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Letter to the Editor



LETTER TO THE EDITOR

# Comparison of four medium cut-off dialyzers

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Medium cut-off (MCO) membranes expand the range of uremic toxin removal in hemodialysis without excessive loss of albumin. In an interesting clinical study, Maduell *et al*. compared the treatment efficacy of four recently available MCO dialyzers, high-flux hemodialysis and hemodiafiltration [1]. They did not identify considerable differences in lambda free light chain (λFLC) removal between the MCO filters; the reduction ratios averaged from 44.0% to 50.9%. With a molecular weight of 45 kDa and a Stokes' radius of 2.8 nm, the λFLC dimer is a biomarker of particular interest, because it is ideally suited for the characterization of the typical cut-off range of MCO dialysis membranes [2]. Due to the rather high serum concentrations measured and the scarce information provided in the methods, it must be questioned whether the λFLC determinations used by the authors were based on the immunonephelometric N-Latex assay with monoclonal antibodies (BNII analyzer, Siemens Healthineers) [1]. λFLC concentrations determined with this assay are considerably higher than those derived from an assay that employs polyclonal antibodies (Freelite™) [3, 4]. Against this background, the results of Maduell *et al*. should be viewed with some caution. In a very recent clinical trial, where two MCO dialyzers were compared, the monoclonal assay produced higher λFLC reduction ratios (63% ± 9% with ELISIO 19HX and 65% ± 10% with Theranova), which even exceeded those produced with the much smaller (22.5 kDa/Stokes' radius 2.3 nm) monomeric κFLC (56% ± 8% with ELISIO 19HX and 62% ± 9% with Theranova) [5]. Therefore, given the sieving properties of a dialysis membrane, which becomes less permeable with increasing molecular weight, the reduction ratios determined with the monoclonal λFLC assay were considered far too high. In contrast, based on the polyclonal assay, with reduction ratios of 28% ± 4% (ELISIO 19HX) and 39% ± 13% (Theranova), more conclusive results were provided [5]. Therefore, the polyclonal assay should be better suited to detecting differences between MCO filters [5]. The reason for the difference in reactivity between the two assays is currently unclear. It may be influenced by an unknown, interfering, low-molecular weight substance, which is cleared during hemodialysis, but erroneously responds to the monoclonal assay [6]. Another explanation could be that FLC might polymerize [7], which may alter the detectability of epitopes. This property may be affected by hemodialysis-induced plasma-milieu modifications. However, both these possibilities remain highly speculative. Although the λFLC concentrations, measured with the mono- and polyclonal assays, were well correlated ($r = 0.665$; $P < .001$) [5], the two assays cannot be used interchangeably. With regard to λFLC removal, our data indicated that only the polyclonal assay seems to be appropriate for discriminating between the effects of different MCO dialyzers on hemodialysis efficacy.

## CONFLICT OF INTEREST STATEMENT

None declared.

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