Multidrug-resistant Tuberculosis

Tzu-Kuang Chou, Ruay-Ming Huang
Chest Hospitial, Department of Health

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Tuberculosis is a transmissible disease caused by *Mycobacterium tuberculosis*. In the recent three years, there were still about 15 thousands of new and confirmed TB patients identified each year, with increasing percentages of patients having multi drug resistant strains.

Globally, among new patients without any previous anti-TB treatments, the average percentage of multidrug resistant strains is 1.1% (0-14.2%). It is 7% (0-58.3%) for those who have received anti-TB treatment. According to WHO, multidrug resistant tuberculosis has spread around the world. It is estimated that three to six hundred thousands of new patients having multidrug resistant tuberculosis are identified globally each year, with a total case number of one million. In Taiwan, according to the statistics of the CDC in 2003, the percentage of multidrug resistant strains was around 4%.

Drug resistance of tuberculosis is generated by random mutation during cell division. Tuberculosis patient with a cavity in the lung, there will be at least 10^7 to 10^9 non-drug-resistant bacteria within the cavity. Therefore, if only one drug is used or the patient is improperly treated, drug resistant tuberculosis could have been easily generated within several cell divisions.

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Correspondence author: Tzu-Kuang Chou; Address: No.864, Jhongshan Rd., Rende Township, Tainan County 717, Taiwan, R.O.C.
E-mail: chenway@ms11.hinet.net

Although generation of drug resistant strains involves many factors including microorganism, clinical symptoms, treatment process, and hosts, most cases are caused by humans. Hence, to treat non-drug resistant tuberculosis, accurate use of first line therapy and proper case management will be the best way to prevent generation of drug resistant strains.

Final diagnosis of drug resistant tuberculosis still relies on accurate laboratory drug sensitivity tests. For high risk patients, doctors should always keep in mind the possibility of drug resistant tuberculosis.

Currently, the best treatment strategy for tuberculosis is the "directly observed treatment short-course (DOTS) strategy" recommended by the WHO. For multidrug resistant tuberculosis, DOTS-Plus should be used. Treatment for multidrug resistant tuberculosis should be at least one and a half year. Further drug resistance can occur and spread if drugs are improperly prescribed by doctors or patients not treated regularly, or patients have poor compliance. Hence, DOTS-Plus and a solid preventative network, must be strictly applied to prevent multidrug resistant tuberculosis. Sometimes the use of second-line drugs could lead to more drug resistant tuberculosis, such as XDR-TB. Cases of multidrug resistance tuberculosis should be referred to specialists for proper assessment and treatment to avoid spreading of drug resistant strains in communities.

Tuberculosis so far is still the most common transmissible disease in Taiwan. In the 21st century, with the trend of increasing number of tuberculosis, AIDS and multidrug resistant tuberculosis, governments, health authorities, medical institutions, academics and social groups should work together closely to form an effective tuberculosis prevention system.

Keyword: multidrug resistant tuberculosis