

EVALUATION OF EFFECT OF COMMUNITY DOTS ON TREATMENT OUTCOMES BY TB SURVEILLANCE DATA

Hitoshi HOSHINO and Noriko KOBAYASHI

Abstract [Objective] The purpose of this study is to evaluate effects of community DOTS on treatment outcome by cohort data derived from TB surveillance system and to find further problems.

[Subjects] New sputum smear positive pulmonary TB patients registered in 2003 and 1998 under standard course regimens.

[Methods] In Japan, DOTS as a method of directly observed treatment by Short Course Chemotherapy is divided into hospital DOTS and community DOTS. Hospital DOTS is to observe hospitalized patients' drug taking directly by hospital staff such as nurses, pharmacists or other hospital staff. Community DOTS is to observe or confirm discharged patients' drug taking by several methods such as direct observation at facility or patient's home, confirmation through checking treatment notes and examining empty blister packages and so on. TB patients were categorized to following 3 groups by available methods of community DOTS. Treatment outcome of patients registered in 2003 was compared with outcome of patients registered in 1998 as the control group before the introduction of community DOTS.

Group 1: TB patients under PHC where at least daily observation DOTS (daily observation of drug taking at clinic or PHC to TB patients with risk factors of defaulting such as homeless, alcohol abuse, past history of default and so on) is available.

Group 2: TB patients under PHC where home-visit DOTS (home-visit for observation of drug taking to the elderly TB patients who have risk to forget to take TB medicines regularly) only is available or, PHC where home-visit DOTS and confirmation DOTS (periodical confirmation of drug taking to TB patients without risk of defaulting) is available.

Group 3: TB patients under PHC where only confirmation DOTS is available.

Group 4: TB patients under PHC where community DOTS is not available.

In addition, high death rate of patients under public assistance is analyzed.

[Results] In group 1 with daily observation DOTS, TB patients under social or national health insurance showed higher treatment success rate and lower defaulter rate. TB patients with insurance for aged showed lower defaulter rate but high death rate due to old age did not improve. Patients under public assistance showed relatively lower defaulter rate. In group 2 with home-visit DOTS, TB patients with national health insurance and insurance for aged showed rather lower defaulter rate. Cohort evaluation of TB patients under group 3 with confirmation DOTS and group 4 without community DOTS is difficult as high rate of unknown treatment result.

TB patients receiving public assistance showed lower death rate than patients requiring but not receiving public assistance. Patients detected at clinic and hospitals showed higher death rate than other patients detected by screening for high risk groups and so on.

[Conclusion] Daily observation DOTS and home-visit DOTS were effective to improve success rate and defaulter rate but effect of confirmation DOTS was not proved due to lack of information. High death rate of patients with insurance for aged in all groups and lack of treatment results in group 3 and 4 were problems to be solved in the future. In order to avoid TB death among TB patients under public assistance, screening for homeless people as high risk groups, earlier detection and referral system of TB symptomatics and improvement of coverage in public assistance might be effective and be tried.

Key words: Tuberculosis, DOTS, Cohort analysis, TB control program

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MICROBIOLOGICALLY IDENTIFIED ISOLATES OF *MYCOBACTERIUM HECKESHORNENSE* IN TWO PATIENTS

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and ²Hideji ITONO

Abstract [Purpose] To identify mycobacteria isolated from sputa of a 51-year-old female and a 72-year-old male patient with pneumoconiosis.

[Object and method] Mycobacteria species were isolated from sputa of a 51-year-old female. The culture was always negative in spite of positive smears before the final isolation in 1988. A 72-year-old male patient suffered from pneumoconiosis and the acid-fast bacillus was isolated by routine sputum examination in 2003. These two strains of acid-fast bacilli were identified as *Mycobacterium heckeshornense* by partial sequencing of 16S rRNA and *rpoB* and conventional methods (biochemical and routine culture methods).

[Result] These two strains grew on 1% Ogawa's slant medium at 37°C and 42°C, but not at 28°C. They formed yellowish colonies in the dark (Scotochromogen). They were classified as a slowly growing Mycobacteria. As it was difficult to distinguish *M. heckeshornense* from *M. xenopi* by conventional methods including growth rate, temperature range of mycobacterial growth, light coloration reaction, biochemical and biological tests, virulence using guinea pigs and drug susceptibility test were further explored. Finally two

were identified as *M. heckeshornense* by summing of these results.

[Conclusion] Mycobacteria species that grow at 42°C for four weeks, imply *M. xenopi* with a DDH method. It is essential to perform both sequencing of 16S rRNA and *rpoB* gene and a biochemical method for the purpose of distinguishing *M. heckeshornense* from *M. xenopi*.

Key words : *Mycobacterium heckeshornense*, *M. xenopi*, 16S rRNA sequence, *rpoB* gene, Smear-positive and culture-negative

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————— Case Report —————

MYCOBACTERIUM FORTUITUM INFECTION
CAUSED BY THE ORGANISM IN SUBCUTANEOUS ABSCESS
MEDIATED BY CENTRAL VENOUS CATHETER

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Abstract A 49-year-old woman with a *Mycobacterium fortuitum* bloodstream infection, who has been managed with central venous (CV) catheterization for two years, was reported. She had undergone resection for rectal cancer and gastrectomy for stomach cancer at the ages of 36 and 42, respectively. Also, she had undergone adhesiotomy for four times for postoperative ileus at the ages between 44 and 47. She was admitted to our hospital because of fever (38.4°C) with chill and fatigue, and a subcutaneous abscess at the right infraclavicular region located at the insertion site of the CV catheter (Hickman catheter). After the catheter was removed, the subcutaneous abscess was incised and a Penrose drain tube was inserted. *M. fortuitum* was detected after three days of blood culture and on the blood agar medium inoculated with purulent discharge from the drainage tube. After receiving these treatments, she was discharged from the hospital one month later. The isolates from these blood and purulent discharge specimens were identical on pulsed-field elec-

trophoresis. Based on these findings, we concluded that the *M. fortuitum* bloodstream infection in this case might be caused by the organism in the subcutaneous abscess mediated by the CV catheter.

Key words: *Mycobacterium fortuitum*, Central venous (CV) catheter, Subcutaneous abscess, Bloodstream infection

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TUBERCULOSIS AS A ZONOSIS

Yasuhiro YOSHIKAWA

Abstract There are more than 700 different kinds of major zoonosis. Among them, tuberculosis is important, since mycobacteriosis, including tuberculosis, is common among non-human primates and ruminants. Although the natural host of *tubercle bacilli* is human, many kinds of animals are susceptible to *Mycobacterium* spp., including *Mycobacterium bovis* and other non-tuberculous *Mycobacteria*. In Japan, the prevalence of the recurrent infection between human and pet animals leads to increasing trends of, and mycobacteriosis of exhibition animals sometimes present a severe problem in a zoo. International standards for the control of infections caused by animals and foods are established by the Office International des Epizooties (OIE), which was founded in 1927. Member nations are required to ensure the protection of human and animal life and health on the basis of the international standards. Owing to the standards, animal diseases have been relatively well controlled in Japan. For example, the occurrence of bovine tuberculosis in dairy cattle is extremely limited, and the incidence rate of human

tuberculosis in imported laboratory monkeys is quite low. At present, there is the political plan that the Tuberculosis Prevention Law will be incorporated into the Infectious Diseases Control Law without consideration of the notification procedures of the infected animals or certification of non-affected animals. Not only veterinarians but also physicians should be aware of this problem.

Key words : Zoonosis, Mycobacteriosis, *Tubercle bacilli*, Quarantine, Infectious Diseases Control Law

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TUBERCULOSIS IN THE WORLD, AND IN JAPAN

Masakazu AOKI

Abstract Tuberculosis situation in a certain country or area is decided by 1) tuberculosis prevalence of the past during around 40 years, 2) socio-economic situations of the country, and 3) tuberculosis control program. The trend of tuberculosis situation is changing forming “tuberculosis spiral” shown in Fig 1. TB situations of the several countries in the world were discussed to show the factors influencing on them from the standpoint of view mentioned above. The trends of TB epidemiology of the 47 prefectures in Japan were analyzed more deeply. The 47 prefectures were divided into the following 3 groups. The first group consists of rural prefectures where TB incidence is not so high and decreasing rather rapidly. TB was not so prevalent in the past 40 years or more, compared with other prefectures belonging to the other group. The second group is composed of intermediate prevalent prefectures because of rather high prevalence of tuberculosis in the aged, due to the rather high prevalence of tuberculosis in the past. The big cities and prefectures near by are forming the third group. Prevalence of tuberculosis among the young, jobless, homeless, foreign-born and so on is high, and tuberculosis is decreasing slowly. Divergence of tuberculosis epidemiology between these three groups is becoming wider recently. The spiral of tuberculosis, mentioned above, could be observed clearly by the analysis of the trend of tuberculosis in these 42 years in 47 prefectures.

The author is considering that tuberculosis control program in the world has developed as follows. After the World War 2nd, classical tuberculosis control program had been carried

out in the world (the classical TB control period, 1948–1963), new realistic tuberculosis control program had been launched in 1964 according to the 8th Experts Report of WHO (the realistic TB control period, 1964–1990). However tuberculosis did not decrease as expected, and the simple and clear tuberculosis control program aiming 85% or more cure rate, later by DOTS strategy (DOTS period, 1991–1999). And to expand and strengthen tuberculosis control program more and more, the Stop TB Partnership has been started in 2000 (the Stop TB period, 2000–). In Japan, tuberculosis control program has been carried out by Anti-Tuberculosis Law enacted in 1951, revising according to the situations. However, remainder of the classical tuberculosis control program, such as high rate of hospitalization, long duration of hospitalization and so on, is still existing. The author concluded that it is important to improve tuberculosis control program according to the epidemiological situation of the area, because tuberculosis situation is different by area to area and will become more profound in the future.

Key words: Tuberculosis epidemiology, TB control, TB in Japan, TB in the world

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————— The 81st Annual Meeting Special Lecture —————

THE CLINICAL FEATURES FOR TUBERCULOSIS IN COMPROMISED HOSTS

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Abstract We investigated the clinical features and measures for tuberculosis with diabetes mellitus, AIDS, gastrectomy, malignant tumor, or receiving anti-tumor necrosis factor- α .

In these days, tuberculosis patients with diabetes mellitus are increasing. Their tuberculosis is often found in advanced cases and the periods of symptomatics are short. In short, in tuberculosis with diabetes mellitus, the progress of tuberculosis is fast. Japanese patients of tuberculosis with AIDS are frequent in mid-life and increasing. Extra-pulmonary tuberculosis including disseminated tuberculosis is frequent with patients of AIDS. The prognosis of them is improved with the spread of HAART treatment. The most frequent occasion for gastrectomy is gastric cancer and the prognosis is good. Many of them are thin and malnutrition. The prognosis of tuberculosis with malignant tumor is bad, especially with lung cancer and malignant lymphoma. People receiving infliximab, an antitumor necrosis factor- α , are frequent to have onset of tuberculosis. Particularly, extra-pulmonary tuberculosis, including disseminated tuberculosis are often. Tuberculin reaction before receiving infliximab are weak. No one, receiving chemoprophylaxis, has onset of tuberculosis. When the rate of

chemoprophylaxis increases, the number of tuberculosis patients decreases.

Immunocompromised hosts need to be examined periodical or extraordinary when they had symptoms of tuberculosis to discover the onset of tuberculosis. To prevent the onset of tuberculosis, patients who previously infected tuberculosis should receive active chemoprophylaxis regardless of their age.

Key words: Pulmonary tuberculosis, Compromised host, Diabetes mellitus, Anti-tumor necrosis factor- α , Chemoprophylaxis

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