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Medium cut-off dialyzer improves reduction ratio of osteoprotegerin: A single center prospective study

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Objectives: Large middle molecular uremic toxins (>15kDa) could not be effectively removed by conventional high flux (HF) membrane. Osteoprotegerin (OPG, 60kDa) is associated with vascular calcification and cardiovascular events in hemodialysis (HD) patients. We aimed to efficacy of a medium cut-off (MCO) dialyzer in regulating OPG compared with HF membrane.

Methods: Twenty clinically stable maintenance HD patients were investigated for 15-weeks study period. Dialyzer efficacies were evaluated during a last midweek HD treatment of each consecutive dialyzer membrane use: 1) initial HF membrane for 5 weeks (HF1), 2) MCO dialyzer for 5 weeks (MCO), 3) later HF membrane for 5 weeks (HF2) to evaluate short term maintenance of MCO efficacy. Treatment efficacy was investigated by calculating the reduction ratio (RR) of OPG and we used α 1-microglobulin (α 1M, 33kDa) as a reference of dialysis efficacy. OPG and α 1M were measured by ELISA method.

Results: Patients were 59.9 ± 14.2 years old and 50.0% were male. Mean dialysis duration was 92.1 ± 54.6 months. Serum calcium, phosphorous, and albumin values were not significantly different each dialyzer treatment period. As a reference, RRs of α 1M were as follows: HF1, $4.0 \pm 16.8\%$; MCO, $37.3 \pm 11.9\%$; HF2, $21.3 \pm 16.2\%$; $P < 0.001$. RR of OPG for MCO dialyzer ($38.0 \pm 8.8\%$) was significantly higher than HF1 ($18.9 \pm 10.1\%$) or HF2 ($22.3 \pm 10.2\%$) membrane ($P < 0.001$).

Conclusions: MCO dialyzer showed significantly higher RR of OPG compared with HF membrane. The effect of MCO membrane seems to disappear after changing to HF membrane.

Figure 1. Reduction ratios of OPG according to the dialyzers

