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PROTECTIVE EFFECTS OF N-3 POLYUNSATURATED FATTY ACIDS ON CIRCULATING MICROPARTICLES SUBPOPULATION FROM PATIENTS WITH MYOCARDIAL INFARCTION

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In patients with coronary heart disease (CHD), high levels of tissue factor (TF) microparticles (MP) circulate in the peripheral blood, disseminating their prothrombotic and proinflammatory potential. Because diets rich in n-3 polyunsaturated fatty acids (n-3 PUFA) have been associated with reduced incidence of CHD-related events, we investigated the in vivo effects of treatments with n-3 PUFA on levels of circulating MP and their TF-dependent procoagulant activity in post-myocardial infarction(MI) patients. Circulating MP were isolated from the blood of 46 post-MI patients: 23 of them had received 5.2 g of PUFA daily, and 23 an olive oil placebo, both for 12 weeks. MP number, cellular source and total TF antigen were determined by flow cytometry, and their

procoagulant potential assayed by a fibrin generation test. The total levels of MP were not different in the two groups. Endothelium-derived MP and total MP TF antigen did not change in both groups. The largest number of MP was derived from platelets and monocytes in both groups. Both platelet and monocyte MP were significantly lower in the n-3 PUFA group $216 \times 10^6/L$ (87-677) (median, 5-95 percentiles) $p=0.016$ and $265 \times 10^6/L$ (7-984) $p=0.010$ vs their baseline levels $420 \times 10^6/L$ (126-1796) and $478 \times 10^6/L$ (9-1681), respectively. MP supported the coagulation mainly via intrinsic pathway and to a lesser extent also via TF-dependent extrinsic-pathway. However, MP TF-procoagulant activity was reduced in the n-3 PUFA group respect to placebo group. A supplementation with n-3 PUFA after myocardial infarction exerts favorable effects by decreasing platelet- and monocyte-derived MP, possibly limiting their pro-inflammatory and pro-thrombotic potential.