
Original Article

CLINICAL CHARACTERISTICS OF PULMONARY *MYCOBACTERIUM AVIUM* COMPLEX INFECTION COMPLICATED WITH LUNG CANCER

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Abstract [Objectives] The coexistence of lung cancer and pulmonary *Mycobacterium avium* complex (MAC) infection has not been well reported. This study illustrated the clinical characteristics of pulmonary MAC infections complicated with lung cancer.

[Patients and methods] We conducted a retrospective analysis of the clinical characteristics of patients with pulmonary MAC infections complicated with newly diagnosed lung cancer between 2006 and 2012.

[Results] Of 530 patients with pulmonary MAC infections, 13 (2.4%) were complicated with lung cancer. Six men and 7 women with a mean age of 73 years were also diagnosed with cancer, and 5 had a smoking history. Six patients were diagnosed concurrently, and 7 patients were diagnosed with pulmonary MAC infections prior to being diagnosed with cancer. Histological examination revealed adenocarcinoma, small cell carcinoma, and other cancer types in 9, 2, and 2 patients, respectively. Eleven of 13 patients had cancers of stages I–IIIA, and 10 underwent cancer resection. Analysis of the anatomical relationship between lung cancer and MAC revealed that both diseases were present in the same lobe in 10

patients. The disease extent was within one-third of a single lung field in 9 patients. Anti-MAC treatment was initiated in 7 patients, but was discontinued in 2 patients owing to side effects. Six patients did not receive anti-MAC treatment.

[Conclusion] In this study, lung cancer was frequent among patients with pulmonary MAC infections, and both diseases tended to be in the early stages. Physicians should consider coexisting lung cancer when managing MAC infections.

Key words: Pulmonary *Mycobacterium avium* complex infection, Lung cancer, Complication

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NEW CRITERIA ENABLE SHORTER HOSPITALIZATION OF PATIENTS WITH SMEAR-POSITIVE PULMONARY TUBERCULOSIS

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Abstract [Background] Sputum conversion defined as 3 consecutive smear-negative sputum samples collected on different days is one of standard requirements for discontinuation of isolation for patients with smear-positive pulmonary tuberculosis (SPpTB). Sputum smear conversion is usually seen prior to culture conversion. However, in some patients, sputum smear tests are continuously positive for a long time. To discontinue isolation of the patients, culture conversion is required instead of smear conversion. Culture testing requires a long incubation period, which results in longer patient stay and isolation.

[Objectives] To identify a more efficient definition of culture conversion, which will enable treating physicians to take the decision to discontinue isolation.

[Methods] The charts of patients with SPpTB admitted from September 2007 to March 2011 were reviewed. The recent definition of culture conversion is 3 subsequent culture-negative sputum specimens incubated for 6 weeks (3 CNs for 6 weeks) in liquid media. Treatment days and admission days were calculated based on the application of the new 3 definitions (3 CNs for 4 weeks, 2 CNs for 6 weeks, 2 CNs for 4 weeks).

[Results] Of 301 patients, 224 were discharged after smear conversion; 77 were continuously smear-positive and were discharged after culture conversion. The median hospital stay was 56 days in patients discharged due to smear conversion and 107 days in patients discharged due to culture conversion,

based on the recent definition. The numbers of treatment days needed for culture conversion were identical in most patients, regardless of definitions. At the time of reporting, all patients conformed to the new definitions and all the patients' sputum specimens were 3 CNs for 6 weeks except for one patient happened to be with 2 consecutive smear-negative specimens at an early phase of chemotherapy. The most efficient definition of culture conversion in this study was 2 CNs for 4 weeks. This enabled to shorten each patient's stay by 31 days and to lessen each patient's cost of hospitalization by about 4,900 dollars.

[Conclusion] Two subsequent CNs for 4 weeks of smear-positive sputum samples is enough to enable discontinuation of patient isolation and may thus shorten hospital stay.

Key words: Smear-positive culture-negative pulmonary tuberculosis, Cultivation period, Isolation, Hospitalization

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GENETIC ANALYSIS REVEALS MISIDENTIFICATION OF
MYCOBACTERIUM LENTIFLAVUM AS *MYCOBACTERIUM INTRACELLULARE*
BY THE COBAS TaqMan MAI TEST

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Abstract [Objective] To evaluate COBAS TaqMan MAI test misidentification of *Mycobacterium lentiflavum* as *Mycobacterium intracellulare*.

[Materials and Methods] Preliminary comparative analysis identified 13 clinical isolates used in this study as COBAS Amplicor MAV and MIN-negative but COBAS TaqMan MAI-positive. The COBAS TaqMan MAI test limit of detection and reproducibility were evaluated by tenfold dilution series from 3×10^8 CFU/mL. Isolate 16S rDNA nucleotide sequences were compared with *Mycobacterium avium* and *M.intracellulare*.

[Results] Discrepancies were observed between isolates identified as *M.lentiflavum* by 16S rDNA sequencing and as *M.intracellulare* by the COBAS TaqMan MAI test. The false-positive results were verified by sequence comparison of a randomly sampled clinical isolate and the *M.intracellulare* reference strain. Sequence analysis of *M.lentiflavum* and *M.intracellulare* 16S rDNA amplification products showed at least 3 mismatches between species. The high identity in the sequence was found for *M.intracellulare* by COBAS TaqMan

MAI.

[Conclusion] In Japan, commercially available nucleic acid probe- and amplification-based tests cannot identify *M.lentiflavum*. Correct identification, though challenging, is possible using standard cultivation procedures for colony growth. Misleading results using the COBAS TaqMan MAI kit may lead to erroneous diagnoses.

Key words : *Mycobacterium lentiflavum*, *Mycobacterium intracellulare*, COBAS TaqMan, 16S rDNA

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