125

Novel medium cut-off high-flux dialysis membrane (Theranova) improves patient haemoglobin and reduces erythropoietin resistance index.

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Introduction:
Theranova is a novel medium cut-off high-flux dialysis membrane. It has been reported to provide better middle and large molecule clearance compared to conventional high-flux haemodialysis (HD) membranes and comparable clearance to haemodiafiltration (HDF) membranes, using regular pre-existing HD environments. However, experience of its clinical utility is as yet unclear, as are its effects on patients' biochemical parameters and outcomes. We hypothesised that the new membrane may improve inflammatory markers and patient symptoms so we undertook a single site prospective observational quality improvement project to determine the effect of changing membrane on prevalent HD patient cohort. Here we report our experience after four months of use.

Methods:
As routine standard of care, one of our dialysis units changed over to the Theranova membrane in April 2019. To ensure there was no detriment to the quality of dialysis provided, patients' routine haematological and biochemical parameters (Hb, Ferritin, Alb, CRP, PTH, PO4 and EPO dose) as well as validated patient experience and symptoms questionnaires (EuroQual:EQ-5D-5L and Kidney Disease Quality of Life:KDQOLTM-36) were collected prior to the change-over and then again four months later. Relevant approval was sought from our hospital's clinical effectiveness unit for this quality improvement project (QI-project Ref:10054).

Results:
In total, 38 patients completed both the initial and four months post survey. The average age of the cohort was 46.5 years and 64% were male. There were no patient or equipment related adverse events during or following dialysis sessions attributable to the Theranova membrane. Following four months of treatment, patients had a significant improvement in mean serum haemoglobin, ferritin and albumin levels, and had a decrease in their erythropoietic resistive index (EPO-RI; weekly Darbepoetin dose/weight/haemoglobin concentration).There was no significant difference in patients' phosphate, PTH levels and CRP over this time. Results are shown in table 1. There was no significant difference in patient experience or symptoms, including cramps, muscle soreness, dry skin and general energy levels (results not shown).

Discussion:
Theranova appears to safely useable within a stable cohort of prevalent haemodialysis patients in a pre-existing dialysis environment with no attributable adverse events. We found no difference in patient symptom and quality of life scores following the change to a high-flux medium cut off dialysis membrane, but there did appear to a significant improvement in patients' haematological parameters and consequent reduction in their require erythropoietin dose.