

RECOMBINANT TISSUE PLASMINOGEN ACTIVATOR PLUS CITRATE *VERSUS* CITRATE ALONE AS CATHETER LOCK FOR TUNNELLED CATHETERS OF HEMODIALYSIS

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INTRODUCTION:

- The solution used to fill the lumens of the tunnelled catheters for haemodialysis (lock) influences catheter-related complications, such as inadequate blood flow and dialysis efficacy. It is unknown whether a lock strategy with weekly administration of Recombinant Tissue Plasminogen Activator (rt-PA) and of citrate on the remainder sessions of dialysis is associated with better catheter blood flow and increased dose of dialysis when compared with citrate alone.

METHODS:

- We performed a prospective cross-over study in 16 patients to compare weekly administration of 1mg per catheter lumen of rt-PA and citrate 4% on the remainder sessions with citrate 4% administration on all dialysis sessions. Each lock strategy was performed for 24 weeks separated by a 4-week wash-out period. We performed a random effects model and two paired t-tests (in each intervention group and in each patient) to compare the mean blood flow and single-pool Kt/V (spKt/V) of each dialysis session

RESULTS:

16 subjects enrolled

6 maintained the catheter while it was necessary:

- 3 died from causes unrelated with the dialysis catheter
- 3 received a fistula or graft

5 out of these 6 were on the citrate alone strategy (less expensive)

- 1 (who was on the rt-PA/citrate strategy) had a bacteremia and removed the catheter
- 1 (who was on the citrate alone strategy) had a subdural hematoma; the investigators decided not to switch to the lock strategy with rt-PA/citrate

8 subjects switched to the second lock strategy and were eligible for blood flow comparison. They completed the 13 months of the study.

- Blood flow was higher on the rt-PA group

380.73 ± 33.43 mL/min versus 368.86 ± 34.86 mL/min; p-value <0.001).

- Mean increase on the random-effects model after adjustment for time was 13.79 mL/min (95% CI 10.23-17.34 mL/min).
- High variability between subjects on the difference in blood flow achieved with the two lock strategies (non-significant in 4 subjects; from 8 to 51 mL/min in the remainder).
- Regarding spKt/V, the mean value was: 1.43 on the rt-PA group and 1.39 on the citrate alone group.

Subject number	Sex	Age (years)	Cause of renal failure	Days since hemodialysis was started	Days since insertion of the tunnelled catheter	Lock strategy performed on the first 24 weeks of the study
1	Male	69	Diabetes mellitus	130	115	rt-PA/citrate
2	Female	83	Hypertension	468	438	rt-PA/citrate
5	Female	86	Urinary tract obstruction	2102	278	rt-PA/citrate
6	Male	48	Autosomal Dominant Polycystic Kidney Disease	1302	749	rt-PA/citrate
7	Male	48	Chronic pyelonephritis	704	444	Citrate alone
8	Male	65	Diabetes mellitus	129	124	rt-PA/citrate
9	Male	75	Cardiorenal Syndrome	152	132	rt-PA/citrate
13	Male	56	Unknown	5527	81	Citrate alone

Patient number	Lock strategy	Blood flow (mL/min) (Mean±SD)	Mean difference on blood flow (mL/min) between lock strategies (95% confidence interval)	p-value
1	Citrate alone rt-PA/citrate	346 ± 36 376 ± 30	31 (20 a 42)	<0,001
2	Citrate alone rt-PA/citrate	342 ± 28 343 ± 36	2 (-10 a 13)	0,764
5	Citrate alone rt-PA/citrate	363 ± 23 366 ± 22	(-4 a 10)	0,493
6	Citrate alone rt-PA/citrate	357 ± 29 370 ± 24	37 (4 a 21)	0,005
7	Citrate alone rt-PA/citrate	356 ± 33 392 ± 36	51 (25 a 49)	<0,001
8	Citrate alone rt-PA/citrate	397 ± 22 404 ± 19	8 (0 a 15)	0,04
9	Citrate alone rt-PA/citrate	384 ± 21 384 ± 23	0 (-7 a 0)	0,951
13	Citrate alone rt-PA/citrate	406 ± 17 409 ± 18	3 (-2 a 9)	0,262

CONCLUSION:

- When compared with citrate alone, **weekly administration of rt-PA was associated with higher blood flow and spKt/V. We consider the clinical benefit of this intervention questionable**, since the mean increase on blood flow was 13.79 mL/min and in 4 out of 8 patients was not significant. Dose of dialysis achieved the recommended target in both groups.

CONTACTS

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