COMPARISON OF CITRATE 4% AND HEPARIN AS TUNNELED-CATHETERS-LOCKING SOLUTIONS IN CHRONIC HEMODIALYSIS

Guillaume Chazot[a], Manolie Mehdi[a], Christie Lorriaux[a], Patrik Deleaval[a], Brice Mayor[a], Guillaume Jean[a], Charles Chazot[a], Sylvain Lechevallier[b], Oriane Moncel[a], Cyril Vo-Van[a], et Jean-Marc Hurot[a]

[a] Nephrocare Tassin-Charcot, 7 avenue du Maréchal Foch, 69110 Saint Foy-lès-Lyon

[b] Laboratoire d'analyses médicales, Sainte-Foy-Lès-Lyon, Grand Vallon, 7 avenue du Maréchal Foch, 69110 Saint Foy-lès-Lyon

Introduction

Citrate 4% is an alternative to heparin as catheter-locking solution in patients on chronic maintenance hemodialysis[1,2,3]. We compared catheter dysfunction episodes, dialysis adequacy, tissue plasminogen activators use and costs according to catheter-locking solution in our centre.

Methods

Prospective, monocentric, cohort study (NephroCare Tassin-Charcot) on 49 prevalent patients on chronic maintenance hemodialysis. 2 main groups were formed according to the prescription of catheter-locking solution at the beginning of the study (03/02/2016) and followed until 05/10/2016: "Heparin » (*n*=26) and « Citrate » (*n*=22).

Results

The number of diabetic patients was higher in the « Citrate » group (12/22) **than in the "Heparin" one** (5/26, p=0.025). **The 2 groups were comparable for the other studied variables.**

Variable	Heparin (n=26)	Citrate (n=22)	p
Age, y (SD)	74.28 (15.8)	72.12 (17.5)	0.65
Male, n (%)	13(50.0)	10 (45.4)	0.98
Diabetes, n (%)	5 (19.2)	12(54.5)	0.025
Duration on HD, y (25th to 75th percentile)	2.68(4.89)	1.27(1.95)	0.067
Current catheter duration, y (25th to 75th percentile)	1.04(1.81)	1.21(2.01)	0.912
Platelet count, n (SD)	200.8 (66.2)	208.1 (66.6)	0.706
Warfarin use, n (%)	12 (46.1)	8 (36.3)	0.695
Blood flow, mL/min (SD)	300.7 (25.6)	304.3 (34.8)	0.69
Duration of sessions, min (SD)	267.7 (51.6)	266.4 (54.3)	0.93

***Table 1*. Clinical and biological characteristics.**

SD, Standard Deviation; HD, Hemodialysis.

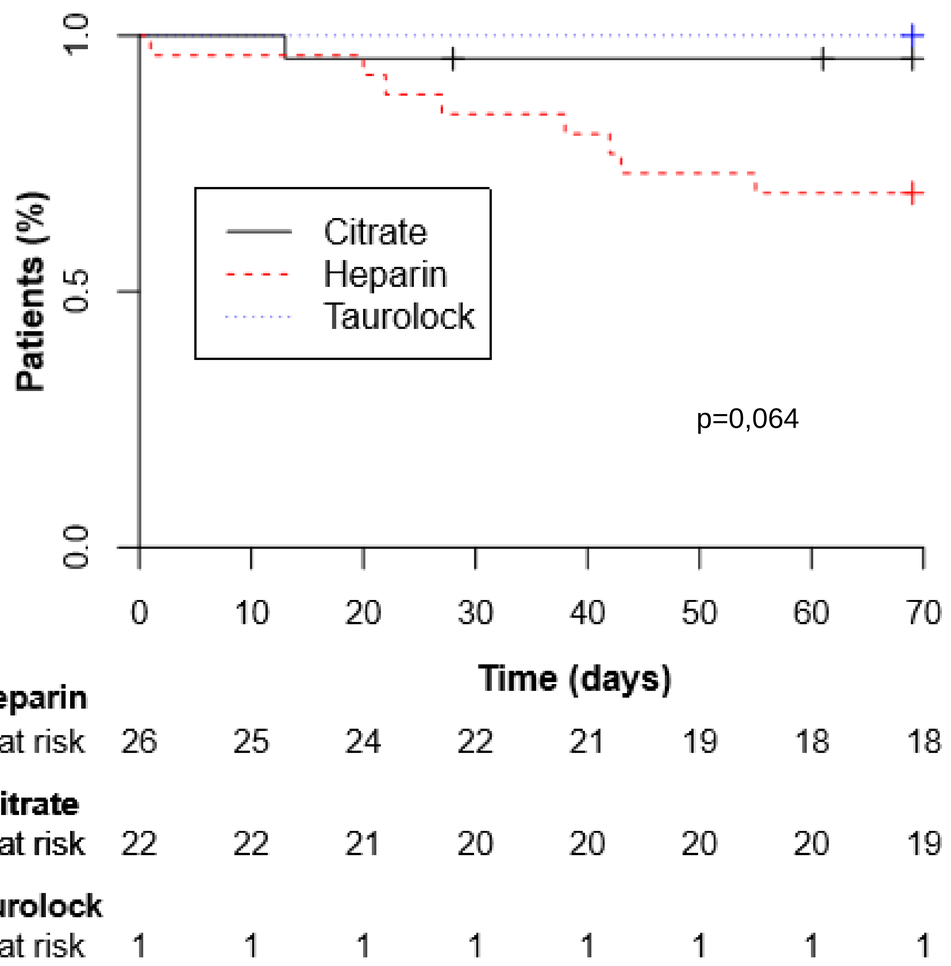

***Figure 1*. Catheter functionality without TPA use**

TPA, Tissue Plasminogen Activator.

.

We didn't observe any difference in terms of catheter-dysfunction (4.23 versus 4.14% in « Heparin » and « Citrate » groups, respectively, p=1.0). **None catheter-associated bacteriemia occurred.**

Variable	Heparin (n=946)	Citrate (n=604)	p
Catheter dysfunction, n (%)	40 (4.23)	25 (4.14)	1.0
TPA use, n (%)	14 (1.48)	1 (0.17)	0.022
Blood flow lower than 230 mL/min, n (%)	34 (3.59)	25 (4.14)	0.70
Catheter-associated bacteriemia, n	0	0	

***Table 2*. Catheter dysfunction and catheter-associated bacteriemia.**

TPA, Tissue Plasminogen Activator.

We didn't observe any difference in terms of dialysis adequacy

Variable	Heparin (n=26)	Citrate (n=22)	p
Blood volume processed, % (SD)	93.06 (4.54)	94.32 (4.29)	0.33
Effective dialysis time, % (SD)	97.76 (2.02)	97.17 (3.22)	0.46
Blood flow, % (SD)	95.16 (0.04)	97.0 (0.03)	0.11
Kt/V, (SD)	1.49 (0.36)	1.48 (0.49)	0.93

***Table 3*. Blood volume processed, effective dialysis time, blood flow and Kt/V.**

Data are expressed as percentage of blood volume prescribed, dialysis time prescribed and blood flow prescribed.

The prescription of Citrate was associated with lower TPA uses (1/604 versus 14/946, p=0.022) **and lower costs** (1.42 € for one session versus *2.94 €).*

	Heparin (n=946)	Citrate (n=604)
Locking-solutions use-associated costs, €	1892	797.28
TPA use-associated costs, €	885.78	63.27
Total costs, €	2777.78	860.55
Average cost by session, €	2.94	1.42

***Table 4*. Costs.**

TPA, Tissue Plasminogen Activator.

Conclusion

Administration of Citrate 4% as a catheter-locking solution is not inferior to Heparin in terms of catheter-dysfunction episodes, is associated with similar dialysis adequacy results, lower tissue plasminogen activators uses and reduced costs in prevalent patients on chronic maintenance hemodialysis.

References

1-« Buturovic J, Ponikvar R, Kandus A, et al. Filling hemodialysis catheters in the interdialytic period: heparin versus citrate versus polygeline: a prospective randomized study. *Artif Organs*. 1998;22(11):945-947. », s. d.

2- Gert Meeus et al., « A Prospective, Randomized, Double-Blind Crossover Study on the Use of 5% Citrate Lock versus 10% Citrate Lock in Permanent Hemodialysis Catheters », *Blood Purification* 23, nº 2 (28 février 2005): 101-5, doi:10.1159/000083203.

3-« Hendrickx L, Kuypers D, Evenepoel P, Maes B, Messiaen T, VanrenterghemY: A comparative prospective study on the use of low concentrate citrate lock versus heparin lock in permanent dialysis catheters. *Int J Artif Organs* 24: 206–211, 2001 », s. d.

54 ERA
600--SP
Dialysis - Vascular access I
Guillaume Chazot
DOI: 10.3252/pso.eu.54ERA.2017
ePosters supported by F. Hoffmann- La Roche Ltd.
54TH ERA-EDTA CONGRESS Madrid Spain June 3rd-6th 2017
PosterSessionOnline.com