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Investigation of the frequency and enzymatic activity of CD13 (Aminopeptidase N) molecule in patients with type 1 diabetes compare to control group

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Introduction and Aim: Type 1 diabetes is an autoimmune disease in which the destruction of pancreatic beta-cells occurs by immune system cells. Aminopeptidase N (APN) or CD13 is a metalloprotease which acts on diabetes pathogenesis by various mechanisms. CD13/APN, is a molecule with multiple functions and have membrane bound and soluble forms. Membrane CD13 binds to its ligand and increases T cell activity and strengthens the immune responses. But soluble form destructs the inflammatory molecules and reduces the immune responses. To investigate the role of CD13 in the pathogenesis of diabetes, the expression frequency of this marker was measured on peripheral blood cells and its enzymatic activity was measured in serum of patients with diabetes.

Methods: In a case control study, 35 patients with type one diabetes were enrolled based on clinical findings. The control group included 35 healthy subjects who were age-sex matched with the patient group. CD13 serum activity was measured by spectrophotometry. The frequency of CD13 molecules expression was measured by flow cytometry.

Results: The results of this study showed that CD13 expression was significantly (P=0.001) increased in patients compared to control group. The activity of serum CD13 (sCD13) in the patient group was increased compared to the control group, (P=0.047).

Conclusion: According to the result of this study, CD13 has an important role in pathogenesis of Type 1 diabetes. Therefore, inhibition of cell surface CD13 through blocking activation and migration of self-reactive lymphocytes might be effective in preventing complete destruction of the pancreatic cells in pre-diabetes individuals and reduction of the severity of the disease.

Biography

Mahsa Shirzad has completed the PhD degree at the age of 45 years from University of Newcastle, Faculty of medicine, Royal Newcastle Hospital, Australia. Currently, she is the Professor of Immunology in Shahrekord University of Medical Sciences, Iran. She has more than 60 publications in International Scientific Indexing (ISI) journals.

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