KT AS A QUALITY INDICATOR OF HAEMODIALYSIS ADEQUACY: COMPARISON OF KT/V, KT ACCORDING TO THE GENDER AND BODY SURFACE AREA

Servicio Canario de Salud

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INTRODUCTION AND OBJECTIVE

The dialysis dose monitored with Kt allows a better discrimination, detecting a percentage of the patients that perhaps do not get an adequate dose for their gender or body surface area (ASC) after treatment with a minimum recommended dose of Kt/v.
The **aim** of the study: evaluate Kt as a clinical indicator referred to dialysis adequacy, compare the level of compliance of the different methods and assess which factors are involved in the dialysis dose administered.

MATERIAL AND METHODS

- **Retrospective** study.
- N: **103 patients.**
- **Convencional hemodialysis** (3 times/week) with ionic dialysance monitor (Hospal).
- The Kt mean value was determined for each dialysis sessions, every month, during the follow-up period (12 months) and every two months Kt/v Daugirdas 2nd generation and urea reduction ratio (URR) were calculated.
- We analyzed the compliance with the different recommendations: **Kt target for their gender** (at least 50 litres in men and 45 litres in women), **or their body surface area** (ASC-Lowrie), **Kt/v target** (at least 1.3 in men and 1.6 in women) and **URR** ≥ 70%.

RESULTS

Demographics and clinical Characteristics

	Patients n= 103
Age (years) median ± SD	62 ± 12
Male (%)	66
Time on dialysis (months) median ± SD	54 ± 42
Diabetes (%)	53,4
Hypertension (%)	87,3
Cardiovascular disease (%)	49
BMI (kg/m²) median ± SD	28 ± 5,5 (35% IMC>30)
ERC etiology: (%)	
- Diabetes	54
- Isquemic/Hypertension	14,7
- Chronic Glomerulonephritys	4,9
- Policystic kidney disease	5,9
- Undetermined	6,9

Time on hemodialysis (months)	54 ± 42
Sesión time (min)	234,2 ± 15,2
Vascular acces(%)	
- FAV (native/goretex)	66
- Catheter	34
Membrane (%)	
- poliester sulfone	88
- helixona	12
Efective Qb (mL/min)	368,04 ± 46,8 (290 – 454)
Qd (mL/min)	500

	Mean doses	% patients on target
Kt/v ≥ 1,3	1,57 ± 0,2	**86,3 %**
Kt/v ♂ > 1,3	1,4 ± 0,2	**81,1 %**
Kt/v ♀ > 1,6	1,7 ± 0,2	
URR > 70%	72 ± 7 %	**73,8 %**
Kt > 45 L	46,8 ± 6,1 L	54 %
Kt ♂ > 50L	48,1 ± 6,4 L	
Kt ♀ > 45 L	44,3 ± 4,9 L	**38 %**
Kt ASC	46,8 ± 6,1 L	**31 %**

Dialysis dose by Kt/v

	Kt/v ≥ 1,3/1,6 (n: 82)	Kt/v < 1,3/1,6 (n: 21)	p
Years (años)	63 ± 12	60,7 ± 11	ns
BMI (Kg/m²)	26,8 ± 5	33,4 ± 5	**0.000**
Time on HD (meses)	58 ± 43	35,9 ± 29	**0.011**
Session HD time (min)	235,8 ± 14	232,4 ± 15	ns
Qb (mL/min)	367,9 ± 44	353,4 ± 42	ns

	Sig.	Exp(B)	I.C. 95,0% EXP(B) Low	Upper
IMC	**,007**	,872	,789	,963
Gender	,413	1,607	,516	5,006
Time on HD	**,009**	1,042	1,010	1,075

Dialysis dose by Kt

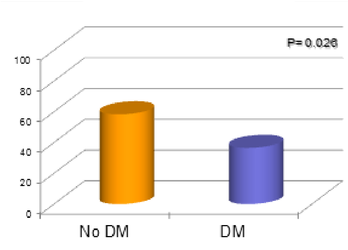
	Kt > 45/50 L (n: 41)	Kt < 45/50 L (n: 62)	p
Years (años)	59,5 ± 10	64,9 ± 12,8	**0.026**
BMI (Kg/m²)	29,8 ± 6,2	26,9 ± 4,7	**0.015**
Time on HD (meses)	60 ± 38	50,5 ± 44	**ns**
Session HD time (min)	241,6 ± 7	231,2 ± 16	**0.000**
Qb (mL/min)	405,9 ± 33	340,4 ± 28	**0.000**

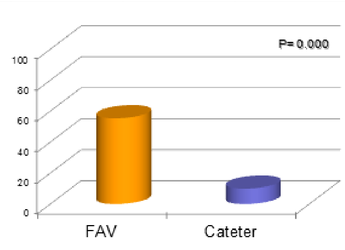
	Sig.	Exp(B)	95% C.I EXP (B) Low	Upper
Years	**,030**	,954	,915	,995
Gender	,357	1,678	,557	5,051
IMC	,104	1,084	,984	1,194
Vascular acces	**,017**	13,656	1,595	116,924
Session HD time	**,015**	1,066	1,012	1,123
Diabetes	,178	2,022	,726	5,631

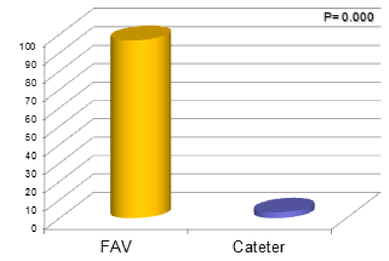
Dialysis dose by Kt-ASC

	Kt ASC optimum (n: 32)	Kt ASC no optimum (n: 71)	p
Years (años)	59 ± 14	64,6 ± 11	**0.049**
BMI (Kg/m²)	28 ± 5	28 ± 6	**ns**
Time on HD (meses)	72,3 ± 53	47,8 ± 43	**0,012**
Session HD time (min)	240,7 ± 8	232,7 ± 15	**0.001**
Qb (mL/min)	408,5 ± 38	345,7 ± 30	**0.000**

	Sig.	Exp(B)	95% C.I. EXP(B) Low	Upper
Years	**,035**	,956	,922	,996
Gender	,240	1,997	,630	6,324
Vascular acces	**,019**	8,605	1,535	70,45
Session HD time	**,009**	1,112	1,020	1,145







In the univariate analysis Kt was higher in patients with more weight, younger age, male gender, nondiabetics, arteriovenus fistulas, increasing blood flow rate and higher session effective duration; the Kt/v was higher in males, in lower BMI and longer time on dialysis and Kt-ASC in arteriovenus fistulas, younger age and higher blood flow rate. In multivariate analysis were significant weight and blood flow rate for Kt; BMI for Kt/v and blood flow rate for ASC- Kt.

CONCLUSIONS

1) The blood flow rate, dialysis time and vascular access are determinants for adequate hemodialysis dose.
2) Monitoring dialysis dose with Kt is a good clinical measure of adequacy and shows more demanding method: the Kt/V value was on target in 81% of the patients, but only in 38% according to Kt measure for their gender
3) BSA Kt shown even more demanding method than Kt for their gender; given the high prevalence of obesity in our sample, studies would be needed to determine the optimal Kt according ASC adapted to our population.