

SP368

**EFFECTS OF DIFFERENT HAEMODIAFILTRATION MODALITIES ON ANAEMIA MANAGEMENT IN DIALYSIS PATIENTS**

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**INTRODUCTION:** Improved responsiveness to erythropoiesis stimulating agents (ESAs) in patients on on-line post-dilution haemodiafiltration (Post-HDF) compared with conventional haemodialysis (HD) has been reported by some authors but challenged by others. Based on the positive results of a previous explorative study, this prospective randomized cross-over study tested the hypothesis that an alternative infusion modality of HDF, mixed-dilution HDF (Mixed HDF) could contribute to further reduce the needs of ESAs in dialysis patients.

**METHODS:** One-hundred-twenty patients from 6 Dialysis Centres were randomly assigned to two six-month treatment sequences: A-B and B-A (A, Mixed HDF; B, Post-HDF). Comparative evaluation of haemoglobin (Hb) trend, ESA (darbepoetin alfa) consumption and ESA resistance (ERI) was performed. Treatments efficiency, iron and vitamins status, inflammation and nutrition parameters were monitored. Analysis of parameters dependence completed the study.

**RESULTS:** In sequence A-B, decreasing darbepoetin doses (from 0.41 to 0.33 µg/kg/month) were required to maintain stable Hb levels during Mixed HDF, while a significant fall in Hb (11.6 to 11.2 g/dl) occurred during Post-HDF (in spite of a significant increase in ESA doses (up to 0.48 µg/kg/month at 6th month). In sequence B-A, ESA requirement increased during Post-HDF from 0.53 to 0.63 µg/kg/month and decreased during Mixed HDF (to 0.35 µg/kg/month at 6th month). A growing linear trend of EPO requirement was shown in patients on Post-HDF as opposed to the decreasing demand in patients on Mixed HDF. Overall, EPO doses at 6 months on Mixed and Post-HDF were 0.34 and 0.56 µg/kg/month, respectively,  $P < 0.01$ . ERI showed a similar trend as darbepoietin requirement in both periods. Multiple linear model confirmed the significant differences between techniques, in ESA consumption (estimated difference -0.167, 95%CI -0.21/-0.13,  $P < 0.0001$ ) and ESA resistance ( $P < 0.0001$ ). Among all the explanatory variables explored by the MLM, only dry body weight ( $P = 0.004$ ) and albumin level ( $P = 0.041$ ) exerted additional effect on the difference. No differences in nutritional and inflammatory status, iron metabolism and treatment efficiency between techniques were shown.

**CONCLUSIONS:** Mixed HDF seems to have clinical benefits in terms of anaemia management by reducing darbepoetin requirement in dialysis patients. This may help preventing the untoward side effects of high ESA doses, besides having a notable economic impact. Additional evidence is needed to confirm this potential benefit of Mixed-HDF.