DOES THE INCREASED GLYCATION OF BLOOD PLATELET MEMBRANE PROTEINS ASSOCIATE WITH ADHESION OF HUMAN BLOOD PLATELETS TO FIBRINOGEN AND VON WILLEBRAND FACTOR UNDER FLOW CONDITIONS?

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The increased blood platelet activation and reactivity was reported in diabetic patients. It was suggested that the concerted action of various metabolic disorders in diabetes could perpetuate an increased adhesion of diabetic blood platelets to vessel wall. We aimed at comparing the extents of glycation of platelet membrane proteins and their associations with platelet adhesiveness under flow conditions in non-diabetic and diabetic individuals. Platelet adherence was analyzed with Cellix Flow system, using microchannels coated with either fibrinogen or vWF at the shear force of 20 dynes/cm². Blood samples from each donor were also analyzed with flow cytometry (expressions of the active GPIIb/IIIa, bound fibrinogen, the binding of exogenous fibrinogen). Blood platelets adhered to fibrinogen to a higher extent in diabetic than in non-diabetic individuals ($P_{1a}=0.062$). Glycation of platelet membrane proteins was significantly increased in diabetic patients ($P_{0.0001}$), and correlated very significantly with plasma fructosamine and HbA₁c ($P_{0.002}$), and with GPIIb/IIIa expression ($P_{0.0001}$), but not with platelet adhesion. Adhesion to fibrinogen was significantly associated with the binding of exogenous fibrinogen and blood hematocrit ($P_{0.002}$). In conclusion, platelets from diabetic patients tend to demonstrate the increased binding to Fg, which does not directly result from the increased glycation of platelet proteins. A relatively high variability of the recorded data can be explained by the fact that platelet adhesion is strongly dependent upon a variety the factors other than platelet readiness to adhere.

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