

THE ROLE OF SIMULTANEOUS COMBINATION CULTURE WITH SOLID AND LIQUID MEDIA FOR DIAGNOSIS OF PULMONARY TUBERCULOSIS

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Abstract [Purpose] To study the usefulness of simultaneous combination culture with egg-based Ogawa medium (1 slant) and MGIT (Mycobacterium growth indicator tube/Becton-Dickinson) for detection of *M. tuberculosis* from sputum in sputum-culture proven pulmonary tuberculosis patients.

[Object and Method] Retrospective study of sputum-culture-positive pulmonary tuberculosis cases in our hospital (with tuberculosis ward) from Jan. 2002 to Sept. 2003.

[Result] In 1103 sputum culture for the diagnosis of 370 sputum-culture proven pulmonary tuberculosis cases, 86.0% were MGIT positive and 79.5% were Ogawa positive. Among sputa contaminated on MGIT, 56.1% (23/41) were positive on Ogawa. Among sputa culture-negative on MGIT, 2.7% (3/113) were positive on Ogawa. Those 3 sputa were obtained from 3 different patients, and in 2 of them, other sputa were positive on MGIT. Frequency of "*M. tuberculosis* strain which can be cultured only by Ogawa" was supposed to be at maximum 0.27% (1/370). Of 41 sputa contaminated on MGIT, 15 sputum specimens were re-treated and re-cultured by MGIT. Of these specimens 46.7% (7/15) were positive on Ogawa, and 73.3% (11/15) were positive on re-treated MGIT,

and the difference was not statistically different.

[Conclusion] From the standpoint of detection of *M. tuberculosis* from sputum in sputum-culture proven pulmonary tuberculosis patients, simultaneous combination culture of Ogawa medium with MGIT is useful, mainly for risk management of MGIT contamination. But, if re-treated MGIT is done for cases of contaminated on MGIT, simultaneous combination culture of Ogawa medium with MGIT is not necessary.

Key words: Pulmonary tuberculosis, Diagnosis, Sputum culture, Ogawa, MGIT (Mycobacterium growth indicator tube)

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Original Article

CLINICAL ANALYSIS OF PATIENTS WITH SEQUELAE OF PULMONARY TUBERCULOSIS UNDERGOING HOME OXYGEN THERAPY

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and ⁴Takeo KAWASHIRO

Abstract [Purpose] To clarify the clinical characteristics of patients with sequelae of pulmonary tuberculosis undergoing home oxygen therapy.

[Objects and Methods] We conducted a cross-sectional survey of those with newly-introduced home oxygen therapy for the sequelae of pulmonary tuberculosis from 1998 through 2001, using national hospital network of respiratory diseases.

[Results] The study subjects were 402 in total (271 men and 131 women), who started the home oxygen therapy at the age ranging between 33 and 100 years (72.2 ± 8.1 years, mean \pm S.D.). They suffered from pulmonary tuberculosis at the mean age of 37.7 ± 19.4 years, and the interval leading to oxygen therapy averaged 33.1 ± 19.1 years. Sixty-eight percent of these patients demonstrated body mass index (BMI) less than 20. Pulmonary function studies revealed the markedly-decreased vital capacity ($46.2 \pm 15.0\%$) as well as reduced FEV₁/FVC ($68.5 \pm 18.8\%$). Arterial blood gases measured when home oxygen therapy was introduced showed hypoxemia (PaO₂, 60.4 ± 10.7 Torr) with hypercapnea (PaCO₂, 50.5 ± 9.4 Torr). The average flow rate of oxygen was 0.94 ± 0.64 L/min at rest and 1.51 ± 0.70 L/min on exertion.

The patients were divided into two groups; those with surgical intervention including thoracoplasty or lung resection (126 cases, group 1) and those without surgery (148 cases, group 2). The mean age of the patients in the group 1 when home oxygen therapy was started was 72.3 ± 6.4 years and 71.6 ± 9.1 years in the group 2, respectively. Subjects in group 1 were more likely suffered from TB in younger age than those in group 2 (28.2 ± 9.7 vs. 45.4 ± 21.5 years, $p < 0.01$),

and had the longer duration to initiate domiciliary oxygen therapy (43.0 ± 10.9 vs. 25.3 ± 20.3 years, $p < 0.01$). The former was also more likely to have lower % VC ($p < 0.01$), more elevated PaCO₂ ($p < 0.05$), and lower inspired flow rate of oxygen ($p < 0.01$). There was no significant difference between the two groups with respect to BMI, FEV₁/FVC, or PaO₂.

[Conclusion] Our investigation demonstrated that patients with sequelae of pulmonary tuberculosis under oxygen therapy revealed the different clinical course and characteristics regarding the presence or absence of previous surgical intervention.

Key words: Sequelae of pulmonary tuberculosis, Chronic respiratory failure, Home oxygen therapy, Surgical interventions of pulmonary tuberculosis

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Original Article

TREATMENT OUTCOME OF PATIENTS WITH MULTIDRUG-RESISTANT
PULMONARY TUBERCULOSIS DURING PREGNANCY

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Abstract [Purpose] To know the treatment outcome of patients with multidrug-resistant tuberculosis (MDR-TB) during gestation.

[Method] Retrospective study of 3 cases of pregnant women, who were treated for MDR-TB with a regimen including pyrazinamide, ethambutol, para-aminosalicylic acid, cycloserine and amoxicillin-clavulanic acid.

[Result] All patients showed a good response to anti-tuberculosis chemotherapy without any serious adverse effect, and were culture-negative at the time of delivery. Two patients delivered vaginally at weeks 40, and one patient delivered surgically at weeks 38. All newborns were healthy, and their tuberculin skin tests and placental tissue examinations were negative for tuberculosis.

[Conclusion] MDR-TB can be successfully treated during

pregnancy by using a regimen including effective second-line anti-tuberculosis drugs.

Key words : Pregnancy, Multidrug-resistant tuberculosis (MDR-TB), Chemotherapy, Delivery

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Original Article

DIFFERENCE IN TRANSMISSIBILITY BETWEEN BRONCHIAL
AND LARYNGEAL TUBERCULOSIS— A Retrospective Epidemiological Study of TB Patients Newly Registered
in Recent 19 Years in Aichi Prefecture, Japan —

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Abstract [Objectives] To elucidate difference in transmissibility between bronchial and laryngeal TB.

[Subjects and Methods] The subjects of this retrospective study were 147 patients with bronchial TB and 28 patients with laryngeal TB registered in Aichi Prefecture between 1985 and 2003. All recorded files were reviewed to identify multiple TB patients in the same transmission group. When multiple patients with a registration interval of less than 10 years were found in the same transmission group, the first patient was considered as the index case, and the other patients were regarded as secondary cases.

[Results] Bronchial TB patients were found in 0.17 per 100,000 population, and laryngeal TB patients in 0.032 per 100,000. Bronchial TB patients occupied 0.55% of total TB patients, and laryngeal TB patients occupied 0.10%.

Significant differences were found in patients' proportion between bronchial and laryngeal TB; as to patients with non-cavitary infiltration (73.5% vs 50.0%, $p < 0.05$), female patients (75.4% vs 39.3%, $p < 0.001$), patients aged twenties (13.6% vs 0%, $p < 0.05$), cavitary lesions (7.5% vs 21.4%, $p < 0.05$), male patients (24.5% vs 60.7%, $p < 0.001$), and patients aged thirties (6.1% vs 17.9%, $p < 0.05$). However, no

significant difference was observed in the patients' proportion between bronchial and laryngeal TB patients as to positive smear (64.7% vs 53.6%).

Three patients with bronchial TB and other three patients with laryngeal TB were found to be the index patients. The proportion of the index patients among overall bronchial and laryngeal TB patients was 2.0% and 10.7% ($p < 0.05$), while they were 2.1% and 20.0% ($p < 0.05$), respectively, in smear-positive patients, and 0% and 20.0% ($p = 0.18$, not significant) in those patients with no chest pathology.

[Conclusion] These findings suggest that bronchial TB is less infectious than laryngeal TB.

Key words: Bronchial tuberculosis, Laryngeal tuberculosis, Tuberculosis transmission, Epidemiological study

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A CASE OF *MYCOBACTERIUM INTRACELLULARE* INFECTION
WITH CHRONIC EMPYEMA

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Abstract A 83-year-old man had been treated for pulmonary infiltration was referred to a nearby hospital because of slight fever and cough. His chest radiograph and CT showed right chronic empyema, and in which pleural aspirate was smear positive for acid-fast bacilli and positive for PCR-*Mycobacterium intracellulare*. He was diagnosed as chronic empyema caused by *M.intracellulare*. A month later exacerbation of bronchopleural fistula was observed and *M.intracellulare* infection expanded into the lung. He was treated with combined use of ethambutol, rifampicin, clarithromycin, and streptomycin for six months, and his chest radiograph showed improvement, however, finally he died as he was in advanced

age and emaciation due to chronic lung infection.

Key words: Chronic empyema, Nontuberculous mycobacteria, *Mycobacterium intracellulare*

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