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NEW MEDIUM CUT-OFF MEMBRANE VS ONLINE HEMODIAFILTRATION IN CLEARANCE OF MIDDLE MOLECULES. PRELIMINARY RESULTS FROM OUR CENTRE

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INTRODUCTION AND AIMS: Nowadays, high-flux membranes represent the standard treatment in bicarbonate hemodialysis (HD). Despite of the undeniable benefits in clearance compared to low-flux membranes, their capability in clearance of medium molecules remains poor, especially compared to online hemodiafiltration (HDF), a treatment however not available for clinical reasons in all patients. Recently, became available in Italian market the TheraNova® 400, defined as first medium cut-off membrane for a significant clearance of molecules under 45 kDa without inducing any reliable loss of albumin. The purpose is to reach a clearance of medium molecules during bicarbonate HD comparable to an online HDF. In this study we evaluated the reduction ratio (RR) of myoglobin (17kDa) in a sample of our patients chronically treated with their common hemodialysis membranes and then with new medium cut-off membrane comparing them with patients treated with online HDF.

METHODS: We evaluated 8 patients, randomly chosen within those chronically afferent to our Centre, 4 bicarbonate HD (1 man and 3 women, medium age 78 ± 14 years, 2 central venous catheters - CVC - and 2 arteriovenous fistulas - FAV -) and 4 online HDF (2 men e 2 women, medium age 77 ± 16 years, 3 CVC e 1 FAV). Plasmatic myoglobin levels were dosed pre-post dialysis in two sessions, one after short and one after long interdialytic interval. After that, the 4 HD patients were shifted to medium cut-off membranes, without changing parameters as dialysis length, blood and dialysate flow, and monitored for two further treatments for pre-post dialysis plasmatic myoglobin levels. Data were expressed as medium \pm standard deviation. Statistical significance ($P < 0.01$) was evaluated with Student's T-test. No differences were found between groups concerning dialysis length and blood and dialysate flow. No notable complications affected any dialytic treatment.

RESULTS: Bicarbonate HD patients treated with common high-flux membranes presented a medium increase in plasmatic myoglobin levels from pre to post-dialysis of

$12.3 \pm 15.3\%$, without any difference between short and long interdialytic interval ($P = NS$). The same patients, subjected to HD similar for length and blood and dialysate flow but with medium cut-off membrane, showed a medium RR of plasmatic myoglobin of $46.5 \pm 7.7\%$ ($P < 0.01$ vs bicarbonate HD). No significant statistical differences were found between short and long interdialytic interval ($P = NS$). Patient treated with online HDF showed a medium RR of plasmatic myoglobin of $42.7 \pm 14.7\%$ ($P < 0.01$ vs HD standard, $P = NS$ vs medium cut-off membranes). (Image 1)

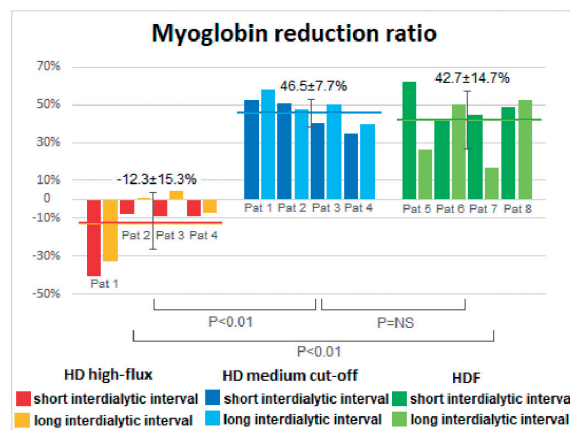


Image 1

CONCLUSIONS: Our data confirm how bicarbonate HD with new medium cut-off membranes allows a significant removal of a 17 kDa molecule like myoglobin, comparable to online HDF with same features. As expected, these results are not reached with a bicarbonate HD with common high-flux membranes. These preliminary data must be studied in deep expanding the analyzed population, evaluating clearance of even larger molecules and assessing long-term effects on further biochemical parameters.