
Original Article

STUDY OF TB-LAMP WITH GASTRIC ASPIRATION, BAL, PLEURA EFFUSION AND OTHER SAMPLES ABOUT EFFICIENCY FOR RAPID DIAGNOSIS OF TUBERCULOSIS

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Abstract [Objective] We reported the results of our evaluation for rapid diagnosis of tuberculosis of TB-LAMP with samples other than sputum.

[Results] The study was conducted between August 2014 and March 2018. Of 56 samples from gastric aspiration, BAL, pleura, lung, pleura effusion, abdominal dropsy, pus and ear discharge were 29, 10, 3, 2, 6, 2, 3 and 1 samples, MGIT culture positive samples, 47 (83.9%) were judged to be positive by the TB-LAMP assay, with a mean positive detection time of 18 minutes 55 seconds. Of 44 smear-negative samples and MGIT positive samples, 35 (79.5%) were judged to be positive by the TB-LAMP assay, with a mean positive detection time of 19 minutes 41 seconds. The mean positive detection time of 8 samples (gastric aspiration 1 sample, pleura effusion 2 samples, pus 4 samples, tissue 1 sample) with MGIT culture negative and TB-LAMP positive was 17 minutes 05 seconds, from retreatment patients who were active tuberculosis.

[Conclusion] TB-LAMP assay is considered effective tuberculosis diagnosis with samples other than sputum detected positive MGIT negative samples from retreatment patients.

Key words: Gastric aspiration, BAL, Pleura effusion, Molecular-based diagnostic test, TB-LAMP, MGIT positive samples, NALC-treatment sample

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Original Article

DETECTION OF SECONDARY CASES IN CONTACT INVESTIGATION AND TREATMENT OUTCOMES OF LATENT TUBERCULOSIS INFECTION

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Abstract [Purpose] To examine the detection of secondary cases (ie. contacts who have developed tuberculosis disease as a result of transmission from the index case) in contact investigation and treatment outcomes of latent tuberculosis infection (LTBI).

[Methods] Of contacts in whom QFT-3G (QFT) was performed in contact investigation by the Osaka City Public Health Office between 2011 and 2015, the subjects were QFT-positive persons. In these subjects, we examined the necessity of LTBI treatment. In those who underwent LTBI treatment, we investigated treatment outcomes and presence or absence of onset. Furthermore, the detection of secondary cases was examined.

[Results] 1) QFT was conducted in 6,486 contacts. Of these, 871 (13.4%) showed positive reactions.

2) Of 871 contacts in whom the necessity of LTBI treatment was examined due to QFT-positive reactions, it was necessary in 697. Concerning the treatment outcomes of LTBI, it was completed in 480 contacts, it was defaulted in 73, it was untreated in 81, and other circumstances were present in 63. Onset within 2 years was noted in 0.8% of the treatment-completed contacts, in 2.7% of the treatment-defaulted contacts, and in 8.6% of the untreated contacts. There were significant differences in the treatment outcomes and incidence ($p < 0.01$). LTBI treatment was unnecessary despite QFT-positive reactions in 174 contacts. As the reasons, the onset of tuberculosis was clarified around the

same time as QFT-positive reactions became clear in 70 contacts, a diagnosis of tuberculosis had been previously infected in 13, and other reasons were present in 91.

3) Of 871 QFT-positive contacts, there were 84 secondary cases (9.6%). When comparing the secondary cases with onset-free, QFT-positive contacts, the rate of contacts with a cough period of ≥ 3 months for index cases and that of those with a cavity in X-ray findings were significantly higher in the former ($p < 0.05$).

[Conclusion] Most secondary cases were detected around the same time as QFT-positive reactions became clear. The timing of LTBI treatment was overlooked, but the incidence was significantly lower in the LTBI-treatment-completed contacts. Therefore, the widespread use of a QFT and education may be important for early detection.

Key words: Tuberculosis, Contact investigation, Secondary case, LTBI, Treatment outcome, QFT

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Original Article

TREATMENT OUTCOMES OF BILATERAL SURGERIES FOR NONTUBERCULOUS MYCOBACTERIAL LUNG DISEASE WITH DESTRUCTIVE LESIONS ON BOTH SIDES

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Abstract [Background] Limited information is currently available on the outcomes of bilateral surgical treatments for nontuberculous mycobacterial lung disease (NTM-LD) with destructive lesions on both sides.

[Objective] To show the outcomes of bilateral surgical treatments for drug-resistant NTM-LD with destructive lesions on both sides.

[Methods] Eleven patients underwent two (bilateral, staged) procedures for NTM-LD between January 2008 and June 2018. Age, bacterial species, disease type, chemotherapy, surgical procedure, recurrence, pulmonary functions, etc. were evaluated retrospectively.

[Results] The median age is 58 years and all were female. The etiological species were *M.avium* in 10 patients and *M.intracellulare* in one. All patients were nodular bronchiectatic type. Resections of the right middle lobe and the left lingular segment were performed by two staged surgeries in all patients and partial resection of the upper lobe was added in three. No complications due to surgeries were observed. All patients achieved sputum culture conversion after second surgery, however, six (55%) developed recurrence during the follow-up period.

[Conclusions] Two staged bilateral surgeries for drug-resistant NTM-LD have acceptable outcomes. Better control of the disease may be achieved in some patients with destructive lesions on both sides through two staged bilateral surgical treatments.

Key words: Nontuberculous mycobacterial lung disease (NTM-LD), Drug resistance, Bilateral lesions, Surgical treatment, Staged surgery

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EVALUATION OF KANAMYCIN AND AMIKACIN SUSCEPTIBILITY TESTING ON OGAWA MEDIA AGAINST *MYCOBACTERIUM TUBERCULOSIS*

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Abstract [Objective] To compare the drug susceptibility testing (DST) results of kanamycin (KM) and amikacin (AMK) between Ogawa and Löwenstein-Jensen (L-J) media.

[Method] Ogawa media containing 20 and 30 µg/ml of KM (Ogawa KM20 and KM30), and 30 µg/ml of AMK (Ogawa AMK30) were prepared, respectively. Similarly, L-J media containing 30 µg/ml of KM (L-J KM30) and 30 µg/ml of AMK (L-J AMK30) were also prepared. A total of 114 clinical *Mycobacterium tuberculosis* (MTB) isolates including 92 multidrug-resistant ones were tested with each medium, and the results were compared. McNemar test was used for the analyses.

[Result] The McNemar test showed significant difference of DST results between L-J KM30 vs. Ogawa KM20 ($p=0.0133$), but not between L-J KM30 vs. Ogawa KM30 ($p=0.134$). DST of AMK showed 100% concordance between Ogawa and L-J medium.

[Discussion] Ogawa proportion method with 30 µg/ml of KM was almost equivalent to that of L-J method, while Ogawa KM20 detected less resistances. As to AMK, Ogawa method could yield same DST results with L-J method. The

modification of current KM concentration from 20 to 30 µg/ml could make the Ogawa proportion method universally acceptable. It was also evident that Ogawa medium could be used for proportion method of AMK. Those concentration settings of KM and AMK in 1% Ogawa medium will be important to standardize the DST results compared to other countries.

Key words: *Mycobacterium tuberculosis*, Antimicrobial susceptibility testing, Kanamycin, Amikacin

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Case Report

A CASE OF PULMONARY SUPPURATIVE DISEASE CAUSED BY *ACTINOMYCES ODONTOLYTICUS* WHICH OCCURRED IN YOUNG MAN WITHOUT BASIC DISEASE AND REQUIRED TO DIFFERENTIATE FROM PULMONARY TUBERCULOSIS

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Abstract A previous healthy 24-year-old man came to our hospital. Chest image revealed nodule and infiltrative shadows with cavity in the upper lobe of the right lung. In the sputum, the acid-fast bacterial smear and *Mycobacterium tuberculosis* PCR were negative. In addition, it was not possible to detect bacteria even in smear and culture of general bacteria and acid-fast bacteria of bronchial lavage fluid. In the second bronchoscopy, bronchoalveolar lavage was performed, and the obtained fluid was anaerobically cultured which was not performed previously, and as a result, actinomycetes was detected. At a later date, the obtained bacteria were identified as *Actinomyces odontolyticus* in the genus Streptomyces. SBT/ABPC was administered for 14 days, shading was improved, after that, it was changed to oral administration of AMPC, and treatment continued. It is known that pulmonary actinomycosis occurs also in people without basic disease. In this example, diagnosis could be reached by performing anaerobic culture of bronchoalveolar lavage fluid. We reported

a case of rare *A.odontolyticus* lung disease.

Key words: Anaerobic culture, *Actinomyces odontolyticus*, Juvenile, Lung abscess, Pulmonary actinomycosis

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Case Report

A CASE OF TUBERCULOUS PULMONARY TUBERCULOSIS AND PERITONITIS
AFTER A DELAYED DIAGNOSIS HAD BEEN GIVEN
BY SURGICAL PERITONEAL BIOPSY

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Abstract A 56-year-old man was admitted to previous hospital because of cough and fever. CT scan revealed pleural effusion on the left side, diffuse thickening of the peritoneum, and swelling of the abdominal lymph nodes. Although the ADA level in the pleural effusion was high, other laboratory findings showed no evidence of tuberculous infection. He was suspected of having carcinomatous peritonitis because of the high accumulation of FDG in the overall peritoneal cavity on PET-CT. Finally, a surgical peritoneal biopsy showed a granuloma with caseous necrosis, and the result of the TB-PCR was positive in the specimen. Accordingly, he was diagnosed with tuberculous peritonitis. He was transferred to our TB ward for treatment. The sputum smear (acid fast bacillus) and TB-PCR performed on admission yielded positive results. Five days after the initiation of the anti-TB treatment, he developed adhesive intestinal obstruction. Owing to the conservative treatment, the symptoms receded and he dis-

charged from the hospital on the 104th day after admission. In this case, the diagnosis was delayed because of the lack of conclusive evidence of TB infection.

Key words : Pulmonary tuberculosis, ¹⁸F-fluorodeoxyglucose positron emission tomography–computed tomography (FDG PET-CT), Biopsy of peritoneum

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