

IDENTIFICATION SIGNIFICANCE USING MASS SPECTROMETRY OF
MYCOBACTERIUM LENTIFLAVUM ERRONEOUSLY IDENTIFIED AS
MYCOBACTERIUM INTRACELLULARE BY THE COBAS TaqMan MAI TEST

¹Shizuko KOSHIBA, ²Katsunao NIITSUMA, ²Miwako SAITO, and ²Tomoko SUZUKI

Abstract [Objective] The frequency of misidentification as *Mycobacterium lentiflavum* strain in *M.intracellulare* strain identified by TaqMan test was examined by using mass spectrometry.

[Method] 70 clinically isolated nontuberculous mycobacteria preserved from 2001 were used. Measurement was carried out by mass spectrometry by the pretreatment method based on the mycobacteria test guide 2016.

[Results] Among clinically isolated nontuberculous mycobacteria strains, the COBAS Amplicor® method (Amplicor method) identified 5 strains and TaqMan test identified 20 strains of *M.intracellulare*. Two strains of *M.lentiflavum* identified by mass spectrometry were the ones misidentified by TaqMan test. All other strains were equally identified by mass spectrometry although the Amplicor method showed a Score Value of less than 1.7 for 2 strains.

[Conclusion] The frequency of isolation of *M.lentiflavum* was 3.9% (2.9% for all 70 strains) for 2 out of 51 strains measured by the TaqMan method. Although there may be a

regional difference in the isolated frequency of *M.intracellulare*, there is a regional difference in the frequency of *M.intracellulare* isolation with a high necessity of treatment, but for the determination of nontuberculous mycobacteria including *M.lentiflavum* with low separation frequency, it is thought that identification by mass spectrometry is important.

Key words: Mass spectrometry, COBAS TaqMan MAI test, *Mycobacterium intracellulare*, *Mycobacterium lentiflavum*

¹Inspection Department, Fukushima Prefectural Minami Aizu Hospital, ²Department of Infectious Diseases and Pulmonary Medicine, Fukushima Prefectural Medical University Aizu Medical Center

Correspondence to: Shizuko Koshiba, Inspection Department, Fukushima Prefectural Minami Aizu Hospital, 14-1, Kazashimo, Nagata, Minamiaizu-machi, Fukushima 967-0006 Japan. (E-mail: koshiba1024@gray.plala.or.jp)

————— Case Report —————

A CASE OF PULMONARY *MYCOBACTERIUM SHINJUKUENSE* DISEASE
WITH POLYMYALGIA RHEUMATICA

¹Yutaro MAEDA, ²Kazumi NISHIO, ²Kenichi ARAKAWA, ²Ryosuke ARAI,
²Shinji AIDA, ²Yasushi NAKANO, ²Junko KAGYO, ³Yuko KAZUMI,
and ⁴Satoshi MITARAI

Abstract A 72-year-old woman was referred to our hospital for the management of sustained cough and sputum. Ten years before the visit, she presented with an abnormal chest shadow and was regularly followed up as old pulmonary tuberculosis. At the age of 70 years, she was suffered from polymyalgia rheumatica and was administered steroid therapy. After starting steroid therapy, the lung shadow expanded rapidly and formed a cavity. Although the cavitary shadow slightly improved after the steroid dose was decreased, coughing and sputum persisted. Mycobacteria were cultured from her sputum repeatedly, but the species could not be identified using the DNA-DNA hybridization (DDH) method. However, analysis of DNA-directed RNA subunit beta (*rpoB*), 16S rRNA and *hsp65* gene sequences revealed *Mycobacterium shinjukuense*. Following the diagnosis of pulmonary *M. shinjukuense* disease, we administered combination chemotherapy with isoniazid (INH), rifampicin (RFP), and clarithromycin (CAM) based on previous reports and her complication of advanced glaucoma. After 8 weeks, we changed the treatment regimen to RFP, CAM and levofloxacin (LVFX),

because of INH induced liver dysfunction. She completed the 18-months course of chemotherapy and her imaging and clinical findings improved without recurrence. This is the first case of pulmonary *M. shinjukuense* disease wherein the patient had been taking immunosuppressive agents such as steroid.

Key words: *Mycobacterium shinjukuense*, Polymyalgia rheumatica, Steroid

¹Department of Internal Medicine, and ²Department of Respiratory Medicine, Kawasaki Municipal Ida Hospital; ³Antimicrobial Resistance Research Center, National Institute of Infectious Disease; ⁴Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association

Correspondence to: Kazumi Nishio, Department of Respiratory Medicine, Kawasaki Municipal Ida Hospital, 2-27-1, Ida, Nakahara-ku, Kawasaki-shi, Kanagawa 211-0035 Japan. (E-mail: nishio-k@city.kawasaki.jp)

REVIEW OF THE RELATIONSHIP BETWEEN
INDOOR CARBON DIOXIDE AND ROOM VENTILATION
FOR THE PURPOSE OF ESTIMATING TUBERCULOSIS INFECTION RISK

Hiroyuki FURUYA

Abstract It has been well known that insufficient room ventilation increased tuberculosis (TB) infection risk. Less number of studies linking between ventilation rates and TB infection risk has been reported. This paper reviews the recent literatures linking the CO₂ concentration by exhaled air and TB airborne infection. The accumulation of CO₂ production by active TB patients means both the increase of TB infectivity and the lower room ventilation rates. From the previous studies, measuring CO₂ concentration in the closed space where TB outbreak occurred, is considered to be useful for identifying environmental infection risk.

Key words: Carbon dioxide, Mathematical model, Room ventilation

Basic Clinical Science and Public Health, Tokai University School of Medicine

Correspondence to: Hiroyuki Furuya, Basic Clinical Science and Public Health, Tokai University School of Medicine, 143 Shimokasuya, Isehara-shi, Kanagawa 259-1193 Japan.
(E-mail: furuya@is.icc.u-tokai.ac.jp)

Report and Information

**QUANTITATIVE EVALUATION OF INFECTIOUS RISK FACTOR OF
CONTACT HEALTH EXAMINATION FOR TUBERCULOSIS
— RETROSPECTIVE STUDY —**

¹Mikiyoshi KOIKE, ²Yukio TOMIZAWA, ³Nobuyuki SAKURAI, ⁴Yasuyuki KONDOU,
³Satoshi TSUKUI, and ⁵Atsushi TAKAHASHI

Abstract [Objectives] The present retrospective study aimed to clarify the validity of quantitative analysis for infectious risk factors (IRF) of contact health examination (CHE) for tuberculosis at 3 types of institutes.

[Subjects and Methods] We analyzed data from 140 (188) individuals who underwent CHE, included 10 patients that occurred at hospitals, care facilities for the elderly, and office workplaces in two local health and medical service areas. IRF measured based on radiographic imaging findings, frequency/duration of symptoms, findings of sputum smears determined used Gaffky scale, and ability to walk freely, as well as occupation, contact duration, contact area, with or without medical care, and with or without wearing mask, were quantitatively divided into two or three grades. A rate of positive judgment of QFT-3G (p-QFT) of each institute or occupation, correlations between the degree of IRF and p-QFT, or a predictive factor for p-QFT were examined.

[Results] The p-QFT rate was significantly higher in the general office workplace or non-caregiver, and there was no medical profession with p-QFT. The rate of p-QFT significantly

correlated with the contact at closed space, one contact time over 30 minutes, ability to walk freely, longer duration of contact, and without wearing mask.

[Conclusions] The range of contact health examination for tuberculosis might be determined via a quantitative evaluation of IRF.

Key words: QFT-3G, Contact health examination, Tuberculosis, Infectious risk factor, Infectious disease, Institute

¹Agatsuma Health and Welfare Office, Gunma Prefecture, ²ex-Agatsuma Health and Welfare Office, Gunma Pref., ³Division of Health Prevention, Department of Health and Welfare, Gunma Pref., ⁴Shibukawa Health and Welfare Office, Gunma Pref., ⁵Isesaki Health and Welfare Office, Gunma Pref.

Correspondence to: Mikiyoshi Koike, Agatsuma Health and Welfare Office, Gunma Prefecture, 183-1, Nishinakanajojo, Nakanojojo-machi, Agatsuma-gun, Gunma 377-0425 Japan. (E-mail: koike-mik@pref.gunma.lg.jp)