THE IMPACT OF ACUTE KIDNEY INJURY ON IN-HOSPITAL MORTALITY IN ACUTE ISCHEMIC STROKE PATIENTS UNDERGOING INTRAVENOUS THROMBOLYSIS

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Intravenous thrombolytic therapy (iv. rt-PA) seems to be the most effective treatment for the acute ischemic stroke (AIS). In the same time, acute kidney injury (AKI) continues to contribute significantly to morbidity and mortality in a variety of critical care settings. Nevertheless, the impact of AKI on iv. rt-PA for AIS has not been evaluated. This study aims to investigate whether AKI impacts on in-hospital mortality in AIS patients undergoing iv. rt-PA.

Method

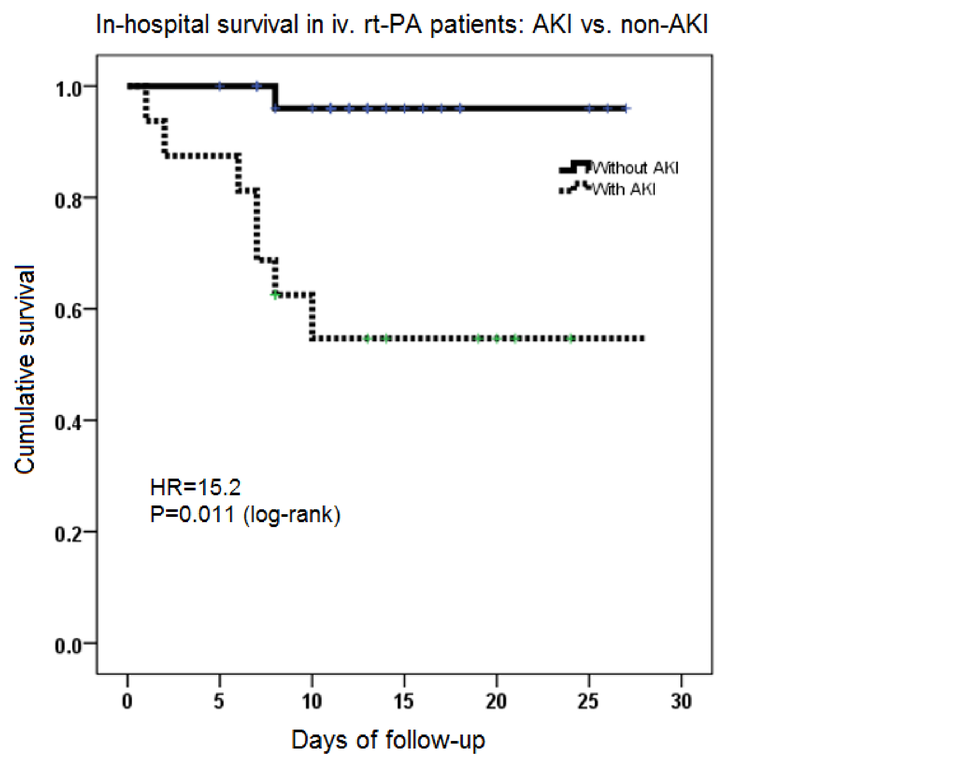
- We included 45 patients (median age = 64 years; 29 (64.44%) males) who consecutively underwent iv. rt-PA for AIS from January 2013 to January 2015.
- The matched-control group consisted of 59 AIS patients (median age = 64 years, 29 (49.15% males) who were not eligible for iv. rt-PA because onset-to-door time was longer than the therapeutic window-time (>4.5h).
- Subjects have been followed-up until hospital release or death (median follow up time = 12 days).
- AKI was defined according to KDIGO AKI Guidelines.
- Stroke severity was evaluated using the National Institutes of Health Stroke Scale (NIHSS) score and iv. rt-PA was used according to the current guidelines.
- Data have been processed using SPSS 17 data analysis system.

Results

Parameter		Thrombolysed group (n=45)	Not-thrombolysed group (n=59)	P
Age (years)		64 [16]	65 [19]	0.24
Male gender (n[%])		29 (64.44 %)	29 (49.15%)	0.16
Cigarette smoking		22 (48.88 %)	20 (33.89%)	0.15
Alcohol consumption		19 (39.58 %)	10 (16.94%)	0.007
Coronary arterial disease		29 (64.44 %)	38 (64.4%)	0.98
Arterial hypertension		33 (73.33 %)	40 (67.8%)	0.69
Atrial fibrillation		8 (17.77 %)	12 (20.33%)	0.80
Congestive heart failure		4 (8.88%)	6 (10.16%)	0.82
Previous ischemic stroke		1 (2.22 %)	10 (16.94%)	0.021
Diabetes mellitus		9 (20 %)	15 (25.42%)	0.64
Dyslipidemia		23 (51.11 %)	21 (35.6%)	0.16
rt-PA dosage (mg)		71.21 ± 12.55	-	-
NIHSS on admission		15 [6.5]	16 [6]	0.18
ASPECTS on admission		9.2 ± 1.08	9.37 ± 1.05	0.54
Body mass index (kg/m2)		27.16 ± 4.12	28.4 ± 4.34	0.14
Blood glucose (mg/dl)		117 [33]	123 [71]	0.15
Serum creatinine (mg/dl)		0.93 ± 0.44	1.04 ± 0.66	0.57
eGFR (ml/min/1.73m2)		82.75 ± 20.51	77.25 ± 25.58	0.22
Haemoglobin (g/dl)		14.05 ± 1.36	13.55 ± 2.05	0.138
Hematocrit (%)		42.2 ± 4.19	40.8 ± 6.34	0.20
Stroke subtype (n [%])				
	Lacunar	9 (20 %)	12 (20.33%)	0.96
	Atherosclerotic	12 (26.66 %)	16 (27.11%)	0.95
	Cardioembolic	8 (17.77 %)	11 (18.64%)	0.80
	Ccryptogenic	16 (35.55 %)	20 (33.89%)	0.86
Simptomatic intracranial haemorrhage		9 (20 %)	-	-
AKI (n[%])		16 (35.5%)	20 (33.9%)	0.86
Death in 30 day (n [%])		9 (20 %)	21 (35.6%)	0.125

- In the group treated with iv. rt-PA, the development of AKI was associated with an increased incidence of both overall in-hospital mortality (50.0% vs. 3.4%; P<0.001) and also in a time-to-event manner (HR=15.2; 95%CI [1.87 to 124.24]; P=0.011).
- In the matched-control group, in-hospital mortality rate in patients with AKI was higher as compared to those without AKI: 45 % (9 patients) vs. 30.7 % (12 patients).

Predictor	B	OR [95% CI]	P
Age (per one year increase)	0.032	1.03 [0.94 to 1.13]	0.488
eGFR (per one ml/min/1.73m2 increase)	- 0.078	0.925 [0.87 to 0.98]	0.013
BMI (per one kg/m2 increase)	0.307	1.36 [1.01 to 1.71]	0.049
Hematocrit (per 3Hct units increase)	0.952	2.59 [1.02 to 6.58]	0.045



- Patients with AKI treated with iv.rt-PA had a similar risk of in-hospital mortality as compared to patients with AKI not treated with iv. rt-PA (HR=0.95, 95%CI [0.354 to 2.57], P=0.92].
- Without superimposed AKI, patients treated with iv. rt-PA had a significant lower risk of in-hospital mortality than those not treated with iv. rt-PA (HR=0.121, 95%CI [0.016 to 0.942], P=0.04).
- The independent predictors for the development of AKI in patients treated with iv. rt-PA were: baseline eGFR, body mass index, respectively baseline haematocrit (logistic regression model explained 59.9% of the development of AKI, Nagelkerke R2=0.599).

Conclusions

Our study has indicated that there is an increased risk for AKI associated to AIS. Thrombolysis itself has not been associated with a higher risk of AKI development. As compared to non-AKI patients, those who developed AKI had a higher rate of in-hospital mortality, both in the iv. rt-PA treated group and in the not-treated group. The in-hospital outcome associated to treatment with iv. rt-PA proved to be better only in the cases without superimposed AKI.

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