

THE EFFECT OF LOW-FLUX AND HIGH-FLUX DIALYSERS ON ENDOTHELIAL DYSFUNCTION, OXIDATIVE STRESS AND INSULIN RESISTANCE

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BACKGROUND/AIMS: Cardiovascular disease (CVD) is the leading cause of mortality in end-stage renal disease (ESRD) patients. The cornerstone of high CVD incidence in ESRD patients is endothelial dysfunction, which results from inflammation, oxidative stress and insulin resistance. Although various modalities of hemodialysis (HD) have been presumed to exert different effects on endothelial dysfunction, solid evidence is still lacking.

METHODS: Forty ESRD patients undergoing HD were prospectively divided randomly into two groups. Patients in each group received either F8 HPS (low-flux, Fresenius, Schweinfurt, Germany) (Group A) or FX80 (high-flux, Fresenius, Schweinfurt, Germany) (Group B) as HD dialyzers for 2 consecutive months. Blood samples for insulin, adiponectin and 8-iso PGF_{2α} were taken at the start and end of the study.

RESULTS: A total of 38 patients completed the study. After 2 months of treatment, adiponectin increased 17.9 % in group A (n=18) and 6.6 % in group B (n=20), while plasma 8-iso-PGF_{2α} decreased 43 % in group A and 37% in group B. There was no significant change between groups in the level of adiponectin and 8-iso-PGF_{2α}. ($p=0.2$ and 0.7) However, the level of HOMA_{IR} decreased 11.9% and 51.8% in groups A and B, respectively ($p=0.016$).

DISCUSSION/CONCLUSIONS: Both low- and high-flux dialysers with synthetic polysulphone membrane have the ability to increase adiponectin and decrease oxidative stress. Furthermore, a significant improvement of insulin resistance was observed in patients in the high-flux dialyser group. All these results implicate that the high-flux membrane confers more cardiovascular protection than the low-flux membrane.

Key words: Hemodialysis, Adiponectin, 8-iso PGF_{2α}