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Butyrylcholinesterase and Acetylcholinesterase polymorphisms and serum cholinergic and inflammatory profiles in Multiple Sclerosis patients.

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Abstract

Multiple Sclerosis (MS) is an autoimmune disease, having not fully understood aetiology, and 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 BChE and AChE genetic variations and serum cholinergic and inflammatory profiles in 102 Relapsing Remitting-MS patients and 117 healthy controls. Results showed in both patients and controls the reduction of BChE enzymatic activity in subjects carrying 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.

Keywords—Acetylcholinesterase, Butyrylcholinesterase, Inflammation, Multiple Sclerosis.

Professional Biography (100-150 words)

Marcella Reale has completed her PhD from "Alma Mater Studiorum" University of Bologna and postdoctoral studies from "La Sapienza" University of Rome. She is Associate Professor of Immunology and General Pathology at the University "G.d'Annunzio" Chieti-Pescara. She has published more than 125 papers in peer-reviewed international journals and has been serving as an editorial board member of repute.



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