

A Significant Clinical Role for the CapitalBio™ DNA Microarray in the Diagnosis of Multidrug-Resistant Tuberculosis in Patients with Tuberculous Spondylitis Simultaneous with Pulmonary Tuberculosis in High Prevalence Settings in China

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Abstract : Background: There has been limited research into the therapeutic efficacy of rapid diagnosis of spinal tuberculosis complicated with pulmonary tuberculosis. We attempted to discover whether the utilization of a DNA microarray assay to detect multidrug-resistant spinal tuberculosis complicated with pulmonary tuberculosis can improve clinical outcomes. Methods: A prospective study was conducted from February 2006 to September 2015. One hundred and forty-three consecutive culture-confirmed, clinically and imaging diagnosed MDR-TB patients with spinal tuberculosis complicated by pulmonary tuberculosis were enrolled into the study. The initial time to treatment for MDR-TB, the method of infection control, radiological indicators of spinal tubercular infectious foci, culture conversion, and adverse drug reactions were compared with the standard culture methods. Results: Of the total of 143 MDR-TB patients, 68 (47.6%) were diagnosed by conventional culture methods and 75 (52.4%) following the implementation of detection using the DNA microarray. Patients in the microarray group began rational use of the second-line drugs schedule more speedily than sufferers in the culture group (17.3 vs. 74.1 days). Among patients were admitted to a general tuberculosis ward, those from the microarray group spent less time in the ward than those from the culture group (7.8 vs. 49.2 days). In those patients with six months follow-up (n=134), patients in the microarray group had a higher rate of sputum negativity conversion at six months (89% vs. 73%). In the microarray group, the rate of drug adverse reactions was significantly lower (22.2% vs. 67.7%). At the same time, they had a more obvious reduction of the area with spinal tuberculous lesions in radiological examinations (77% vs. 108%). Conclusions: The application of the CapitalBio™ DNA Microarray assay caused noteworthy clinical advances including an earlier time to begin MDR-TB treatment, increased sputum culture conversion, improved infection control measures and better radiographical results

Keywords : tuberculosis, multidrug-resistant, tuberculous spondylitis, DNA microarray, clinical outcomes

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