

ABSTRACT

Multiple sclerosis (MS) and Neuromyelitis Optica (NMO) are autoimmune demyelinating diseases of the central nervous system (CNS), with distinct immunopathological significance. Oxidative stress and low vitamin D level are implicated in pathological features which is common to a multitude of neurological diseases. Therefore, the current study aimed to investigate the oxidative status of MS and NMO patients in terms of oxidative stress and antioxidant parameters and serum vitamin D levels. A total of 60 participants; 15 MS patients, 15 NMO patients, 15 disease controls (OND) and 15 healthy controls (HC), were included in this study. Relevant clinical and demographic data were collected. Oxidative parameters tested were Neutrophil-Lymphocyte Ratio (NLR), Total protein (TP), Nitric oxide (NOx) and Lactate dehydrogenase (LDH). Total antioxidant status (TAS) and Catalase (CAT) were the antioxidant parameters measured. Vitamin D levels and differential white blood cell counts were also analysed. Statistical analysis involved Kruskal-Wallis test followed by Mann-Whitney U test and ANOVA followed by Tukey's post hoc test. Ages of MS and NMO patients are different ($p=0.010$) and ages of onset between the MS and NMO patients differ ($p=0.001$). NLR was increased in MS and NMO patients compared to Healthy Controls and also those of MS are non-significantly increased than that of NMO patients. Levels of TP ($p=0.0001$) and NOx ($p=0.001$) differed significantly between the study groups with MS patients having highest levels. No significant difference was found between study groups in terms of LDH and CAT. Levels of TAS were lowest in MS patients ($p=0.001$). MS and NMO levels of Vitamin D were very similar ($p=1.000$), and show resemblance to HC. The present study which has compared the two diseases MS and NMO have revealed new insight in terms of oxidative and antioxidant parameters. Except vitamin D levels, almost all other parameters studied have shown differences between MS and NMO patients and with HC. Extensive study to uncover molecular mechanisms would serve to provide more knowledge to pave the way for antioxidant therapy which could be helpful as an immunomodulatory treatment for MS and NMO patients thereby increasing their standards of living.