Article 3

lincR-Ccr2-5′AS and THRIL as potential biomarkers of multiple sclerosis

Abstract

Background: Multiple sclerosis (MS) is a demyelinating disease affecting the central nervous system (CNS). Long non-coding RNAs (lncRNAs) were believed to play a role in the pathogenesis of neurological disorders including MS. lincR-Ccr2-5′AS is expressed in the T helper2 (Th2) lineage. TNF-α heterogeneous nuclear ribonucleoprotein L (THRIL) causes the induction of TNF-α and regulates innate immune response and inflammation.
Methods: We investigated the expression of lincR-Ccr2-5′AS and THRIL in MS to clarify their association with MS risk and the clinical features.
Results: LincR-Ccr2-5′AS was significantly downregulated in MS patients (fold change = 0.43±0.29, p = 0.03). The expression level was significantly low in patients with motor weakness and optic neuritis, patients with Expanded Disability Status Scale (EDSS) ≥5.5, and treatment-naïve patients. THRIL was significantly upregulated in MS patients (fold change = 6.18±2, p = 0.02). Its expression was significantly higher in patients with relapsing-remitting multiple sclerosis (RRMS), patients with motor weakness, patients with EDSS ≤5, and patients who received interferon.
Conclusion: Our results showed the downregulation of lincR-Ccr2-5′AS and the upregulation of lncRNA THRIL in MS patients. This differential expression of both lncRNAs may have an important role in MS pathogenesis.

Keywords: Multiple sclerosis, lincR-Ccr2-5′AS, lncRNA, THRIL