Complex roles of long non-coding RNAs in the regulation of inflammation in multiple sclerosis patients: evidences from vitamin D treatment

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Deregulation of gene expression is one of the major aspects of the pathogenesis of multiple sclerosis (MS [MIM 126200]). Recently, many studies showed that long non-coding RNAs are involved in the regulation of gene expression and the aberrant expression of these molecules indicated in many disease. Here we are trying to assess the expression level of ANRIL in RRMS patients after treatment with vitamin D (VD).

14 Iranian RRMS patients were clinically diagnosed according to McDonald's criteria. Also, we selected 12 age and gender matched controls. All patients received 50,000 IU vitamin D3 for 8 weeks. The VD levels were estimated before and after supplementation. 5ml whole blood was obtained and RNA extracted. Real time PCR was performed by Step One ABI system using specific primers. ΔΔct method was used for the analysis of gene expression results. The investigation was performed in keeping with the Helsinki declaration on research with human participant. Also, this trial was registered with Iranian Registry of Clinical Trials (ID: IRCT2014011216181N1).

Our data showed that the expression level of ANRIL does not affected by the treatment of VD after 8 weeks (p=0.9). Moreover, we don't find any differences in the expression level of ANRIL gene in RRMS patients before and after VD treatment (p=0.217 & p= 0.226 respectively) in comparison with healthy controls

Beside the immunomodulatory role of VD, here we don't find any evidences in this study which may be due to low sample size, dose of VD and the short period of supplementation. In conclusion, based on our best knowledge, this is the first report which evaluate the expression level of long non coding RNAs specially ANRIL in multiple sclerosis patients under VD treatment which is under elaborate investigation in our laboratory.

Key words: Multiple Sclerosis, ANRIL, Long Non-Coding RNAs, Vitamin D