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Effect of medium cut-off dialyzer on middle molecules: one-year experience

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Objectives: The medium cut-off (MCO) dialyzer has shown good clearance of large middle molecules, but its long-term effects are unclear. We investigated whether MCO hemodialysis (HD) over one year could reduce middle molecule levels without albumin loss.

Methods: A prospective cohort study in 57 hemodialysis patients was conducted. The patients were assigned to the MCO dialyzer group or the high-flux dialyzer group, according to the HD machine they used. The reduction ratio (RR) and one-year changes in small and middle molecules were analyzed.

Results: Over a 12-month follow-up, MCO HD did not reduce the serum levels of middle molecules (lambda free light chain [FLC], from 135.7 ± 39.9 to 132.0 ± 39.1 mg/L; kappa FLC, from 168.2 ± 58.5 to 167.7 ± 65.8 mg/L; β 2-microglobulin, from 25.6 ± 9.6 to 28.4 ± 4.8 mg/L) or albumin (from 3.96 ± 0.31 to 3.94 ± 0.37 g/dL). MCO HD provided excellent RR of lambda FLC (49.3 ± 10.3 %), kappa FLC (69.6 ± 10.4 %) and β 2-microglobulin (80.9 ± 7.3 %), compared to high-flux HD.

Conclusions: The MCO dialyzer can be used effectively and safely in conventional HD settings, but long-term effects on large middle molecules were not significant. Further studies are needed to verify clinical benefits of the MCO dialyzer.