

#6760

EFFICACY OF HEMOSORPTION IN REMOVAL OF HIGH MOLECULAR WEIGHT UREMIC TOXINS IN CHRONIC HEMODIALYSIS PATIENTS

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Background and Aims: Symptoms associated with the accumulation of large uremic toxins (the development of chronic inflammation, accelerated progression of cardiovascular diseases and an increase in the incidence of protein-energy malnutrition) are common for patients who get chronic hemodialysis (HD) for a long time. HD effectively removes small and medium molecules (up to 15 kDa), while convection techniques, which are not always available, are used to remove substances of higher molecular weight. An alternative strategy for removing uremic toxins, especially large medium molecules, is the use of sorption techniques. The aim of the study was to compare the removal efficiency of substances with a molecular weight from 11.8 to 45 kDa using HD on a high-flux membrane and a combination of a high-flux membrane with hemosorption.

Method: The study included patients with a duration of hemodialysis therapy for more than 5 years. Blood sampling was carried out before and after the procedures, in the average RRT session per week. The following indicators were determined: β -2-microglobulin, leptin, free light chains (FLC) κ and λ , IL-6. The first HD session was performed on a Fresenius Fx-80 high-flux membrane. The second procedure (one week after) was carried out using the same filter, but with the connection of a Jafron HA130 sorption column (HD+HP). The duration of the both procedures was 4 hours. Blood flow did not exceed 300 ml/min.

Results: Total 10 patients were included in the study. Mean duration of renal replacement therapy was 12±5 years. The ratio of men and women was equal. Mean age 54±12 years. All patients used AV fistulas as vascular access. When determining and comparing the concentrations of β -2-microglobulin, leptin, IL-6, a comparable significant decrease in concentrations was noted after both procedures without significant statistical differences between the methods. At the same time, the efficiency of FLC removal on HD and HD+GP was convincingly different:

- average kappa-FLC concentration change after HD was +1.8±9.1 mcg/ml, after HD+GP:

-9.4±7.5 mcg/ml, p = 0.04.

- average lambda -FLC concentration change after HD/HD+GP was +3.2±16.3 and -12.9±4.4 mcg/ml, respectively. p = 0.02.

Conclusion: The use of sorption techniques as an adjunct to standard HD therapy can increase the excretion of medium-large molecular substances, such as FLC kappa/lambda, which may help reduce the severity of symptoms associated with the accumulation of these uremic toxins. Additional studies are required to evaluate the clinical effectiveness of the new sorption method in chronic HD.

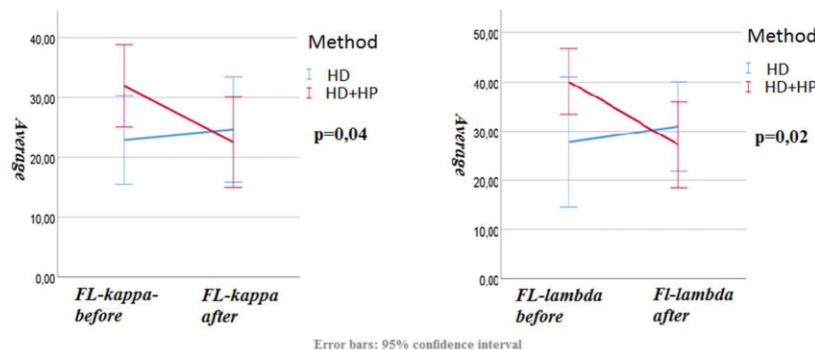


Figure 1: Change in free light chain concentrations both fractions (kappa/lambda) after HD and HD+HP.

#6394

ACUTE KIDNEY INJURY IN MYELOMA WITH HIGH LIGHT CHAIN PRODUCTION: A 10-YEAR EXPERIENCE

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Background and Aims: In multiple myeloma (MM), a high serum light chain (LC) concentration significantly increases the probability of developing cast nephropathy. The use of high cut-off (HCO) hemodialysis (HD) membranes has not been clearly shown to be effective in 2 large European studies (MYRE and EuLITE) in terms of improved prognosis. Therefore, their use is currently controversial. We want to review our experience, in the last 10 years, of patients with Acute Kidney Injury (AKI) in the context of MM in progression with high circulating LC: whether or not any HD technique has been performed and what factors may have had an impact on kidney and patient survival.

Method: We reviewed all cases of MM flare or progression, with LC >1000 mg/L and AKI, evaluated by our service between May 2012 and May 2022 (N = 20). We collected data on baseline renal function, laboratory tests, type and amount of light chain and monoclonal component, whether or not HD was performed, type of technique, evolution of kidney function and mortality.

Results: We counted 60% males, median age of 76.5 years (69.5-83.0), and baseline creatinine of 1.30 (0.94-1.66) with an estimated glomerular filtration rate (eGFR) of 52 mL/min (35-58). At the time of AKI, the median obtained data were: peak creatinine 4.6 mg/dL (4.1-6.0), Hb 8.8 g/dL (8.3-11.6), albumin 3.6 mg/dL (3.1-4.1), calcemia 10.1 mg/dL (9.5-11.5), blood monoclonal component of 0.80 mg/dL (0.36-2.22) and serum LC of 5.480 mg/L (2,143-11,825). In 9 cases the myeloma was CL kappa-producing and in 11 cases CL lambda-producing. In 9 of the 20 cases (45%) the patient died within 6 months. HD was performed in 11 cases: 7 with HCO membrane, 2 with polymethylmethacrylate (PMMA) and 2 with conventional technique. Of the 7 patients dialyzed with HCO, 3 died in <6 months (43%) and 2 of them (29%) were also HD-dependent at the time of death. The 2 patients dialyzed with PMMA had eGFR>30 mL/min at 6 months after the episode. In contrast, the 2 patients who underwent conventional HD died in <6 months without recovery of renal function. Of the 9 patients who did not undergo HD, 4 had optimal recovery of renal function (eGFR>45 mL/min) but 2 of them died in <6 months (50%). Of the remaining 5: 2 died in <6 months (40%), progression to end-stage CKD was observed in 2 cases (HD was not performed and one of them died in <1 year), and the remaining patient remains alive with eGFR>20 mL/min at 2 years of follow-up. Concerning chemotherapy (QT), 13 patients were treated with bortezomib (12 in 1st line), 4 with lenalidomide and only 1 case was not treated. Of 8 patients who achieved remission with chemotherapy (40% of the total), 7 remained alive at 2 years of follow-up (87.5% of them) and did not require HD, and only 1 of them died at 1 year after a new recurrence (despite HD being implemented). Although statistical significance was not reached due to the small sample size, we did observe a statistical trend towards a higher risk of death at 6 months in patients with peak creatinine >5 mg/dL (p = 0.078), albuminemia <3.5 mg/dL (p = 0.078) and lambda-type LC (p = 0.064).

Conclusions: The use of HCO membranes has not seemed to influence kidney and patient prognosis. In contrast, remission after chemotherapy appears to be the most important determinant of patient survival. Recovery of kidney

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