Letter to the Editor
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Effect of Anticoagulation on Plasma Levels of Granulocyte Elastase during Hemodialysis

J. Bonal
R. Romero
M.C. Pastor
J. Teixidó
A. Caralps

Hospital ‘Germans Trias i Pujol’, Badalona, Spain

Dr. J. Bonal, Servei de Nefrología, Hospital ‘Germans Trias i Pujol’ Apartat de Correus 72, Badalona (Spain)

Dear Sir,

Previous studies have shown that granulocyte elastase (E-αiPI) is increased during hemodialysis [1]. This increase depends on the type of dialyzer membrane used [2]. The release of granulocyte E-αiPI has been attributed to the contact between leukocytes and the dialyzer membrane which results in the so-called ‘frustrated phagocytosis’.

Our results, using different types of membranes (AN-69®, polymethyl methacrylate, cuproammonium, Gambrane®), show increases in plasma levels of E-αiPI at 180 min similar to the values observed by Hörl et al. [2] (AN-69 +168%, polymethyl methacrylate +265%, cuproammonium + 345%, Gambrane +384%).

On the other hand, we have measured the increases of E-αiPI during hemodialysis with an ethylenevinyl alcohol (EVAL) membrane, with and without heparin, in 7 stabilized patients at 0.15 and 180 min. The increase in EVAL without heparin at 180 min (+36 ± 26%) is significantly lower than that observed with heparin (+102 ± 72%; p < 0.05, Wilcoxon’s test), without any noticed variation in induced leukopenia (-57 vs. -55%; fig. 1).

In addition, we have analyzed the contents of E-αiPI in blood after 15 min of hemodialysis at the inlet and at the outlet of the dialyzer in the same patients. The increase (inlet-outlet) with heparin (+56 ± 71%) is significantly higher than that observed without heparin (-5 ± 7%; p < 0.05, Wilcoxon’s test).

These results suggest that release of granulocyte E-αiPI during hemodialysis is not only related to the types of membrane used, but also to the anticoagulation (heparin).
References

Fig. 1. Percent changes of plasma E-αiPI levels as a function of dialysis time for the EVAL membrane with and without heparin. Data are expressed as mean values ± SEM. *p < 0.05.