Diagnostic values of microRNA-31 in peripheral blood mononuclear cells for pediatric pulmonary tuberculosis in Chinese patients

J.X. Wang, J. Xu, Y.F. Han, Y.B. Zhu and W.J. Zhang

Infectious Diseases Branch, Laiwu City People’s Hospital of Shandong Province, Laiwu, Shandong, China

Corresponding author: J.X. Wang
E-mail: wangjixu1215@126.com

Received August 9, 2015
Accepted October 25, 2015
Published December 16, 2015
DOI http://dx.doi.org/10.4238/2015.December.16.23

ABSTRACT. We investigated the diagnostic values of microRNA-31 in peripheral blood mononuclear cells (PBMCs) for pediatric pulmonary tuberculosis in Chinese patients. Sixty-five children with TB were selected for this study, which was conducted at the Department of Infectious Diseases People’s Hospital of Laiwu City between December 2013 and December 2014. Sixty healthy children, selected in parallel, served as the control group. Real-time PCR was used to detect miR-31 expression in PBMCs. Serum levels of IL-6, TNF-α, NF-κB, and IFN-γ was detected by ELISA. ROC curve was employed to evaluate the diagnostic value of miR-31 in pediatric TB. Results show that expression of miRNA-31 in pediatric TB patients was significantly lower than that in normal children (0.48 ± 0.15 vs 1.23 ± 0.36, P < 0.05). By contrast, serum levels of the innate immune response cytokines, IL-6, TNF-α, NF-κB, and IFN-γ, were significantly higher in pediatric TB patients compared with normal children (P < 0.05). Furthermore, miRNA-31 expression was negatively correlated with serum levels of IL-6 (t = 69.91, P < 0.001), TNF-α (t = 10.96, P < 0.001), NF-κB (t = 39.94, P < 0.001), and IFN-γ (t = 37.94, P < 0.001). The cut-off threshold of miR-31 for pediatric TB diagnosis is 0.835 with a sensitivity of 98.5% and a
specificity of 86.7%. Therefore, miR-31 has the potential to be a diagnostic marker in pediatric TB patients.

**Key words:** miR-31; Tuberculosis; Peripheral blood mononuclear cells; IL-6; TNF-α; NF-κB