Original Article

EPIDEMIOLOGICAL STUDY ON FACTORS AFFECTING THE HOSPITALIZATION PERIOD OF PATIENTS WITH ACTIVE TUBERCULOSIS

[1]Tadahiko FUJINO, [1]Hisae FUSEGAWA, [1]Mai NISHIUMI, [1]Yasuyuki OKUBO, [1]Toru KAKIZAKI, [2]Kiyoshi MAEJIMA, and [3]Hiroki SUGIMORI

Abstract [Objective] We compared the time needed for sputum negative conversion of tubercle bacilli among patients with active tuberculosis to clarify factors affecting the hospitalization period.

[Subjects and Methods] We retrospectively reviewed 1260 patients definitely diagnosed as active tuberculosis between Jan. 1996 and Dec. 2003. Smears were examined by fluorescent staining procedure, and cultures were tested by egg-based Ogawa and Kudo-PD solid media. Sputum smears and cultures were examined at least once a month. All patients received standard chemotherapy including isoniazid (INH), rifampicin (RFP), ethambutol hydrochloride (EB) [or streptomycin sulfate (SM)], and pyrazinamide (PZA). Time needed for sputum conversion was defined as the period from the initiation of chemotherapy to the first documented negative smear and culture. Multivariate analysis was performed to document factors that were independently associated with hospitalization period.

[Results] Factors correlated with longer conversion time were high amount of bacilli discharge, severe radiographic findings, and drug sensitivity at the initiation of treatment. Patients with bacilli discharge Gaffky 9−10 required 3 months (median) [3.9 months (mean)], and those with culture 3+ required 2 months (median) [2.8 months (mean)] for conversion. Patients with large and widespread cavities, classified as Ⅰ or Ⅱ3 according to the Classification by the Japanese Society for Tuberculosis, required conversion time of 3 months (median) [2.8 months (mean)]. Cases with initial drug resistance to any of the drugs required 2 months (median) [2.2 months (mean)] for conversion. Factors associated with prolongation of hospitalization were the amount of bacilli in sputum at the initiation of chemotherapy, past history of tuberculosis, presence of cavities and size of lesion observed on chest X-ray, drug resistance, and presence of extra-pulmonary lesions. Gender, complication with chronic renal failure, and alcoholism did not affect the hospitalization period.

[Conclusion] Patients with huge amount of bacilli discharge, extensive cavitary lesion, or initial drug resistance required more than 2 months for sputum negative conversion. In these cases, hospitalization period shorter than 2 months is inadequate, even if chemotherapy is initiated. For complete eradication of tuberculosis, we must ensure adequate chemotherapy and hospitalization period to eliminate further sources of infection. Our study shows that hospitalization period should be cautiously determined based on the disappearance of bacilli in sputum.

Key words: Length of isolation, Conversion, Persistence of positive smear and /or culture, Multidrug-resistant tuberculosis, Infectiousness

[1]Departments of Respiratory Diseases and [2]Internal Medicine, National Hospital Organization (NHO) Kanagawa National Hospital, [3]Department of Sports and Health Science, Daito Bunka University

Correspondence to: Tadahiko Fujino, Department of Respiratory Diseases, NHO Kanagawa National Hospital, 666−1, Ochiai, Hadano-shi, Kanagawa 257−8585 Japan.

Original Article

ANALYSIS OF CHRONIC NECROTIZING PULMONARY ASPERGILLOSIS (CNPA) CASES COMPLICATED WITH NON-TUBERCULOUS MYCOBACTERIOSIS (NTM)

Satoru FUJIUCHI, Michiko SAKUNAMI, Yasushi YAMAMOTO, Akinori TAKEDA, Yutaka NISHIGAKI, Yuka FUJITA, Yasuhiro YAMAZAKI, and Toshiaki FUJIKANE

Abstract [Objective] To clarify the clinical feature of chronic necrotizing pulmonary aspergillosis (CNPA) complicated with non-tuberculous mycobacteriosis (NTM).

[Subjects and methods] Forty-one CNPA cases underlying NTM were analyzed according to their clinical backgrounds.

[Results] Concerning the radiological type of prior NTM, CNPA cases were classified into two groups; 1) resembling pulmonary tuberculosis that usually shows cavitary lesion and 2) micronodule and bronchiectasis pattern, and more than half of cases (61.0%) were classified as the latter type. Average duration between prior NTM and CNPA was 1354 days. Isolation of *Aspergillus* spp. from sputum was 15 out of 41 (36.6%). Positive rates for *Aspergillus* galactomannan antigen and anti-*aspergillus* antibody were 58.5%, 46.3% respectively. With regard to subspecies of mycobacteria, *M. avium* was most frequent (82.9%). Since 6.8% of NTM cases develop CNPA within 10 years, careful observation of CNPA was required for the management of NTM.

Key words: Non-tuberculous mycobacteriosis, Chronic necrotizing pulmonary aspergillosis

Department of Respiratory Medicine, National Hospital Organization Dohoku National Hospital

Correspondence to: Satoru Fujiuchi, Department of Respiratory Medicine, National Hospital Organization Dohoku National Hospital, 7 Hanasaki, Asahikawa-shi, Hokkaido 070−8644 Japan. (E-mail: fujiuchi@douhoku.hosp.go.jp)

EVALUATION OF THE DISCREPANT *MYCOBACTERIUM TUBERCULOSIS* STRAINS BETWEEN ANY ORDINARY SUSCEPTIBILITY TESTING AND *rpoB* GENE ANALYSIS BY THE LINE PROBE ASSAY

[1]Shiomi YOSHIDA, [1]Katsuhiro SUZUKI, [1]Kazunari TSUYUGUCHI, [2]Motohisa TOMITA, [1]Masaji OKADA, and [3]Mitsunori SAKATANI

Abstract [Purpose] Evaluation of rifampicin-resistance by the line probe assay, for rifampicin-susceptible *Mycobacterium tuberculosis* strains which were classified as rifampicin-resistant by the phenotypic drug susceptibility testings.

[Materials and Methods] A total of 15 clinical isolates from NHO Kinki-chuo Chest Medical Center consisting of 6 rifampicin-resistant strains by the line probe assay despite susceptible result by the drug susceptibility testings, and 9 clinical isolates which showed the fluctuating results on repeated drug susceptibility testings. After we conducted 3 drug susceptibility testings and the line probe assay, we have examined the sequence analysis for confirming mutations in the *rpoB* gene.

[Results] All strains were determined rifampicin-susceptible or intermediate by the drug susceptibility testings with Minimum Inhibitory Concentration (MIC) which ranged from 0.25 to 4 μg/m*l* by BrothMIC MTB-1, whereas these isolates indicated rifampicin-resistance by the line probe assay and revealed mutations in the hot-spot region (69 bp) by the sequence analysis.

[Conclusion] We verified that the line probe assay might be useful for the correct determination of drug susceptibility, especially about the low-level rifampicin-resistant *M. tuberculosis* strains.

Key words: *M. tuberculosis*, Drug susceptibility testing, Resistance-conferring mutation, *rpoB*, MIC

[1]Clinical Research Center, [2]Department of Clinical Laboratory, [3]Department of Respiratory Medicine, National Hospital Organization Kinki-chuo Chest Medical Center

Correspondence to: Shiomi Yoshida, Clinical Research Center, National Hospital Organization Kinki-chuo Chest Medical Center, 1180 Nagasone-cho, Kita-ku, Sakai-shi, Osaka 591−8555 Japan. (E-mail: dustin@kch.hosp.go.jp)

Case Report

AN ADOLESCENT CASE OF PULMONARY MAC INFECTION, FOUND 3 YEARS LATER FROM BONE MARROW TRANSPLANTATION FOR MYELODYSPLASTIC SYNDROME

[1]Seijiro MINAMOTO, [1]Kazunari TSUYUGUCHI, [1]Katsuhiro SUZUKI, [1]Masaji OKADA, and [2]Mitsunori SAKATANI

Abstract *Mycobacterium avium* complex (MAC) pulmonary infection is usually seen in elderly persons. We encountered a rare case of MAC pulmonary disease seen in a 19-year-old adolescent. The patient had received bone marrow transplantation at the age of 16 for myelodysplastic syndrome. Subsequently, he developed constrictive bronchiolitis and has been treated with corticosteroid and taclorimus. At age 19, small or fine nodules and a cavitary nodule in right lung were detected on the chest radiograph and computed tomography. Afterwards, *Mycobacterium avium* was detected by bronchoscopic examination and sputum examination and he was diagnosed as MAC pulmonary infection. MAC pulmonary infection in a young person at the age of 19 is an extremely rare case, in which constrictive bronchiolitis, immunosuppression by corticosteroid and tacrolimus, and diabetes mellitus were considered as critical predisposing factors.

Key words : MAC pulmonary disease, Bone marrow transplantation, Constrictive bronchiolitis, Corticosteroid, Tacrolimus

[1]Clinical Research Center, [2]Department of Internal Medicine, National Hospital Organization Kinki-chuo Chest Medical Center

Correspondence to : Seijiro Minamoto, Clinical Research Center, National Hospital Organization Kinki-chuo Chest Medical Center, 1180 Nagasone-cho, Kita-ku, Sakai-shi, Osaka 591−8555 Japan.
(E-mail : minamoto@kch.hosp.go.jp)

Report and Information

STORAGE AND TRANSPORT OF ISOLATED *M. TUBERCULOSIS* AT PUBLIC AND PRIVATE HEALTH INSTITUTIONS IN JAPAN

[1]Akihiro OHKADO, [3]Chieko TAKAHASHI, [4]Masahide HORIBA, [2]Yoshiro MURASE, and [2]Satoshi MITARAI

Abstract [Purpose] To obtain basic data about the present practices on storage and transport of isolated *M. tuberculosis* at public and private health institutions in Japan.

[Method] Survey forms regarding the practices on storage and transport of isolated *M. tuberculosis* were distributed and collected by post-mail in January 2007 to 76 local public health institutions, 145 public health centres, and 150 public or private hospitals. The questionnaire was adopted from the guidelines proposed by the Ministry of Health, Labour, and Welfare in 2006 on storage and transport of isolated *M. tuberculosis*.

[Results] The respondents of the survey were as follows: 96.1% (73/76) from local public health institutions, 93.8% (136/145) from public health centres, and 73.3% (110/150) from hospitals. In general, local public health institutions conformed well to the proposed standards, however public health centres and hospitals were not compliant to some standards.

[Summary] Based on the survey conducted on the practice of storage and transport of isolated *M. tuberculosis*, certain discrepancy was found among public health centres and hospitals.

Key words: *M. tuberculosis*, Infectious Diseases Control Law, Storage, Transport, Equipment, Questionnaire survey

[1]Department of Research, and [2]Mycobacterium Reference Center, Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association (JATA), [3]Department of Microbiology, Kanagawa Prefectural Institute of Public Health, [4]Department of Respiratory Medicine, National Hospital Organization Higashi-Saitama National Hospital

Correspondence to: Akihiro Ohkado, Department of Research, Research Institute of Tuberculosis, JATA, 3−1−24, Matsuyama, Kiyose-shi, Tokyo 204−8533 Japan.
(E-mail: ohkadoa@jata.or.jp)