Effects of Hemoperfusion on protein-bound uremic toxins in patients with maintenance hemodialysis

Hong Zhang, Lide Lun, Xinlun Li, Jian Li, Guifang Dou

Department of Nephrology, Air Force General Hospital, Beijing, China，100142，lunlideldm@163.com

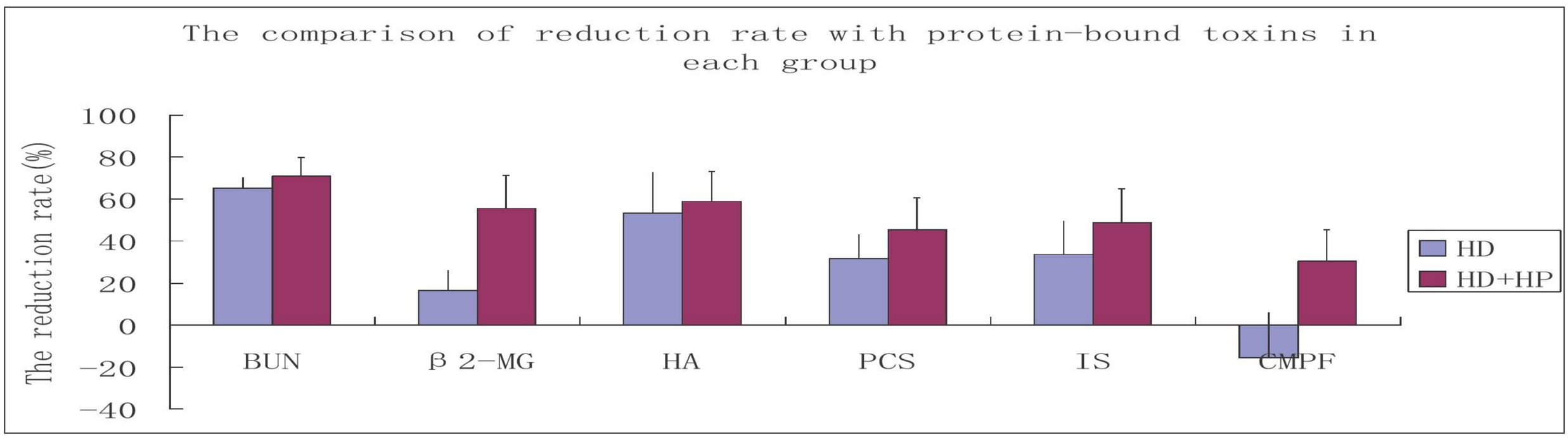
Background/Aim To observe the clearance of protein-bound uremic toxins in patients with maintenance hemodialysis (MHD) by combination of hemodialysis（HD） with hemoperfusion (HP).

Methods 60 MHD patients were randomly divided into 2 groups. HD+HP group received low-flux hemodialysis two times a week and the combined treatment of HD with HP(HD+HP) once a week,whereas HD group received low-flux hemodialysis three times a week alone. Using high performance liquid chromatography tandem mass spectrometry (HPLC-MS/MS) method to determine the serum concentrations of hippuric acid (HA), indoxyl sulfate (IS), p-cresyl sulphate (PCS) and 3 - carboxyl - 4 - methyl - 5 - 2-methyl propyl furfuryl propionate(CMPF) before and after treatment in each group.Then calculated the reduction rate of these toxins , and determine the total solute removal of the 4 kinds of toxins in dialysate and in hemoperfusion apparatus respectively.

Results The serum concentrations of HA, PCS, IS and CMPF in two groups were decreased as compared to before treatment($P<0.05$). HD+HP group were significantly higher than those in HD group ($P<0.01$).The total solute removal of HA、PCS、IS and CMPF in HD+HP group were （126.14±76.61）mg、（74.95±28.67）mg、(82.36±26.96）mg and（10.96±6.70）mg,respectively.While were（93.05±61.87）mg、（30.57±10.93）mg and（27.18±15.55）mg for HA、PCS and IS in HD group,respectively,and CMPF can not measured in dialysate,the differance was significant with the two groups($P<0.01$).

Conclusion HD+HP was superior to HD in eliminating protein-bound uremic toxins.

The comparison of reduction rate with protein-bound toxins in each group



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