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Benefits of the nephros dual stage ultra-filter in chronic hemodialysis patients: Evidence for improved ESA responsiveness

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Ultrapur dialysate has been shown to reduce inflammatory markers and improve nutritional and anemia parameters in patients on chronic maintenance hemodialysis. The DSU (dual stage ultra-filter) has been shown to reduce bacterial counts and endotoxin levels by at least a 5-log order of magnitude. We performed an observational trial of this filter in a hospital-based acute dialysis facility in the USA. There were 23 chronic stable hemodialysis outpatients at New York Presbyterian Hospital-Columbia University Medical Center treated during the six months after the installation of the DSU filters. The mean age was 51 (range 12-91), 61% male, predominantly hispanic (70% hispanic, 17% African-American, 9% Caucasian and 4% Asian) and 30% diabetic. Comparing data from the six months period after the installation of the filters to the preceding six months, there was an increase in the mean hemoglobin level of 0.5 g/dL ($p=0.010$) with a reduction in the mean weekly darbepoetin dose of 14.6 mcg ($P<0.001$) translating to a reduction in the ESA resistance index (weekly ESA dose/hemoglobin level) of 1.52 ($p<0.001$). During this time period, indirect inflammatory markers showed a reduction in the mean WBC count of 0.46 ($p=0.008$), an increase in serum albumin of 0.08 ($p=0.024$), an increase in the TSAT of 1.0% ($p=0.34$, NS) and an increase in the serum ferritin of 85 ($p=0.06$). In conclusion, the use of a filter to further reduce endotoxin exposure in chronic hemodialysis patients can result in improved ESA responsiveness and a lower ESA dose.

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