Article (٤)

Elevated cellular-microparticles expressing platelets and endothelial markers in cardio-vascular ischemic infarction: A possible new challenge for early diagnosis.

Abstract:

Cellular microparticles are plasma membrane vesicles of <1 μm in diameter, mainly composed of lipids and proteins, which are released into the blood circulation by blood cells and vascular cells during cellular activation or apoptosis. Microparticles play an important procoagulant role in several diseases, especially in thrombotic accidents. In the present study, we assess the effect of anticoagulant treatment on microparticles in patients having thrombotic accidents for better monitoring of the anticoagulant therapy. We collected blood samples from 20 patients with myocardial infarction at the time of diagnosis and four weeks after suffering the MI. All patients were subjected to full clinical evaluation, revision of their archived clinical progress reports, radiological and laboratory data. In addition assay of circulating, microparticles for both quantitation and determination of cell of origin using flow cytometry technique was performed. The following fluorescent monoclonal antibodies were assayed: Endothelial: CD 62 E, Platelet: CD 61p. Comparing MP assay data in MI patients versus controls revealed a significantly higher Coexpression of CD61p and CD62E and highly significant expression of CD 61p in MI patients compared to controls. In comparison of MP assay data in patients at time of diagnosis as MI and after a month of surviving the MI and receiving anticoagulant treatment, there was no statistically significant difference in MP markers following intervention in all cases, from (22.39±9.41 to 21.72±7.77) for CD 62E/61, from (62.12±14.25 to 61.18±13.18) for CD 61, and from (0.040±0.043 to 0.034±0.037) for CD 62E ($p > 0.05$). A cutoff value for the expression of CD61p as a marker of thrombotic MI was suggested to be (58.70) revealed (70%) sensitivity and (85%) specificity and as regards CD 62E/61, taking (22.25) as a cut-off point revealed (60%) sensitivity and (95%) specificity using ROC curve statistical method. In conclusions, the antithrombotic properties of low dose antiplatelet or anticoagulant therapy are not strong enough to suppress shedding of the microparticles. A cut off value for expression of CD61 and coexpression CD 62E/61 in MI patients can contribute to the clinical applications as using MP assay in early diagnosis of thrombotic propensity, monitoring of anticoagulant therapy, and detection the risk of ischemic heart diseases in high-risk patients.