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Toll Like Receptors 2 and 4 Expression in Peripheral Blood Lymphocytes and Neutrophils of Egyptian Multiple Sclerosis Patients: A Case Control Study

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Background: Evidence suggests a strong link between toll like receptors (TLR) activation and the pathogenesis of many autoimmune disorders. Consequently, TLRs and its signalling pathways arise as a tempting research topic, on ground of its potential as a therapeutic target in multiple sclerosis. The aim of the current work was to study TLR2 and TLR 4 expression on peripheral blood neutrophils and lymphocytes of egyptian MS patients and to evaluate its role as a candidate biomarker for MS diagnosis.
Methods: This case control study, included 84 treatment naive MS patients, recruited from the Kasr Al Ainy multiple sclerosis unit and 68 healthy volunteers. TLR-2 and TLR-4 expressions on peripheral blood neutrophils and lymphocytes were assessed using flowcytometry technique.
Results: As compared to the control group, a significantly higher TLR2 expression on both lymphocytes and neutrophils of MS patients was found. Whereas, TLR4 showed higher expression only on lymphocytes. No statistically significant difference was found in TLRs expression between male and female patients or between patients with different MS subtypes, the expression of both receptors was not significantly correlated with either the duration of the disease or the EDSS scores. Sensitivity and specificity of TLR2 expressed on lymphocytes and neutrophils to diagnose MS were (73.81, 70.59%), (69.05%, 52.94%) respectively. Whereas, sensitivity and specificity of TLR4 expressed on lymphocytes and neutrophils were (88.10, 79.41%), (78.57, 76.47%) respectively.
Conclusions: High expressions of TLR-2 andTLR-4 on peripheral blood neutrophils and lymphocytes of multiple sclerosis patients may suggest its potential role in the pathogenesis of the disease. Consequently, modulating TLRs can represent a possible immunotherapeutic approach. Moreover, TLR4 expressed on lymphocytes and neutrophils might have a role as a potential diagnostic biomarker for MS.