EVOLUTION OF HIGH-SENSITIVITY TROPONIN-T IN PATIENTS UNDERGOING HIGH EFFICIENCY ON-LINE HEMODIAFILTRATION VERSUS CONVENTIONAL LOW-FLUX HEMODIALYSIS

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Introduction and Aims: On-line hemodiafiltration (HDF) has been associated with better atherosclerosis-related inflammatory markers profile than conventional low-flux hemodialysis (HD). Recent large randomized clinical trials suggested that HDF had a beneficial effect on survival when higher convection volumes are provided. High-sensitivity troponin T (hs-TnT) has been related to all-cause and cardiovascular mortality in end-stage renal disease patients. The aim of this study was to determine the effect HDF vs HD on hs-TnT evolution at one year follow-up.

Methods: Patients were randomized from 2007 to 2013 to HD or HDF in accordance with the CONvective TRANsport Study (CONTRAST) protocol initially as part of the Montreal CONTRAST cohort (until 2010) and subsequently as part of the local cohort (2010-2013). Hs-TnT were obtained before dialysis session and analyzed at baseline and at 1-year follow-up with STAT assay (Roche Diagnostics) on Cobas e411 instrument. Comparison of the evolution of hs-TnT values between groups were performed with appropriate non-parametric tests. Agreement between hs-TnT values at baseline and at follow-up was analyzed using a Bland-Altman plot.

Results: A total of 54 HDF patients and 59 HD patients were included. Mean age was 60±16 years old in the HDF group and 64±12 years old in the HD group (p=0.170). A total of 32 (59%) patients in HDF were male and 40 (68%) patients in HD (p=0.474). Diabetes was present in 27 (50%) HDF patients and in 34 (58%) HD patients (p=0.454). Coronary artery disease was present in 26 (48%) HDF patients and in 31 (53%) HD patients (p=0.708). Prior to randomization, all patients had been previously treated with conventional hemodialysis. In both groups, mean dialysis time had been 3.8±0.35 hours 3 times a week. Mean Kt/V had been 1.6±0.4 in HDF vs. 1.5±0.2 in HD (p=0.026) and mean dialyse vintage had been 43.8±52 months in the HDF vs. 39.0±41 months in HD (p=0.582). Patients with a myocardial infarction within 2 months before randomization were excluded. At baseline, median hs-TnT value was 49 (interquartile range 31-89) umol/L in the HDF group vs. 60 (36-96) umol/L in the HD group (p=0.370). During the following year, dialysis was provided according to randomization with comparable dialysis session time and frequency. Mean Kt/V was 1.9±0.4 in HDF vs. 1.6±0.2 in HD (p<0.001). Mean convection volume was 27.9±0.9 L in the HDF group, all HDF sessions performed in post-dilution mode. A one year follow-up, median hs-TnT remained stable at 47 (32-86) umol/L in the HDF group (p=0.508 vs. baseline) but significantly increased to 62 (40-104) umol/L in the HD group (p=0.021 vs. baseline). The median variation (delta) in hs-TnT values was -3 (-7 to +7) umol/L in the HDF group vs. +8 (-5 to +25) umol/L in the HD group (p=0.024). Bland-Altman plots revealed good agreement between hs-TnT measurements at baseline and one year follow-up only in the HDF group.

Conclusions: Treatment with high-efficiency HDF is associated with stability in hs-TnT values whereas low-flux HD is associated with significant increase in hs-TnT levels at one-year follow-up. Future studies are needed to establish whether stability of hs-TnT values is linked to better outcome in HDF patients.