ONLINE CLEARANCE AND THEIR RELATION WITH THE VASCULAR ACCESS ANATOMY AND THE PUNCTURES CHARACTERISTICS

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INTRODUCTION AND AIMS

Achieving a KtV target is essential to ensure an adequate quality of life and prevent complications in hemodialysis (HD) patients. The clearance of a substance is defined by the dialyzer characteristics, the dialysate flow (QD) and the proper operation of the vascular access (VA). The key is to get a good blood flow (QB) with the less recirculation percentage possible.

The objective of this work is to define the ranges of the online clearance values (OCMc) measured by the Fresenius on line clearance monitor depending on the VA anatomy and different QB.

Some studies has related OCMc/blood flow ratio to access recirculation (1,2). These new ranges values, could detect early dysfunction of this VA and prevent possible complications.

METHODS

We analyzed 40 HD patients, stables for 3 months. We monitor in each patient the OCMc at different QB (300, 400, 500 mL/min) during two sessions using the same dialyzer and QD (500 ml/min). We also measured the average of these OCM parameters and their effective QB (Qef) associated, obtained in the Fresenius 4008 Monitor. We studied epidemiologic data and defined the different ratio OCMc/ Qef considering: 1. Native fistulae (AVF) vs grafts (table 1). 2. Proximal or distal arterio-venous anastomosis (elbow vs wrist) (table 2) 3. Puncture in the same or different veins (table 3) 4. The influence of the punctures distances (D) (graghic 1 and text 1).

RESULTS

Demographics of these 40 patients:, 40% female. Age 60.4 years, HD vintage: 78.1 months. VA: 37 AVF vs 3 grafts. AVFs characteristics: 21 in elbow and 16 in wrist. In elbow: AVF 14 cases had punctures in same vein and 7 in different ("V" puncture). Wrist AVF were all punctured in same vein. D: 12 cms in elbow AVF and 5.8 cms in wrist AVF.

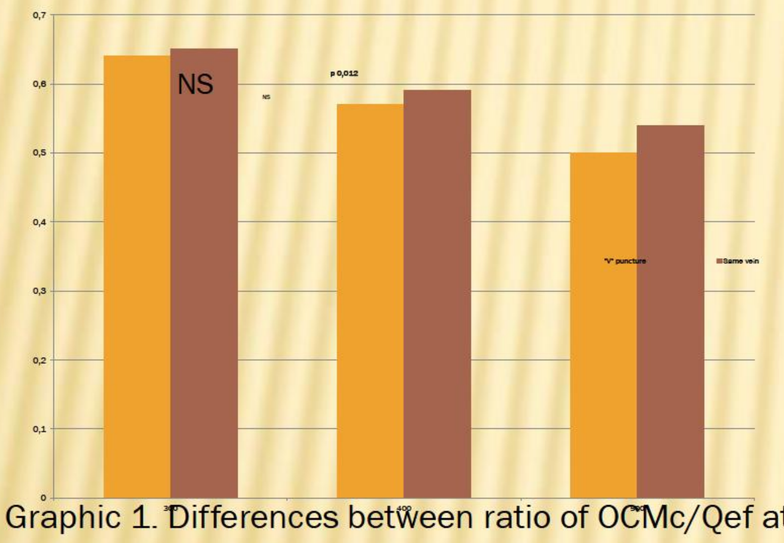
Results expressed in average and standard deviations(Table 1):

All patients:

-OCMc (at QB 300-400-500 mL/min): **184±15, 214±14, 236±16**.

-Q Qef (at QB 300-400-500 mL/min): **285±18, 364±5, 441±9**.

-OCMc/ Qef (at QB 300-400-500 mL/min): **0.65±00.6, 0.59±0.04, 0.54±0.04.**



Graphic 1. Differences between ratio of OCMc/Qef at different Qb (ml/min) depending on type of puncture.

Text.1 Pearson correlation coefficient:

-Distance of punctures and OCMc /Qef at Qb 300: 0,047 (p NS)

- Distance of punctures and OCMc /Qef at Qb 300: 0,149 (p NS)

- Distance of punctures and OCMc /Qef at Qb 500: **0.347; p 0.041**.

Qb (mil/min)	Ratio OCMc/Qef	Ratio OCMc/Qef	
AV type	AVF (n 37)	GRAFT (n 3)	p
300	0.63	0.68	NS
400	0.57	0.59	NS
500	0.55	0.54	NS

Table 1. Differences between ratio of OCMc/Qef at different Qb depending on AV type (graft vs fistula)

Qb (mil/min)	Ratio OCMc/Qef	Ratio OCMc/Qef	
Location	Wrist (n16)	Elbow (n21)	p
300	0.65	0.65	NS
400	0.59	0.58	NS
500	0.55	0.53	NS

Table 2. Differences between ratio of OCMc/Qef at different Qb depending on location of AV.

Qb (mil/min)	Ratio OCMc/Qef	Ratio OCMc/Qef	
Distance	>12 cms (n9)	<12 cms(n 7)	p
300	0.64	0.65	NS
400	0.58	0.60	NS
500	0.54	0.56	NS

Table 3. Differences between ratio of OCMc/Qef at different Qb depending on their type (graft vs fistula)

CONCLUSIONS

The ratio OCMc/Qef declines when QB rises. We found no substantial differences of this ratio related to the VA type or the VA location. A substantial decrease of clearance to effective flow ratio is related to an increase on recirculation.Monitoring this parameter together with those most widely used, could help us detect early VA dysfunction.

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