Original Article

THE RELATION BETWEEN NUTRITIONAL STATE OF TUBERCULOUS PATIENTS ADMITTED IN TUBERCULOUS WARD AND THEIR OUTCOME AT THE TIME OF DISCHARGE

Nobuhiko NAGATA, Kazuko MATSUNAGA, Kentaro WAKAMATSU, Akira KAJIKI, and Yoshinari KITAHARA

Abstract [Objectives] To investigate the relation between nutritional state of tuberculous patients admitted in tuberculous ward and their outcome at the time of discharge.

[Patients and methods] We retrospectively investigated BMI, peripheral blood lymphocyte count, serum albumin concentration, and induration size of PPD skin test at the time of admission from their clinical charts of all 174 tuberculous patients newly admitted in NHO Omuta National Hospital during the period from 2000 to 2002, and based on these indices, the nutritional state of tuberculous patients was divided into severely impaired, moderately impaired, and mildly impaired or normal. The relation between nutritional state on admission and the outcome at the time of discharge was examined.

[Results] The worse the nutritional state on admission, the higher the rate of death from all causes and tuberculosis, and the higher the average age and the duration of hospitalization.

[Conclusions] The assessment method of nutritional state reported in our study is easily applicable to every tuberculous patients admitted in tuberculous ward, and the outcome of tuberculous patients at the time of discharge could be expected, based on the nutritional state assessed with this method. Prospective study is needed to ascertain the validity of results obtained in the present study.

Key words: Tuberculosis, Nutrition, Prognosis

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Original Article

RELAPSE RATE OF TUBERCULOSIS TREATED WITH STANDARD REGIMEN OF CHEMOTHERAPY

Tuberculosis Research Committee (Ryoken)

Abstract [Background] Japanese standard of Tuberculosis treatment indicates that six months treatment with isoniazid, rifampicin and pyrazinamide can be extended to nine months under certain conditions such as diabetics. We have little information on the validity of the duration of treatment as yet.

[Method] The treatment result of isoniazid and rifampicin susceptible new TB cases treated with the regimen including isoniazid, rifampicin and pyrazinamide were analyzed with the categorization of duration of treatment. Risk factors of bacteriological relapse were evaluated.

[Results] Among 839 cases treated at the facilities of Ryoken members in 2005, 27 cases relapsed bacteriologically. The rate of relapse (3%) was the same between those that were treated for six months and those treated for nine months. Diabetic cases, immuno-compromised cases and extensive cavitary cases showed higher risk of relapse if they were treated with six months regimen than in cases treated with nine months regimen. Those that were culture positive even after 2 months of treatment showed high rate (6−7%) of relapse if they were treated with six to nine months regimen but no relapse was observed if they were treated for >40 weeks or if they were treated for more than 6 months after conversion to negative culture.

[Conclusions] Our results did not indicate that Japanese standard of TB treatment should be changed regarding extension of treatment for diabetics and serious cases. Those who remained culture positive after 2 months of treatment should be treated >9 months and/or at least 6 months after culture negative conversion.

Key words: Tuberculosis, Relapse, Treatment

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CLINICAL EVALUATION OF ACID-FAST SMEAR EXAMINATION WITH LIGHT EMITTING DIODE FLUORESCENT MICROSCOPY

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[1]Hiroyuki YAMADA, and [1]Satoshi MITARAI

Abstract [Objective] Fluorescent smear microscopy is one of the recommended methods to detect highly infectious tuberculosis (TB) patients. Recently, fluorescent microscopy using a light emitting diode (LED) as a light source has been developed and introduced. The objective of this study is to evaluate the efficiency of LED fluorescent microscopy.

[Method] The clinical specimens were collected from TB suspects and follow-up patients of mycobacteriosis in Double Barred Cross Hospital through Sept. to Oct. in 2008. The specimens were subjected to the ordinary decontamination/concentration process, and the sediments were smeared and stained with auramine O. The slides were examined using an ordinary mercury vapour lamp and a LED fluorescent microscope by at least two laboratory technologists independently. If there was a discrepancy between the first and second reader, the third reader (umpire) judged the result. The treated specimens were also cultured using BACTEC MGIT or 2% Kudoh medium. The smear and culture results were compared with the results of LED fluorescent microscopy.

[Results] A total of 1,324 specimens, including 1,192 sputa and 23 pleural fluid, were collected from TB suspects and patients. The overall agreement, smear positive versus smear negative, occurred in 1,300 of 1,324 specimens (98.2%). Among the mutually positive readings, the agreement on grading was 256 out of 334 (76.6%), and disagreement beyond two grades was observed only in 3 specimens. The smear positive/culture positive rates were not statistically different between two smear methods.

[Discussion] The overall efficiency of LED fluorescent microscopy was similar to that of ordinary fluorescent microscopy with a mercury vapour lamp. The LED costs less than mercury vapour lamp, and has a usable life of more than 40,000h. It does not require either a dark room for observation, or a long waiting time for stabilization. It was expected that the LED fluorescent microscopy would be utilized widely for the efficient detection of acid-fast bacilli in clinical practices.

Key words: Fluorescent staining, Smear microscopy, Light emitting diode

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CROSS-RESISTANCE BETWEEN RIFAMPICIN AND RIFABUTIN AMONG MULTI-DRUG RESISTANT *MYCOBACTERIUM TUBERCULOSIS* STRAINS

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Abstract [Objective] To compare the susceptibility of rifampicin (RFP) and rifabutin (RBT) against multi-drug resistant *Mycobacterium tuberculosis* (MDR-TB).

[Method] A total of 44 confirmed MDR-TB strains collected by Ryoken consortium and 97 susceptible *M. tuberculosis* strains were tested for the susceptibility to RBT, following CLSI M24-A laboratory standard. The core 81 bp region of *rpoB* gene was sequenced for MDR-TB strains, and the mutations were defined.

[Results] Among the 44 MDR-TB strains tested, 12 strains were susceptible to RBT. The genetic alterations were identified in 43 of 44 MDR-TB strains. The RBT susceptible strains had alterations mainly at codons 506−508, 511, 512, and 516. The mutation at codons 526 and 531 closely related to RBT resistance with two exceptions. The overall cross-resistance between RFP and RBT was 72.7%.

[Discussion] RBT will be a candidate drug for the treatment of MDR-TB. In this study, approximately 27% of MDR-TB in Japan had susceptibility to RBT. However, the drug susceptibility testing for RBT is not easy at general microbiology laboratory considering the preparation of medium and laboratory facilities. It is also difficult to transfer confirmed MDR-TB strains to one place to another for testing legally. The mutations at codons 526 and 531 in *rpoB* are closely related to RBT resistance and will be useful to predict its susceptibility.

Key words : Rifampicin, Rifabutin, Multi-drug resistant *Mycobacterium tuberculosis*, *rpoB*

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