

# ON LINE HEMODIAFILTRATION (ol-HDF) : WHICH MODALITY FOR WHICH BLOOD FLOW RATE

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## OBJECTIVES

- Even if Post ol-HDF (POST) has become the reference, other ol-HDF modalities (HDF) differentiated by their infusion site (PRE, MIXED and MID) permit especially Middle Molecules (MM) to be optimally removed.

- Since ESHOL study (F Maduell et al. JASN 2013), Convective Volumes (VConv >= 23.1L) are recommended, but this goal is limited to POST.

- The lack of volumetric guidelines for HDF modalities other than POST, has led us to compare actually proposed modalities from their MM removal efficiency.

- This approach is based on the MM removal hypothesis which suppose that clinical HDF benefits could be due more to its MM removal efficiency than to a simple convective volumetric goal.

- As HDF is also used whatever vascular access and blood flow rate (Qb), we also tried to find the best match between Qb and different HDF modalities.

## METHODS

- 10 patients from one center (M=7; F=3; Age: 74 ±10.9) were included in a crossover study.

- They underwent a 240min/session on the same day of 4 successively different weeks on 5008 CorDiax generator (FMC).

- **MIXED, POST and PRE** were performed with a **FXCorDiax1000** (FMC; Helixone; 2.3m<sup>2</sup>; Kuf=76mL/h/mmHg) in an automated Substitution Volume delivering mode (AutoSub+).

- **MID** was performed with an **OLPUR MD220** (Bellco; PES; 2.2m<sup>2</sup>; Kuf=105) and Total Convective Volume (VConv.T) was fixed to be the one obtained in MIXED.

- MM removal efficiency was evaluated by their Reduction Ratio (RR) (RR= [(Cp<sub>pre</sub> - Cp<sub>post</sub>) \* 100 / Cp<sub>pre</sub>] with Cp<sub>post</sub> corrected for hemoconcentration)

- **MM studied:** beta2-microglobulin (β2M; 11.8kDa); Moglobin (Myo; 17.2); Prolactin (PLT; 23) and Orosomuroid (ORO; 42)

- Each patient was assigned to one of the 3 different Qb groups (Qb): Qb250 (4pts), Qb300 (3pts) and Qb350 (3pts).

- Statistical analysis (StatView) was performed with Student's paired test for mean values of RR in HDF modalities in each Qb, and less relevance - as patients were different in each Qb group - between RR in different Qb for each HDF modality. Statistically significant difference (SSD) if P<0.05.

## RESULTS

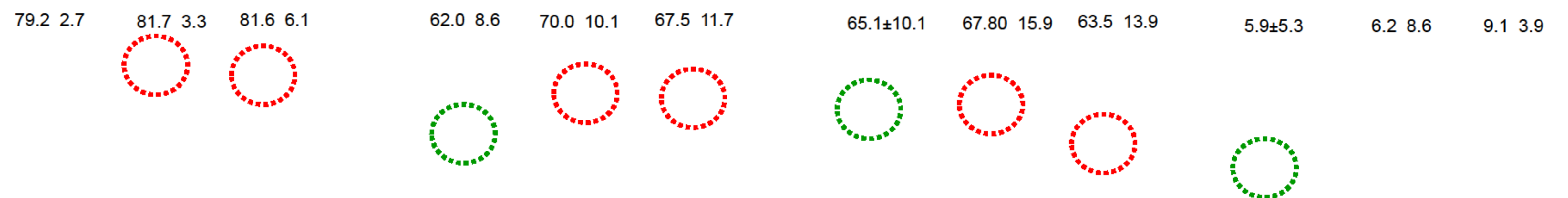
VConv.T

β2M

Myo

PLT

ORO



- For **MID, MIXED and POST**, the lowest VConv.T were obtained in Qb250 with no difference between Qb300 & Qb350
- Mean VConv.T with **PRE** was 57.2±9.8 with no influence of Qb.
- For **RRβ2M**, no SSD between HDF modalities in each Qb group or between Qb for each modality.
- For **RRMyo MIXED and POST** were more efficient versus **PRE** only in Qb300. SSD between Qb250 and Qb300 only for **POST**.
- For **RRPLT**, no SSD between modalities in each Qb group, nor between Qb for each modality.
- For **RRORO, MIXED and POST** were more efficient versus **PRE** only in Qb350. SSD between Qb250 and Qb350 only for **MID**.

		MID	MIXED	POST	PRE	
β2M	250	78.8±3.8	79.5±5.2	79.0±2.1	79.5±1.0	NS
	300	80.5±3.2	83.7±1.7	82.3±4.8	80.35±3.3	NS
	350	80.5±6.5	82.7±7.3	83.1±7.0	80.0±7.3	NS
		NS	NS	NS	NS	
Myo	250	63.3±5.5	68.4±9.2	61.0±7.1\$	55.2±9.3	NS
	300	69.6±6.0	77.8±0.8 *	76.2±5.9 °\$	56.3±7.5 *°	*P=0.007 °P=0.022
	350	64.0±3.7	74.9±3.7	75.6±7.7	55.7±13.3	NS
		NS	NS	\$=0.029	NS	
PLT	250	64.7±3.1	74.0±8.9	63.2±10.5	58.47±11.9	NS
	300	65.8±18.8	77.2±9.7	74.5±12.4	53.8±16.9	NS
	350	59.5±10.1	70.9±15.2	66.7±17.1	57.0±16.1	NS
		NS	NS	NS	NS	
ORO	250	2.3±3.8*\$	11.3±5.8*	3.5±4.1	6.8±3.9	*P=0.041
	300	2.8±4.9	14.9±6.8	5.5±10.9	1.8±7.7	NS
	350	10.2±3.9\$	11.5±1.6*	10.65±3.2°	4.1±2.3*°	*P=0.012 °P=0.049
		\$=0.026	NS	NS	NS	

## CONCLUSION

- With 5008 CorDiax and AS+, Convective Volumes seemed optimal right from Qb300 and even from Qb250 for PRE.
- Globally, in terms of MM removal, there was no important influence of Qb in each HDF modality. This finding argues for a universal use of HDF whatever Qb conditions.
- In each Qb, there was only minor differences between HDF modalities with Post-D contribution (POST, MIXED, MID)
- PRE was always less efficient above β2M.
- For Qb250, MIXED appeared more efficient for MM above β2M.
- For Qb300 and Qb350, POST and MIXED were always the more efficient and proportionally to the MW of the molecule.
- If one believe in the MM removal hypothesis, we recommend HDF modalities with a Post-D contribution - especially POST or MIXED - if removal of toxins with a MW above the β2m one is wished, as often actually recommended.

