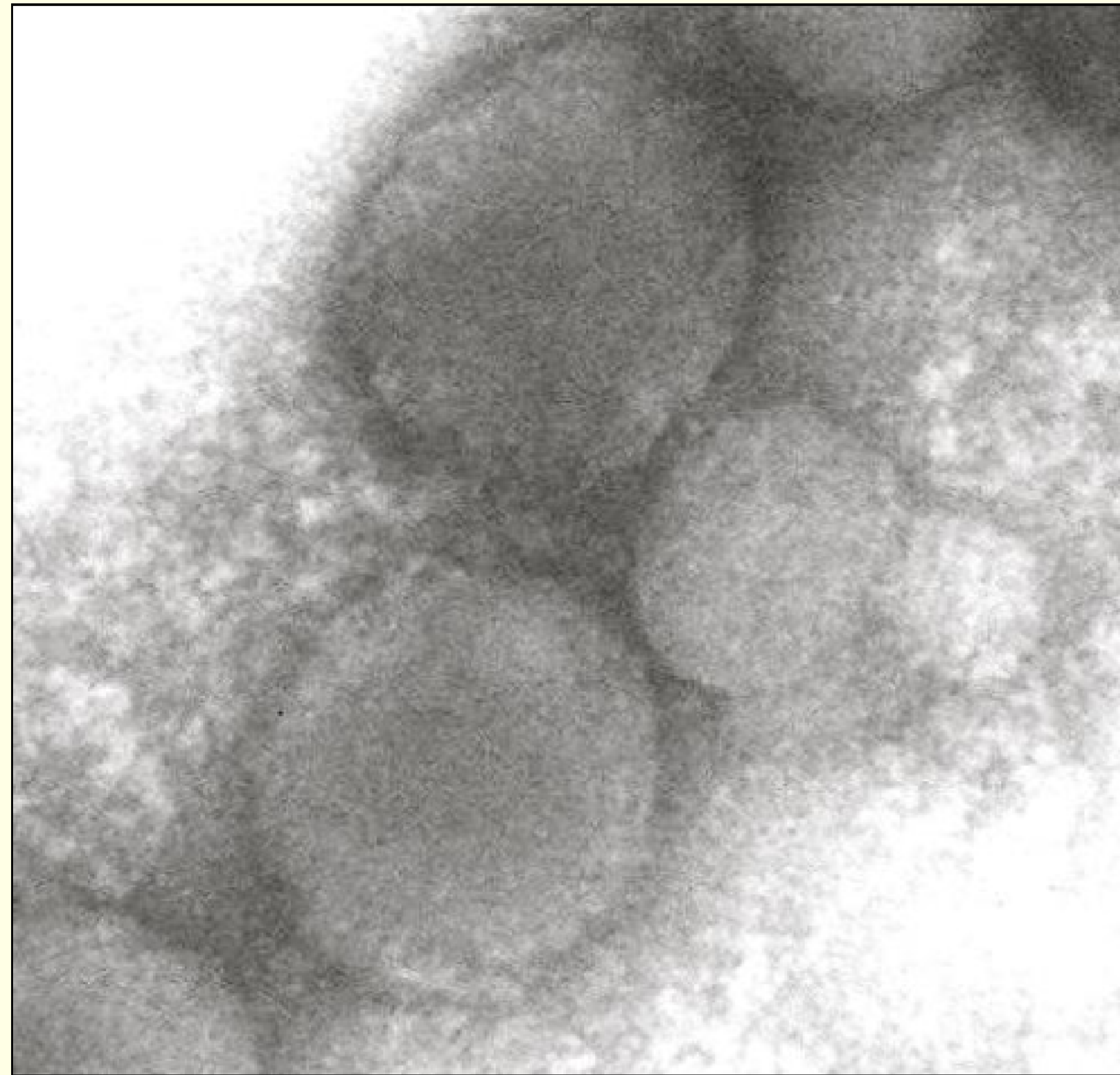


Decrease of microparticles (MP) after the treatment in hemophilia A patients– Coincidence or causation?

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Total, platelet and endothelial microparticles were decreased after on-demand treatment with FVIII concentrate in hemophilia A patients. Decrease of circulating microparticles which inversely correlated with hemostatic activation may potentially implicate that those microparticles may be incorporated in the hemostatic plug formed after FVIII substitution on the site of injury.

Introduction

Microparticles (MP) are small membrane vesicles (0.1 – 1 µm) released from various cell types after activation and/or apoptosis.

Data about their role in hemophilia A, bleeding disorder characterized by seriously impaired thrombin generation, disturbed clot formation and stability, and increased fibrinolysis, are limited.

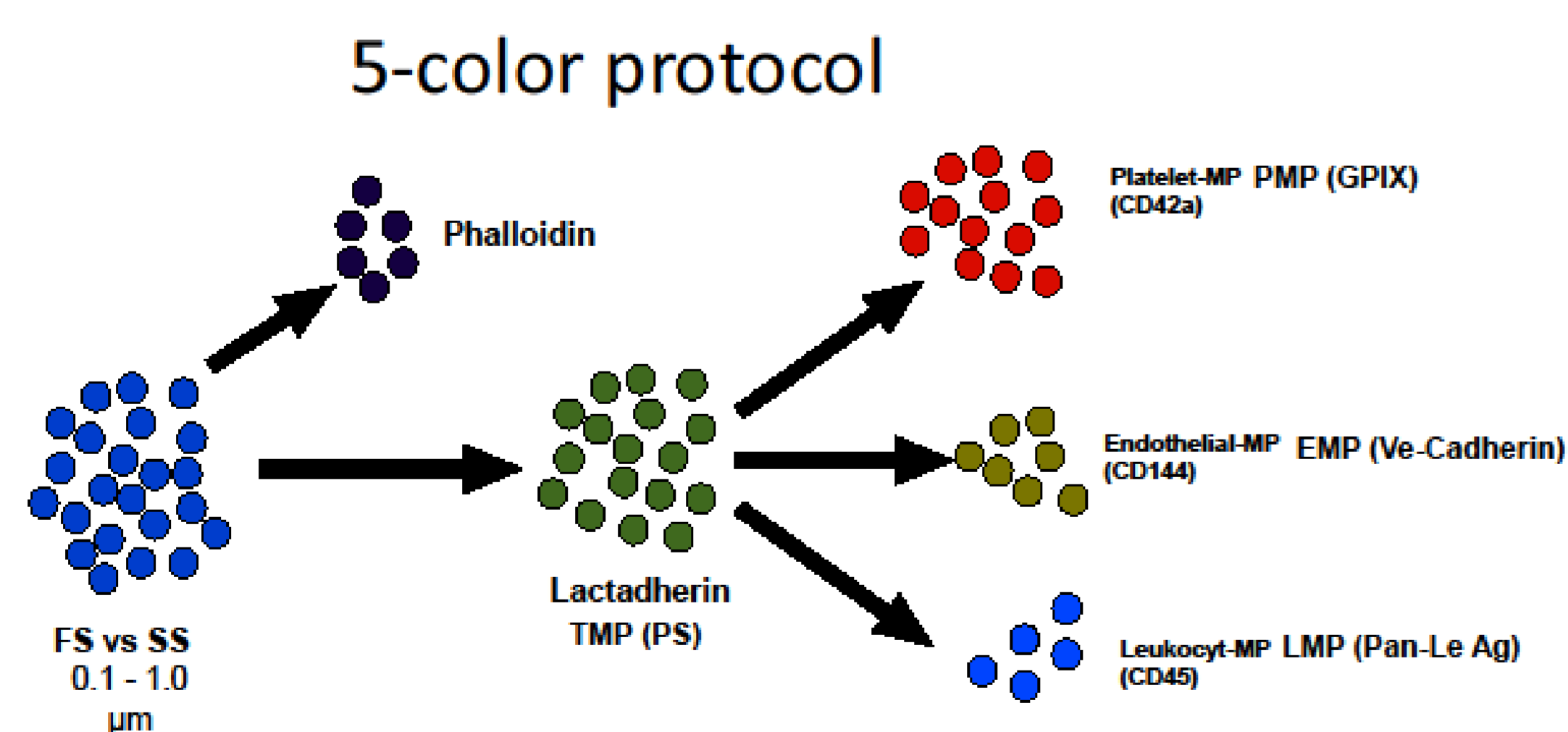
MP may have a role in the initiation and propagation of the coagulation cascade and this mechanism mainly involves the presence of negatively charged surfaces (phosphatidylserine (PS)) and to some extent the tissue factor (TF).

Methods

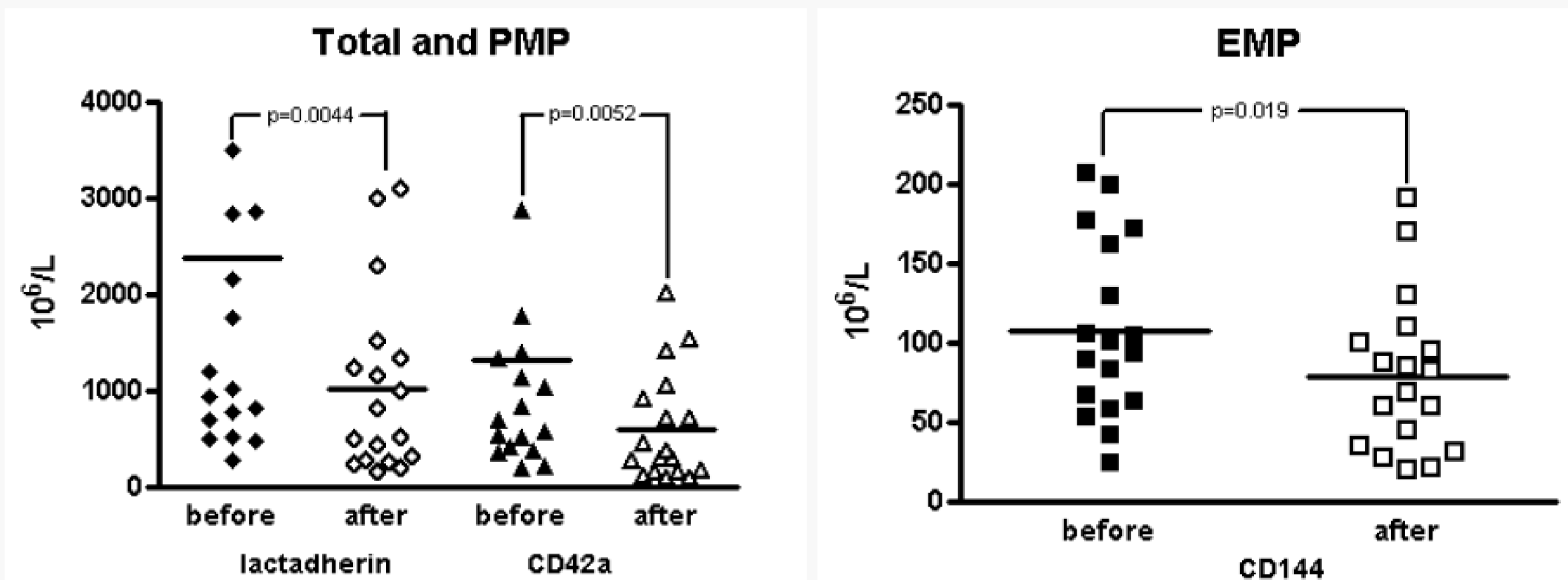
BEFORE AND 30 MINUTES AFTER FVIII-injection
18 hemophilia A patients treated on-demand

MPs were measured on Gallios (Beckman Coulter) flow cytometer using protocol described below

The results were compared with endogenous thrombin potential (ETP), overall hemostatic potential (OHP), fibrin gel permeability (presented as Ks) and thrombin activable fibrinolysis inhibitor (TAFI) (those results were part of a larger study).



Results & Interpretation



A very low level of LMP was not influenced by the treatment.

CORRELATION (R)	OHP	ETP	TAFI	Ks (fibrin gel)	FVIII
TMP	-0.30	-0.32	-0.32	0.34	-0.29
PMP	-0.28	-0.32	-0.30	0.32	-0.29
EMP	-0.29	-	-	-	-
LMP	-	-	-	-	-

p<0.05

A decrease of MP 30 minutes after injection of FVIII seems not to be a consequence of their clearance (half life was shown to be about 5 hours). Therefore a plausible explanation may be that MP are incorporated in the hemostatic plug formed after FVIII substitution on the site of injury (injury and bleeding usually precede the concentrate injection in patients treated on-demand). MP may provide a negatively charged surface for the activation of coagulation and also promote coagulation via the expression of TF and P-selectin on their surface.

The limited results observed justify a larger (mechanistical) study to evaluate the role of microparticles in patients with hemophilia A



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