ENDOCAN SERUM LEVELS IN HEMODIALYSIS PATIENTS BEFORE AND DURING THE PROCEDURE WITH TWO DIFFERENT DIALYSIS MEMBRANES

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Objectives:

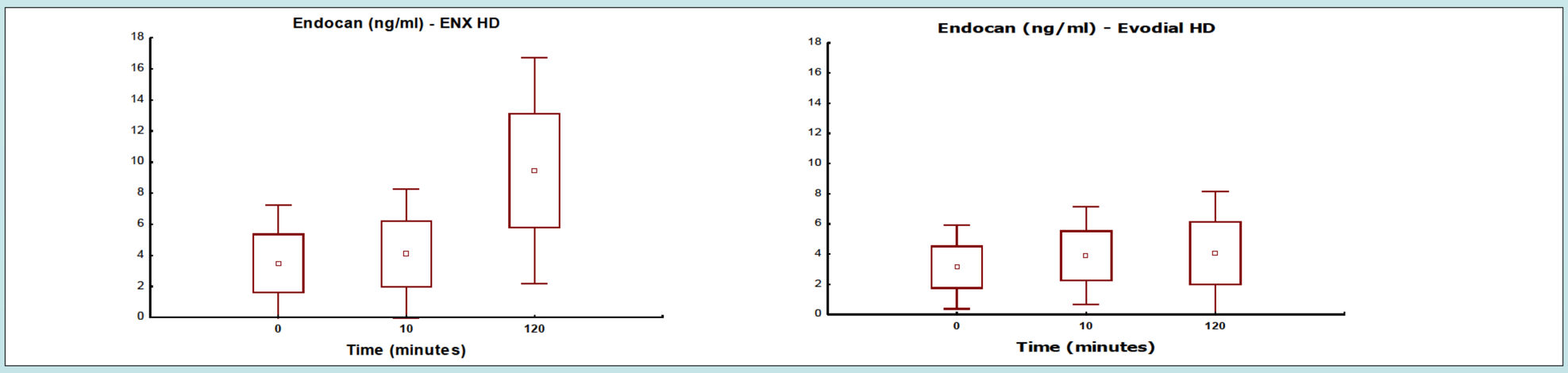
Endocan is a novel, soluble, dermatan sulfate proteoglycan expressed by endothelial cells. It was proved to modulate the inflammatory processes and neoangiogenesis. Recently the overexpression of the molecule was shown in patients with sepsis, pneumonia, cancer, chronic kidney disease and in renal transplant recipients. Endocan was also proposed to be a good diagnostic and prognostic marker in these diseases.

We aimed to determine plasma endocan levels in a specific population with established endothelial dysfunction such as maintenance hemodialysis (HD) patients.

The aim of the study was to confirm endothelial dysfunction in maintenance HD patients as compared to healthy volunteers and to investigate if HD procedure per se and its modes further adds to this dysfunction, we prospectively studied plasma endocan levels during HD sessions with two different dialysis membranes.

Methods:

Nineteen clinically stable maintenance HD pts (9 men; aged 58.1 ± 18.8 yrs; dialyzed 3 x wk for at least 4 months) were enrolled. First HD sessions were performed as usual - with no-reuse low-flux polysulfone membrane and an iv bolus of 40 (20-60) mg of low molecular weight heparin (LMWH) enoxaparine (ENX) given on HD initiation. Consecutive HD sessions were performed in the same patients with the use of a new anti-thrombogenic heparin-grafted HeprAN hydrogel membrane derived from polyacrylonitrile AN69 ST (Evodial, Gambro Diaverum) and no ENX administration. Blood samples were
collected from the a-v fistula circuit before the ENX-anticoagulated or “Evodial” HD (T0) and, then, after 10 min (T10) and 120 min (T120) of HD procedures from the circuit. Serum Endocan levels were measured using a referential ELISA kit from Lunginnov. The control group consisted of 19 healthy volunteers.



Results:

The median Endocan concentration at the beginning of HD with ENX was 2,9 ng/ml and at the beginning of ”Evodial” HD – 3 ng/ml, and they did not differed (p>0,1). The median Endocan concentration in the control group was 1 ng/ml and it was almost 3 times lower than the protein concentration before both HD (p=0,001). There was significant change in plasma Endocan concentration during both standard and “Evodial” procedure (p<0,05). We did not observed any difference in Endocan concentration after 10 minutes of the two procedures, but we showed that Endocan concentration was 2,25 times higher after 120 minutes of ENX-anticoagulated HD than at the same time of ”Evodial” HD.

Conclusions:

In conclusion, maintenance HD patients have higher degree of endothelial dysfunction as measured by plasma Endocan concentration. The effect is potentiated by HD procedure. Whether LMWH administration adds to increased protein concentration remains unclear and needs further investigation as well as the mechanism of this action. However if confirmed it could further acknowledge to LMWH’s anti-inflammatory potential.

References:

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L1) Dialysis. Extracorporeal dialysis: techniques and adequacy.
Joanna Gozdzikiewicz-Lapinska
DOI: 10.3252/pso.eu.52era.2015
ePosters supported by F. Hoffmann- La Roche Ltd.
52nd ERA-EDTA CONGRESS London2015 UNITED KINGDOM MAY 28th
PosterSessionOnline.com