EXAMINATION OF ONSET CASES IN CONTACT INVESTIGATION

Kenji MATSUMOTO, 1Yuki MIYAKE, 1Kazuyo ARIMA, 1Jun KOMUKAI, 1Katsura DANNO, 1Hideki YOSHIDA, 1Satoshi HIROTA, 1Shinichi KODA, 1Kazuhiko TERAKAWA, and 2Akira SHIMOUCHI

Abstract [Objectives] To analyze and evaluate onset cases of tuberculosis detected in contact investigations and to apply the results to future countermeasures.

[Methods] Index and secondary cases in contact investigations in which the secondary cases occurred in Osaka City between 2005 and 2008 were enrolled. The tuberculin skin test or QFT (QuantiFERON-TB Gold) was conducted to diagnose whether the contacts were infected with tuberculosis. X-ray examination of the chest was conducted to determine whether tuberculosis had developed, immediately or 6 months, 1 year or 2 years after the contact investigation.

[Results] (1) Index cases: Index cases followed by secondary cases numbered 131 patients. Regarding the chest X-ray findings, a cavity was observed in 67.7% of the index cases, and a sputum smear of + was observed in 51.5% of the index cases. A 3-month or longer delay in index case-finding was noted in 50.4% of the index cases. (2) Secondary cases: Secondary cases numbered 177 patients, consisting of 107 patients who showed an onset of less than 6 months after their last contact with index cases. Of 70 secondary cases in whom tuberculosis was detected in the investigation conducted 6 months to 2 years after the contact investigation, 50% of them were not tested for infection due to their older age, consisting of 11 patients in their 40’s, 8 in their 50’s, and 16 in their 60’s or over, and 17.1% of them refused or discontinued the treatment for latent tuberculosis infection, leading to onset.

[Discussion] Many secondary cases were detected immediately after the contact investigation, suggesting the importance of reducing the delay in index case-finding. Regarding the onset of secondary cases who showed an onset 6 months after the last contact with index cases, many cases showed an onset without being tested for infection due to their older age. More attention should be paid to the cases who refused or discontinued the treatment for latent tuberculosis infection, leading to onset.

Key words: Contact investigation, Index case, Secondary case, LTBI, Infection diagnosis, Delay in case-finding

1Osaka City Public Health Office, 2Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association (JATA)

Correspondence to: Kenji Matsumoto, Osaka City Public Health Office, 1–2–7–1000, Asahimachi, Abeno-ku, Osaka-shi, Osaka 545–0051 Japan.
(E-mail: ke-matsumoto@city.osaka.lg.jp)
Short Report

MOLECULAR EPIDEMIOLOGY OF RIFAMPICIN MONO-RESISTANT MYCOBACTERIUM TUBERCULOSIS

1Shiomi YOSHIDA, 1Kazunari TSUYUGUCHI, 2Katsuhiko SUZUKI, 3Motohisa TOMITA, 1Masaji OKADA, 2Sciji HAYASHI, and 4Tomotada IWAMOTO

Abstract  [Purpose] We aimed to investigate the prevalence and possible transmission routes of rifampicin (RFP) mono-resistant Mycobacterium tuberculosis strains.

[Methods] Drug susceptibility testing was used to identify 15 RFP-resistant strains out of 4,633 M.tuberculosis isolates. Sequencing of the rpoB gene and VNTR analysis were performed to further confirm the genetic classification.

[Results] Resistance-conferring mutations in the RFP resistance-determining region (RRDR) of the rpoB gene were found in 14 of the 15 strains with phenotypic RFP mono-resistance. VNTR analysis revealed 2 clusters of 5 identical strains each.

[Conclusions] Although the community prevalence of RFP mono-resistant M.tuberculosis is low, the results of VNTR analysis suggested that rather than being recently transmitted, these strains may have been widely transmitted as latent infections in the population.

Key words: Mycobacterium tuberculosis, Rifampicin, rpoB gene, Drug susceptibility testing, VNTR

1Clinical Research Center, 2Department of Respiratory Medicine, 3Department of Clinical Laboratory, National Hospital Organization Kinki-chuo Chest Medical Center, 4Kobe Institute of Health

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)
TWO CASES OF PULMONARY TUBERCULOSIS WITH AN INTRA-FAMILIAL TRANSMISSION ROUTE

Keiko MITAKA, Takayuki HONDA, Kazuhiro FUKASAWA, and Yoshihiro MIYASHITA

Abstract Two patients with smear-positive adult-type pulmonary tuberculosis (TB) were admitted to our hospital. The patients in case 1 and case 2 were a 33-year-old woman and a 33-year-old man, respectively. None of the patients’ family members had any apparent symptom indicating TB. However, the father of patient 1 was found to have recurrent TB with a positive smear in the contact investigation. The mother of patient 2 was then admitted to a hospital with acute respiratory failure caused by recurrence of TB. Her sputum sample also turned out to be smear-positive. Restriction fragment length polymorphism (RFLP) analysis of the isolates revealed identical DNA patterns in each pair of family members. These cases were typical examples of intra-familial infections involving young adults and their parents. This route of transmission is still important in areas with low prevalence of the disease.

Key words: Intra-familial TB transmission, Secondary infection, Old TB, Contact investigation

Department of Pulmonary Medicine, Yamanashi Prefectural Central Hospital

Correspondence to: Keiko Mitaka, Department of Pulmonary Medicine, Yamanashi Prefectural Central Hospital, 1-1-1, Fujiim, Kofu-shi, Yamanashi 400–8506 Japan.
(E-mail: k-mitaka0801@ych.pref.yamanashi.jp)
Report and Information

NATIONWIDE SURVEY OF THE USE OF CLASS 2 INFECTIOUS DISEASE BEDS FOR IN-HOSPITAL CARE OF TUBERCULOSIS PATIENTS

Kunihioko ITO, Yohko NAGATA, Minako URAKAWA, and Seiya KATO

Abstract  [Purpose] To investigate the possibility of employing in-hospital care for tuberculosis (TB) patients in beds meant for patients with Class 2 infectious diseases and determine the obstacles facing the same.

[Subjects & Methods] We conducted a questionnaire survey of all 225 hospitals that had beds meant for patients with Class 2 infectious disease but did not have tuberculosis wards.

[Result] Responses were obtained from 83.1% of the target hospitals. Around 60% of the hospitals had used these beds for patients other than those with Class 2 infectious disease (including TB patients). Around 50% and 30% of the hospitals had used these beds for suspected TB patients to ensure hospital infection control, and for treatment of patients diagnosed with TB, respectively. In response to the question on how they would use these hospital beds for TB or suspected TB patients if the regulations allowed such use, around 60% of the hospitals answered that the beds will be used for suspected TB patients until their diagnosis was confirmed, and 25% of the hospitals responded that they will never use their beds for TB patients. Only 10% of the hospitals answered that the beds will be used for in-hospital care of TB patients. With regard to the reasons why the beds cannot be easily used for in-hospital care of TB patients, several issues were pointed out, such as difficulty in appointing sufficient staff for care of TB patients, and a lack of doctors who had sufficient experience in TB medicine. However, there was no single predominant reason.

[Conclusion] To ensure that hospital beds for patients with Class 2 infectious diseases are utilized for in-hospital TB care, we need a flexible policy, which is suited to the specific conditions in each community and hospital.

Key words: Class 2 infectious disease beds, Tuberculosis, Tuberculosis ward, Infectious Disease’s Control Law, National Policy to Control Tuberculosis

Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association

Correspondence to: Kunihioko Ito, Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association, 3-1-24, Matsuyama, Kiyose-shi, Tokyo 204-8533 Japan.
(E-mail: ito@jata.or.jp)
核の診断後、死亡等で治療を開始しなかった者の割合は
75歳以上で2%を超え、90歳以上では5.6%であった。
（4）PZAの治療継続状況（表4）

表4は、2009年年報情報を用い2008年の新登録結核
患者のうち、治療開始時にPZAを含む治療を開始した
15,146人について、PZAの服薬期間をみたものである。
なお、サーベイランスシステムでは、治療を完遂して指
示終了となった場合、必須項目としてPZAの服用期間
を入力しなければならないが、それ以外ではPZAの服
用期間の入力は任意である。よって「完遂者」について、
PZA服薬期間を観察すると、2カ月間服用した者の割合
は90.1%であった。治療を完遂した者でも9.9%はPZA
を2カ月間服用できなかった。

おわりに

医療機関におけるDOTSカンファレンス、地域DOTS
の展開、コホート法による治療成績の評価等が保健所の
結核対策の一環に組み込まれたことで、保健所でも患者
の治療内容や抗結核薬の服薬状況を積極的に確認するよ
うになった。これらの情勢の変化をうけて、2007年から
の結核サーベイランスでは、治療に関する入力情報の見
直しが実施された。今のところ正確に情報が入力されて
いないところもあるが、サーベイランスから治療方法の
評価ができるようになったことの意義は大きい。

——— Report and Information ———

TUBERCULOSIS ANNUAL REPORT 2009
— Series 8. Treatment of TB (1)—

Tuberculosis Surveillance Center, RIT, JATA

Abstract The standard treatment of tuberculosis (TB) is the
key to its control. Here we report the statistics of treatment
history and the initial regimen for treating TB in 2009.

In 2009, 24,170 TB patients were newly notified. Of those,
1,751 cases were reported as having had previous treatment
and 410 cases were reported as having an unknown treatment
history. The proportion of patients receiving retreatment was
7.4%, excluding those of unknown treatment history. The propor-
tion of those receiving retreatment among newly notified
TB patients increased with age from those at 20–24 years old
(3.2%) to those at 80–84 years old (9.3%). The frequency of
retreatment among newly notified TB patients might be partly
an indicator of previous insufficient treatment.

Regarding the year of previous treatment, the greatest num-
ber of cases reported having received previous treatment in
2008 (n=194). The total number of cases whose previous
treatment had begun in 2008 or 2009 was 224, i.e. 12.8% of
all retreatment cases in 2009. On the other hand, the number
of cases having received previous treatment in the 1950s was
also significant (n=219, 12.5%).

As the initial treatment regimen, the combination of INH
(isoniazid), RFP (rifampicin), PZA (pyrazinamide) + EB
(ethambutol) or SM (streptomycin) is recommended by the
Japanese Society for Tuberculosis. This regimen was initially
used in 80.8% of all forms of TB patients aged 15–79 years
old, excluding those cases whose treatment regimen was
unknown.

The data on duration of having actually received PZA was
added to the central TB surveillance database starting in 2007.
The number of cases who started TB treatment including PZA
in 2008 was 15,146. Of those, 11,997 cases had completed TB
treatment by the end of 2009, but 9.9% of them could not take
PZA fully for 2 months.

Key words: Tuberculosis, Age, Treatment history, New treat-
ment, Retreatment, Regimen, PZA

Research Institute of Tuberculosis, JATA

Correspondence to: Tuberculosis Surveillance Center, Re-
search Institute of Tuberculosis, JATA, 3–1–24, Matsuyama,
Kiyose-shi, Tokyo 204–8533 Japan.
(E-mail: tbsur@jata.or.jp)
RECENT ADVANCES IN TUBERCULOSIS IMMUNITY

Kiyoko S. AKAGAWA

Abstract  Primary tuberculosis infection is acquired by the inhalation of droplets containing Mycobacterium tuberculosis (MTB) bacilli. Only 5–10% of those individuals infected by MTB develop clinical diseases, and disease presentation itself is heterogeneous, suggesting that host factors play a large role in disease susceptibility. Protective immunity in the lung against MTB consist of the innate immunity in which alveolar macrophages play a central role, and the acquired immunity including various type of effector T cells. Recent studies show that the important roles of the receptors which recognize MTB for the development of protective immunity, the difference in the anti-MTB activity of macrophages between human and mice, the macrophage-heterogeneity that affects the anti-MTB activity, the role of IL-10 in the activation of anti-MTB activity of human macrophages, and the role of Th17/IL-17, Th22/IL-22 and TNF in the protective immunity against human tuberculosis. In this review, these recent advances in tuberculosis immunity will be described.

Key words: Tuberculosis, Immunity, Pattern recognition receptors, Macrophages, Effector T cells, TNF

Kitasato Institute for Life Sciences, Kitasato University and Department of Immunology, National Institute of Infectious Diseases

Correspondence to: Kiyoko S. Akagawa, Kitasato Institute for Life Sciences, Kitasato University, 5–9–1, Shirogane, Minato-ku, Tokyo 108–8642 Japan.
(E-mail: akagawak@nih.go.jp)
311），平成22年では82%（290/354）であった。6年を経過しているが、DOTSの意識は人が変わっても引き継がれない状況が見られた。

おわりに

結核に関する特定感染症の予防指針が2011年5月に改正された。DOTSの推進については、DOTS体制が強化され、地域連携体制の推進が求められている。看護職もそのキーパーソンの役割を担っていることから自治体および施設間の垣根を越えたチームケアの推進および結核業務を経験したものが情報発信源になりうる基礎および現行教育は重要である。

The 86th Annual Meeting Mini-Symposium

ROLE OF NURSING IN TUBERCULOSIS CARE

Chairpersons: ¹Yoko NAGATA and ²Keiko KUDO

Abstract One of the key roles of nursing in TB care includes coordinating with various other professionals and conducting patient education. DOTS conferences and cohort analysis are just some examples of areas in which nurses could effectively practice these roles. Naturally, nurses working in hospital TB wards must devote their time to providing medical procedures and care, and can rarely attend conferences. Yet on the other hand, nurses involved in TB care must prevent the spread of infection and at the same time maintain the QOL of patients—in other words, they are expected to have both specialist and general skills. The role of TB nursing may be said to have three aspects: 1) educate patients and ensure they are provided with accurate, professional knowledge on TB, 2) conduct assessment in order to provide appropriate patient support, and 3) coordinate between the medical establishments and the local communities. One of the places where nurses could effectively practice these roles is DOTS conference. DOTS conference may also be thought of as an opportunity to re-affirm and expand one’s knowledge of DOTS, and accumulate experience in coordinating with other professionals and related bodies. Medical establishments, social welfare and governmental bodies each need to clarify their roles and work in partnership to build a local network of TB care, with public health centers acting as a coordinator. On the other hand, the role of nursing in TB care is to provide high-quality TB nursing by sharing information with relevant individuals and bodies and practicing the three aspects as mentioned with the ultimate aim of ensuring that patients overcome TB.

1. The role of nursing in TB specialist hospitals: Haruko KIDO (National Hospital Organization Kinki-chuo Chest Medical Center)

One of the roles nurses are expected to play in TB specialist hospitals is the coordination within the hospital, and between the hospital and the outside bodies. In order to act as such coordinator effectively, the nurse must 1) be aware, as a nurse of a TB specialist hospital, of the role of TB nursing and recognize his or her responsibility, 2) hold appropriate knowledge and skills regarding TB and TB care, and be able to communicate assertively and coordinate with patients, their family members, doctors and co-medicals, and 3) disseminate the knowledge and skills of TB nursing to other institutions. Examples of such opportunities include DOTS conference, conference with the hospital team, research and participation in training and lectures as a trainer. In other words, the role of nurses in TB specialist hospital is not only to improve knowledge and skills regarding TB and TB care but also to disseminate these to other professions and bodies.

2. The roles and responsibilities of public health nurses in...
tuberculosis control: Tomoko KAMIYAMA (Health Precaution Section, Takasaki City Health Center)

Despite the estimated rates of tuberculosis (TB) prevalence and mortality are declining, it remains a significant public health threat in Japan. Public health nurses, who practice in local health departments, play a major role in the prevention, treatment, and cure of TB. When a case of lung TB disease is discovered, the nurse works to determine which people might have been exposed to the TB bacteria and to make a plan to prevent developing the disease. The nurse also observes the TB patient take prescribed medication as ordered. The educational training on the job for fresh, inexperienced public health nurses to develop their faculties and to get knowledge of TB should be effective methods. However, it becomes a serious problem to decrease opportunities of on-the-job training at health centers in Gunma prefectural office. The author considers that elaborated and systematic TB control strategies, such as the DOTS conference, the critical path of TB for community healthcare network, and the cohort meeting in the TB control program, are important not only for TB control but also for TB expert development.

3. Basic nursing education and tuberculosis nursing: Keiko KUDO (Faculty of Nursing, Musashino University)

Mainstream university education is an integrated program requiring students to obtain the qualifications necessary to take the national examinations for both nurses and public health nurses. This system is thought to facilitate collaboration between ward and public health nurses at public health centers. However, as studying to be a public health nurse is becoming optional, there is concern that tuberculosis nursing will become an even smaller part of future basic nursing education. It is necessary to reexamine what tuberculosis nursing skills are required in basic nursing education.

Statement 1: What can we learn from working in a TB ward?: Mariko FUKUMURO (National Hospital Organization Tokyo National Hospital)

An anonymous self-administered questionnaire was conducted among nurses working in the TB ward (of NHOTH) of investigate how nurses perceived their capacity regarding their DOTS-related work. The average years of experience in TB ward was 3.4 years, and all stated that they thought they are able to fully perform the tasks related to adherence support within the DOTS. They were most confident in providing adherence support in the TB ward. However, on the other hand, 60% of them had said that they were not being able to conduct patient interviews, participate in adherence conferences, communicate with patients and their family member, communicate with other relevant bodies, and share information with public health nurses when they came to visit patients, in a manner they considered satisfactory. Nurses in charge wished to improve skills in organizing their time so that they could attend conferences and communicate more fully with public health centers, so that they could discuss and plan patient support after discharge in detail. They also found their work in the TB ward, which requires specialist knowledge and skills in communication, challenging and meaningful in a different way from acute nursing care.

Statement 2: In-service training for nursing: Noriko KOBAYASHI (Research Institute of Tuberculosis, JATA)

Specific Guidelines on Prevention of Tuberculosis Infection was revised in May 2011. With regards to DOTS, the guidelines recommend strengthening of the DOTS system and promotion of local partnership. Nursing plays a key role in building this partnership, thus in-service training, where nurses who have experienced TB care can themselves disseminate information is essential to provide holistic team care which can overcome difference local bodies and establishments.

Key words: Nursing in TB care, Partnership, DOTS conference, Basic nursing education, In-service training

1Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association; 2Faculty of Nursing, Musashino University

Correspondence to: Yoko Nagata, Department of Program Support, Research Institute of Tuberculosis, Japan Anti-Tuberculosis Association, 3–1–24, Matsuyama, Kiyose-shi, Tokyo 204–8533 Japan. (E-mail: nagata@jata.or.jp)