodular bronchiectasis, Non-cavitary disease

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Case Report

A HEALTHY ADULT WITH DISSEMINATED NONTUBERCULOUS MYCOBACTERIAL INFECTION WITH MULTIPLE BONE LESIONS

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Abstract A 54-year–old man was admitted to our hospital because of fever, dyspnea, and low back pain. Chest computed tomography showed a 30-mm mass in the left lung and bilateral pleural fluids, multiple bone lesions, enlarged lymph nodes, and skin abscesses. *Mycobacterium avium* was isolated from his sputum, a pleural fluid sample, the right cervical lymph node, and a precordial skin abscess. We thus diagnosed his illness as disseminated nontuberculous mycobacterial infection (DNTM) and treated him with multiple chemotherapeutic agents. However, the disease progressed, and he ultimately died. He was not in an obvious immunocompromised state. DNTM with multiple bone lesions in a healthy adult is very rare and we therefore report this case.

Key words: Disseminated nontuberculous mycobacterial infection, *Mycobacterium avium*, Multiple bone lesions

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A TUBERCULOUS PSEUDO-ANEURYSM OF THE ABDOMINAL AORTA COMPLICATED BY MILIARY TUBERCULOSIS

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Abstract A 66-year-old man was transferred to our hospital on November 2010 owing to a diagnosis of miliary tuberculosis. Treatment was initially started with INH, RFP, PZA, and EB. However, PZA and EB were discontinued because of their adverse effects. Subsequently, chest radiographic and laboratory findings gradually improved. However, the patient experienced lumbago, which exacerbated towards the end of March 2011. An abdominal CT scan showed an abdominal mass at the L3-L5 level between the abdominal aorta and lumbar vertebra. On the basis of the findings of abdominal ultrasonography, MRI, and PET-CT, infectious abdominal aortic aneurysm was highly suspected. Therefore, vascular graft replacement surgery was performed at the beginning of May 2011. The result of histopathological analysis showed the presence of acid-fast bacteria in the aneurysm and the lymph nodes around it, revealing that the aneurysm was due to systemic miliary tuberculosis. After the surgery, the patient was administered LVFX in addition to INH and RFP for 18 months and showed no recurrence.

Key words: Miliary tuberculosis, Tuberculous pseudo-aneurysm of the abdominal aorta, Vascular graft replacement surgery

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ACUTE MYELOID LEUKEMIA COMPLICATED BY DISSEMINATED TUBERCULOSIS AT DIAGNOSIS

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Abstract A 58-year-old man was admitted to our hospital because of fever and night sweating. Laboratory examinations showed pancytopenia on admission. Examination of bone marrow smear specimens revealed many myeloblasts, thus the diagnosis of acute myeloid leukemia (AML) was made. In contrast, many central necrotic epithelioid granulomas were found in clot specimens prepared from the same bone marrow sample. Computed tomography showed small lymphadenopathies and hepatosplenomegaly. *Mycobacterium tuberculosis* was isolated only from the urine culture. These findings of the bone marrow and the urine culture led to the diagnosis of disseminated tuberculosis. Therefore, these results mentioned above led to the diagnosis of AML complicated with disseminated tuberculosis. After disseminated tuberculosis treatment with anti-tuberculosis drugs, induction chemotherapy for AML helped the patient to achieve complete remission (CR). During treatment and CR, he showed a paradoxical reaction with lymph node enlargement without worsening of disseminated tuberculosis. This is a rare case of AML complicated by disseminated tuberculosis.

Key words: Pancytopenia, Acute myeloid leukemia, Disseminated tuberculosis, Paradoxical reaction, Bone marrow granuloma

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Case Report

A SURGICAL CASE OF *MYCOBACTERIUM KANSASII* LUNG DISEASE MIMICKING PRIMARY LUNG CANCER

Sumitaka YAMANAKA and Hiroshi TOMOYASU

Abstract We report a rare surgical case of a solitary pulmonary nodule due to *Mycobacterium kansasii*. A 59-year-old man was admitted to our hospital for examination of an abnormal shadow in the left upper lobe incidentally found on a chest radiogram. Computed tomography of the chest showed that the nodule was located in the left segment 1+2 and was irregularly shaped with a diameter of 35 mm. Thoracic fluorine-18 fluoro-deoxy-glucose positron emission tomography showed a high metabolic pulmonary lesion, with a maximum standardized uptake value of 5.1, consistent with findings for lung cancer. A bronchoscopy was performed to establish the diagnosis of lung cancer; however, it failed to show malignant cells. Because we could not confirm the diagnosis by bronchoscopic examination, video-assisted thoracoscopic surgery was performed. The intraoperative rapid diagnosis of the nodule was epithelioid cell granuloma. Smear test of the resected specimen was positive for acid-fast bacilli, and a culture was also positive for mycobacteria, which were identified as *Mycobacterium kansasii*. Antibiotic treatment for *M.kansasii* infection was administered for a year after the surgical resection. Few cases of *Mycobacterium kansasii* infection present with solitary pulmonary nodules.

Key words : *Mycobacterium kansasii*, Primary lung cancer, Pulmonary nodular shadow

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Committee's Report

EVALUATION STANDARD OF EXTERNAL QUALITY ASSESSMENT PROGRAMME FOR DRUG SUSCEPTIBILITY TESTING OF *MYCOBACTERIUM TUBERCULOSIS* IN JAPANESE LABORATORIES: PROFICIENCY TESTING IN 2004−2010

The Committee for Mycobacterial Examinations, the Japanese Society for Tuberculosis

Abstract [Objective] To analyze the results of the external quality assessments (EQA) for anti-tuberculosis drug susceptibility testing (DST) and to set-up its rational passing criterion.

[Method] Each participating laboratory in EQA performed DST, and the sensitivity, specificity, agreement (efficiency) and kappa coefficient were calculated from the results. We analysed the data of seven EQA results for DST from 2004 to 2010.

[Results] A total of 20, 20, 10, 5, 10, 10, and 10 strains of *M.tuberculosis* with known susceptibility were sent to each participating laboratory in 2004, 2005, 2006, 2007, 2008, 2009, and 2010, respectively. The total of participating laboratories was 564. Each laboratory was asked to perform DST with its routine methods and reported 25,100 test results in these seven years. The laboratories showed relatively high specificity than sensitivity, and an improving sensitivity through the years. Sixteen laboratories participated the EQA continuously, and the sensitivity and specificity to isoniazid (INH), rifampicin (RFP), streptomycin (SM) and ethambutol (EB) were 0.999 (95% CI 0.992−1.000) and 0.998 (95% CI 0.991−1.000), 0.985 (95% CI 0.973−0.992) and 0.997 (95% CI 0.989−0.999), 0.932 (95% CI 0.912−0.948) and 0.977 (95% CI 0.962−0.986), and 0.965 (95% CI 0.947−0.977) and 0.978 (95% CI 0.966−0.986), respectively.

[Discussion] The analyses revealed that the accuracy of DST for INH and RFP was highly maintained throughout the years. However, SM showed a high unevenness of performance quality and required situational considerations for evaluation. In conclusion, the EQA for DST would require a minimum number of 10 strains for each assessment, and INH and RFP should show over 95% of sensitivity and specificity with over 90% of efficiency to SM and EB as passing remark.

Key words: Tuberculosis, Anti-tuberculosis drug susceptibility testing, External quality assessment, Criterion

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