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BUTYRYLCHOLINESTERASE AND ACETYLCHOLINESTERASE POLYMORPHISMS AND SERUM CHOLINERGIC AND INFLAMMATORY PROFILES IN MULTIPLE SCLEROSIS PATIENTS

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Multiple sclerosis (MS) is an autoimmune disease, having not fully understood aetiology, both genetic and environmental factors contribute to the pathogenesis of the disease. The cholinergic system has been indicated as a mediator of neuro-immune interactions, as well as an internal regulator of immune responses. The aim of the present research was to assess the associations between butyryl cholinesterase (BChE) and acetyl cholinesterase (AChE) genetic variations, serum cholinergic and inflammatory profiles in 102 relapsing remitting (RR) MS patients and 117 healthy controls. Results showed that in patients and controls, the reduction of BChE enzymatic activity in subjects carry the BChE polymorphic allele. Serum levels of BChE were higher in RR-MS patients compared to HD subjects, resulting in reduced amounts of circulating ACh. An increased frequency of the BChE K-allele in MS patients as compared to controls was found. The BChE-K-allele seems a promising marker to assess the role of non-neuronal cholinergic system in regulating peripheral inflammation via ACh regulation. This study shed light on the role of the non-neuronal cholinergic system in immune cells to better understand MS aetiology and progression. The cross-talk between the periphery and the CNS could have a new undescribed crucial role for MS, regarded as a systemic disease.

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