

Assessment of Platelet and Lymphocyte Interaction in Autoimmune Hyperthyroidism

Authors : Małgorzata Tomczyńska, Joanna Saluk-Bijak

Abstract : Background: Graves' disease is a frequent organ-specific autoimmune thyroid disease, which characterized by the presence of different kind autoantibodies, that, in most cases, act as agonists of the thyrotropin receptor, leading to hyperthyroidism. Role of platelets and lymphocytes can be modulated in the pathophysiology of thyroid autoimmune diseases. Interference in the physiology of platelets can lead to enhanced activity of these cells. Activated platelets can bind to circulating lymphocytes and to affect lymphocyte adhesion. Platelets and lymphocytes can regulate mutual functions. Therefore, the activation of T lymphocytes, as well as blood platelets, is associated with the development of inflammation and oxidative stress within the target tissue. The present study was performed to investigate a platelet-lymphocyte relation by assessing the degree of their mutual aggregation in whole blood of patients with Graves' disease. Also, the purpose of this study was to examine the impact of platelet interaction on lymphocyte migration capacity. Methods: 30 patients with Graves' disease were recruited in the study. The matched 30 healthy subjects were served as the control group. Immunophenotyping of lymphocytes was carried out by flow cytometry method. A CytoSelect™ Cell Migration Assay Kit was used to evaluate lymphocyte migration and adhesion to blood platelets. Visual assessment of lymphocyte-platelet aggregate morphology was done using confocal microscope after magnetic cell isolation by Miltenyi Biotec. Results: The migration and functional responses of lymphocytes to blood platelets were greater in the group of Graves' disease patients compared with healthy controls. The group of Graves' disease patients exhibited a reduced T lymphocyte and a higher B cell count compared with controls. Based on microscopic analysis, more platelet-lymphocyte aggregates were found in patients than in control. Conclusions: Studies have shown that in Graves' disease, lymphocytes show increased platelet affinity, more strongly migrating toward them, and forming mutual cellular conglomerates. This may be due to the increased activation of blood platelets in this disease.

Keywords : blood platelets, cell migration, Graves' disease, lymphocytes, lymphocyte-platelet aggregates

Conference Title : ICICSLC 2017 : International Conference on Internal Cellular Structures and Life Cycle

Conference Location : Copenhagen, Denmark

Conference Dates : October 02-03, 2017