The Study of Platelets Behavior in Type 2 Diabetes Mellitus Environment via Continuous ADP Stimulation

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Abstract:

Patients with type 2 diabetes mellitus (T2DM) have accelerated atherosclerosis as a prothrombotic state that is associated with priming of platelet activation. Platelets undergoing continuous mild stimulation may lose their sensitivity to react to a strong stimulation. Platelet micro particles (PMPs) are submicron particles released from the membrane of activated platelets through shedding. They are involving in thrombotic problems of diabetes. The present study aimed to investigate activation responses of platelets in patients with T2DM and healthy individuals to mild and subsequent strong stimulations. Blood samples, which were taken from 40 patients with T2DM and 35 healthy individuals, were collected into the citrate containing tubes. The samples were subjected to the soft centrifugation to prepare the platelet rich plasma (PRP). Platelets in PRP samples were treated at a low (1 µM) concentration and then at a high (10 µM) concentration of ADP. Before and after stimulation with different doses of ADP, levels of CD62P expression and formation of platelet micro particles (PMPs) were measured using a flow cytometry method. The platelets from patients with T2DM had higher levels of CD62P expression before any stimulation (P = 0.003) than control samples. Platelets, which underwent the mild stimulation, indicated lower responses in CD62P expression, but higher PMPs formation after stimulation with high dose of ADP. Patients with T2DM had higher platelet micro particles in all states with ADP stimulation. (P = 0.004, SD: ±74.52)The flow cytometry data indicated that platelets in patients with type 2 diabetes mellitus were pre-active and associated with metabolic conditions. The induction of desensitization state helped platelets to reduce the platelet activation and sensitivity to ADP in diabetic environment. Furthermore, the production of platelets micro-particles was high in these patients; and desensitized platelets were more susceptible to shedding of micro-particle.

Biography:

Razie Mahmoodian is a hematologist and works as head of department of hematology in Mehragin Medical Diagnosis Laboratory. Also she teaches practical hematology in Azad university,Tehran Medical Branch. She holds a BSc in Medical Laboratory and then a Master of hematology and Blood Banking degree in School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences. She has worked for 5years in Tehran Amiralam Hospital and many other medical diagnosis laboratories as a hematologist. She has published some papers in the field of hematology about platelets and platelets microparticles formation in patients with type 2 diabetes mellitus. She has presented two abstracts in the 10th international congress of laboratory and clinic and ICIA2018 in Tehran. She grew up in Isfahan and now lives in Tehran with her wife. She is interested in research about blood cells behavior in diabetes and other endocrine disorders.

Publication of speakers:

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