

MIXED HAEMODIAFILTRATION: LONG-TERM EFFECTS on EFFICIENCY and SURVIVAL . A 4-YEAR COHORT STUDY

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INTRODUCTION

Recent large trials¹⁻³ have suggested that post-dilution haemodiafiltration (post-HDF) may reduce mortality of chronic dialysis patients by ~30% provided that high convective volume is achieved (CV = 20-23 L/session).

In **Mixed HDF** simultaneous infusion at pre- and post-dilution ports of the haemofilter promotes achievement of the highest CV and similar/higher efficiency than post-HDF, while avoiding dangerous haemoconcentration by means of a TMP feedback system which modulates infusion rate and site according to the patient and operating conditions (Q_B , Htc, membrane surface and permeability)⁴⁻⁷.

AIM OF THE STUDY : to evaluate the results of a four-year application of Mixed HDF in a large cohort of patients of 21 Dialysis Centres

PATIENTS and METHODS

334 Patients of 21 NephroCare Centres (102 F, 232 M), aged 64±13, range 22-88, on Mixed HDF for at least 4 months, from May 2011 to May 2016.

45 Renal transplantation

59 Change technique

146 17 Transferred to other Centres / lost to follow-up
25 DEAD

188 Patients on Mixed HDF at May, 31th, 2016

Mean follow-up: 31.4± 21.9 months; median: 27,5 months; range : 4-168 months.

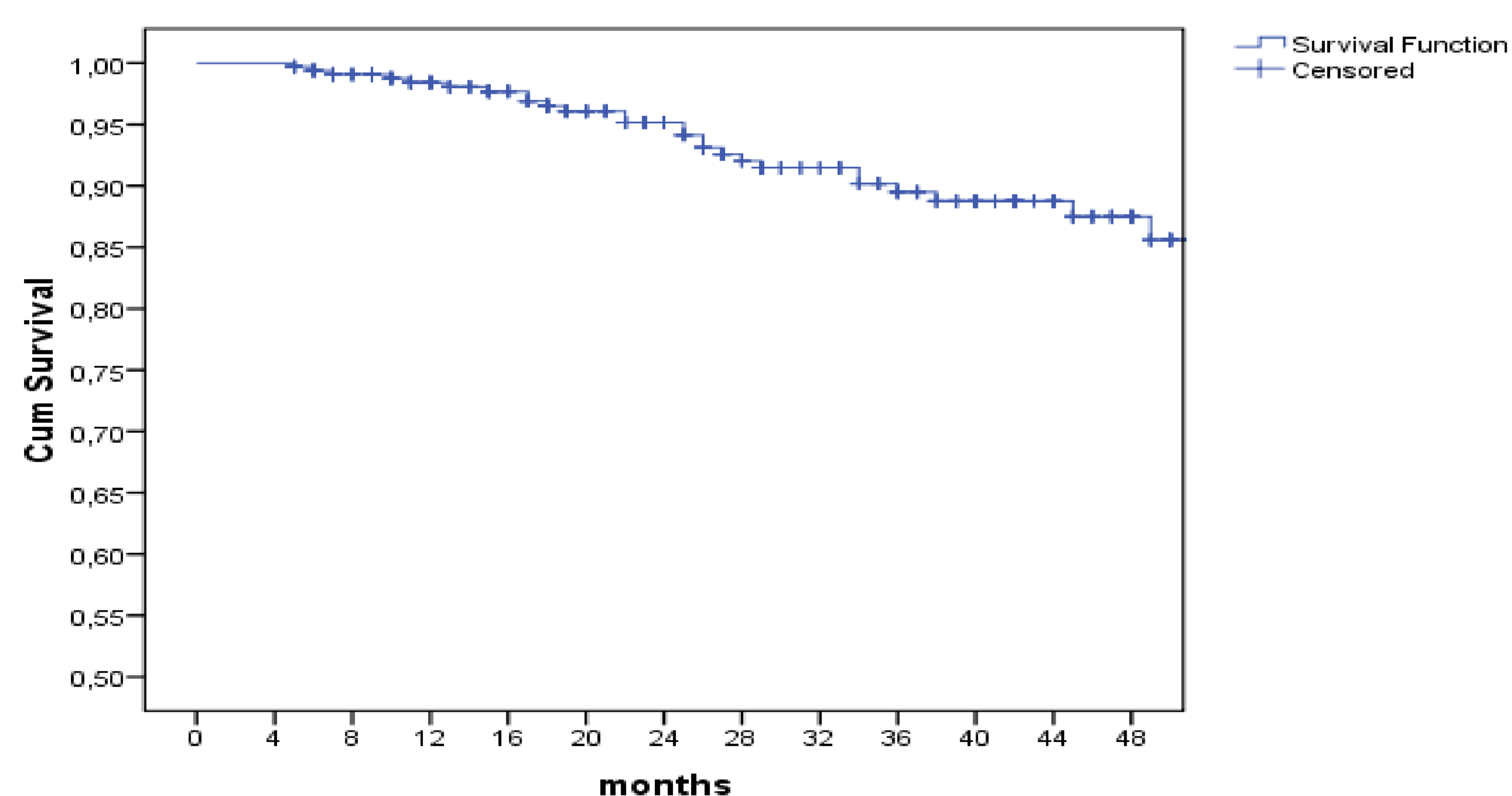
Lab. analyses were monitored and extracted from a data-base every 4 months. Patient and operational parameters were recorded on-line at each session and averaged per month. Kaplan Meier survival analysis was performed as overall and by class of age.

RESULTS

The mean observation period covered more than 120,000 Mixed HDF sessions. Mean blood flow rate (Q_B) was 393±40 ml/min, session time 239±7 min., dry body weight 73±13 kg. Trend of CV, markers of small and middle molecule removal (Kt/V and β_2 -microglobulin reduction ratio), and nutritional, and anaemia status throughout the follow-up are in Table.

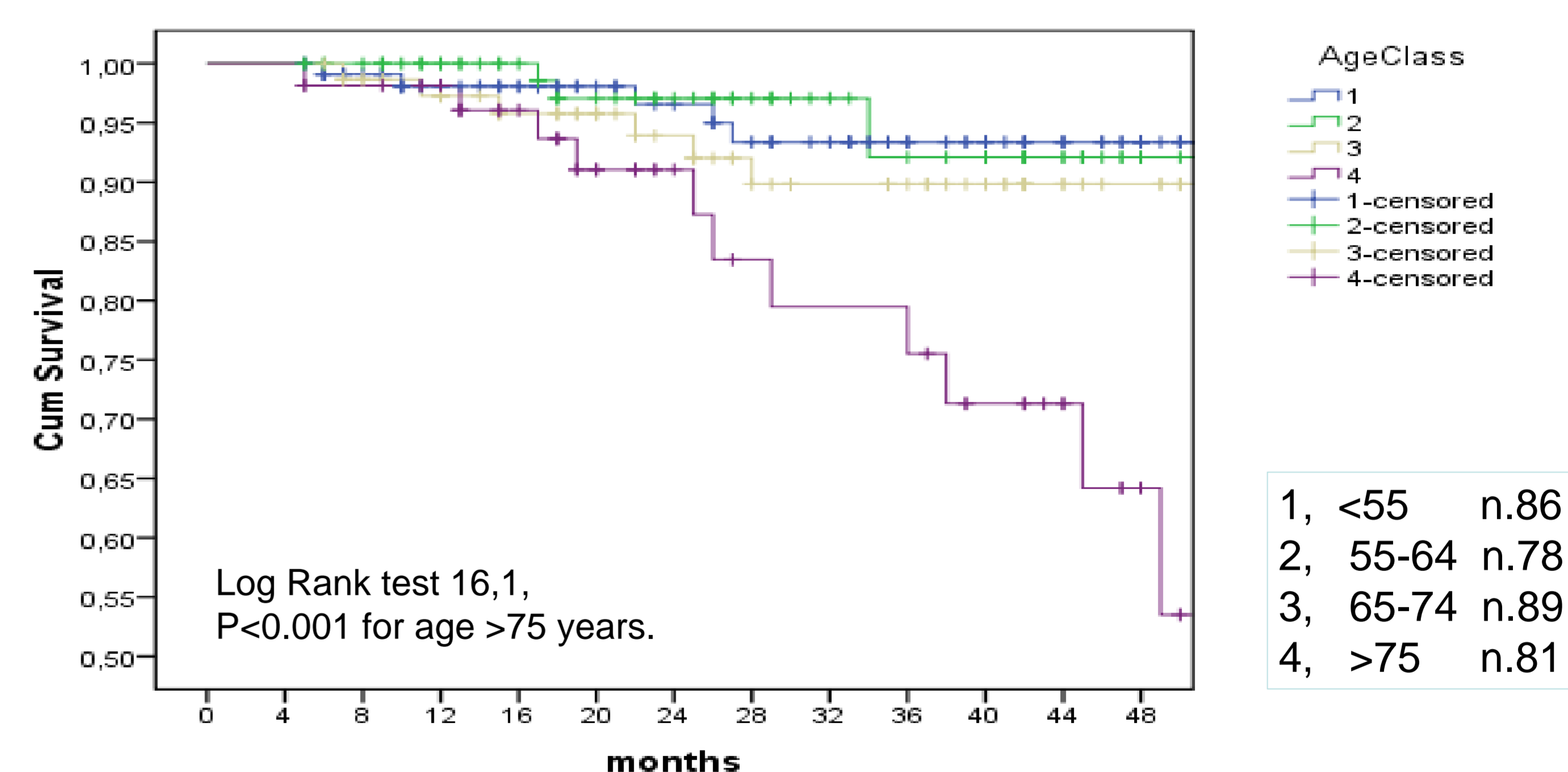
months	0	4	8	12	16	20	24	28	32	36	40	44	48
Conv.Volume, L/sess.	39,6	40,3	40,0	39,9	39,8	40,2	39,8	40,0	39,6	39,0	38,4	38,2	39,4
spKt/V	1,82	1,89	1,90	1,91	1,90	1,93	1,89	1,93	1,91	1,87	1,85	1,88	1,90
β_2 -M R.Ratio, %	80,3	80,8	80,2	81,2	81,7	81,6	81,6	81,3	81,3	81,0	80,6	80,5	80,4
β_2 -M basal, mg/L	25,1	24,7	25,3	25,8	25,3	25,1	25,2	25,2	26,0	26,8	26,6	27,1	26,9
Hb, g/dl	11,6	11,7	11,7	11,8	11,6	11,6	11,6	11,6	11,6	11,6	11,9	11,7	11,6
Albumin, g/dl	3,7	3,8	3,8	3,8	3,8	3,8	3,8	3,8	3,8	3,8	3,8	3,8	3,8
Phosphate, mg/dl	4,4	4,4	4,3	4,3	4,3	4,2	4,2	4,3	4,3	4,2	4,3	4,4	4,3

Fig.1 Survival Function (overall)



N. 334 334 312 284 254 221 192 167 149 133 115 79 55

Fig.2 Survival Functions (by class of age)



1, <55 n.86
2, 55-64 n.78
3, 65-74 n.89
4, >75 n.81

CONCLUSIONS

Mixed HDF as maintenance therapy of a cohort of 334 chronic dialysis patients was able to steadily maintain high removal of uremic toxins of different molecular weight and, actually, a remarkable patients survival rate. This technique prevents the drawbacks of post-HDF (haemoconcentration) and may be easily applied also in patients with difficult operational conditions as a reduced blood flow rate. The high convective volume achievable with Mixed HDF (~40 Liter/session, of which ~23 Liter/session infused in post-dilution) probably contributed to these results, to be confirmed by controlled trials due to the acknowledged limits of the present study, first of all the possible bias of patients selection.

References

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