

Serum Free Light Chain removal in patients with Acute Myeloma Kidney

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OBJECTIVE

Multiple Myeloma (MM) could frequently manifest with Acute Kidney Injury (AKI), with unfavorable prognostic significance. Light chains removal, combined with hematological therapy (CT) seems to offer significant benefits to renal function recovery. We report our experience about the extracorporeal removal of free light chains (FLC) using different techniques in patients with Acute Myeloma Kidney associated with chemotherapy.

METHODS

Our experience includes twenty-seven (27) patients with a first diagnosis of MM and AKI, with pathological FLC levels >1000 mg/l. All patients received Bortezomib-based chemotherapy in association with extracorporeal treatment for the removal of FLCs.

Haemodialytic treatments were scheduled three times a week and the dialytic dose was not related to the degree of the renal function but to the removal of sFLC.

The dialyzer used were:

-PMMA filter (polymethylmetacrylate; Filtrizer BK-F 2.1 m2 surface area, cut-off 20000 Da);
-PEPA filter (polyester polymer alloy FDX 210-GW and FDY 210-GW, 2.1 m2 surface area, Cut-off undisclosed by manufacturers); -low flux polyphenylene membrane (1.7 m2 surface area, K UF 13 mL/h/mm Hg) with an adsorbent cartridge of hydrophobic styrene resin with a sur-face of 700 m2for each gram for resin (Suprasorb, Bellco-Medtronic HFR 17 Supra 1,7 m2 surface area).

Primary outcome was overall renal recovery. The other end-point included: 30-day sFLC reduction, number of sessions, reduction rate per sessions, creatinine at recovery, 12 months survival.

RESULTS

Principal results are represented in table 1. The 4 group show significant differences in the primary end-point, overall renal recovery: 1/6 patients (14.3%) in the PMMA group, 6/8 patients (75%) in the PEPA- FDX group, 7/7 patients (100%) in FDY and 2/4 patients (50%) in HFR-supra group recovered renal function.

Regarding the RR at 30 days, the treatments with PEPA filters showed the highest rate of removal (average 82,6%) while in HFR-supra group the RR at 30 days was the lower (19.8%), with an evident variability between the patients.

The RR per session was similar among group 1, 2 and 3; on contrast, the RR per session in group 4 was lower with an average of 0,295.

The number of dialytic sessions was notably different between the four groups: average number of dialytic session was 18,25 (min 3 max 68). In particular, the number of dialytic session in the FDY-210 GW group is significantly lower than the others. Six patient involved in the study died because of the complications of multiple myeloma (infections, bone fractures, chronic kidney disease). They all required chronic hemodialysis. 21 patients survived: among these 18 restored their renal function and 3 required chronic hemodialysis

CONCLUSION

Extracorporeal treatment with double dialyzer in series, is a safe and effective therapy in patients with renal impairment in MM. The PEPA and PMMA filters are dialyzer with high absorptive properties which are widely available and cheaper. Moreover, in our patients we didn't observe albumine likeage wich is one of the most side effect of HCO-HD. In our study HFR Supra don't show high efficacy in removal of sFLC and provide renal recovery.

	Group 1 : PMMA (n=6)	Group 2: FDX-210 GW (n=8)	Group 3: FDY-210 GW (n=9)	Group 4: HFR-Supra (n=4)
Overall Renal recovery	1 (14.3%)	6 (75%)	9 (100%)	2 (50%)
Number of sessions	28,16 [9-79]	12,87 [3-24]	7,22 [1-25]	38 [13-68]
RR FLC (%) per session	0.464 [0.368-0.530]	0.445 [0.392 – 0.530]	0.468 [0.500-0.656]	0.295 [0.173 – 0.411]
RR FLC (%) 30 days	0.492 [-0.757 – 0.999]	0.805 [0.153 – 0.997]	0.847 [0.520 – 0.998]	0.198 [-1.72 – 0.999]
Creatinine at recovery (mg/dL)	1.94	2.97 [1.03 – 8.7]	1.84 [1.0 – 4.08]	2.75 [1.18 – 4.32]
6 months survival	1 (14%)	7 (87.5%)	9 (100%)	4 (100%)