

Early Clinical Improvement After Administration Of Tissue Plasminogen Activator On A Mobile Stroke Unit Occurs With Treatment Within The First Two Hours From Last Known Normal

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Introduction

- Earlier treatment with intravenous tissue plasminogen activator (tPA) is associated with improved clinical outcomes.
- Mobile stroke units (MSU) can speed treatment with tPA for stroke patients.

Objective

- To investigate the effect of earlier tPA administration on the MSU on clinical presentation to the emergency department (ED).

Methods

- 191 patients treated with tPA on three MSUs participating in the BEST-MSU study were included.
- Baseline scores on the National Institutes of Health Stroke Scale (NIHSS) on the MSU were compared to scores upon ED arrival across different time epochs.
- Time from last known normal (LKN) to tPA bolus and MSU on-scene arrival time to tPA bolus were analyzed.

Results

- Improvement in NIHSS scores was associated with tPA treatment within two hours of LKN and within 40 minutes from MSU arrival on-scene.
- 19 patients (10%) had absence of significant deficits upon ED arrival.

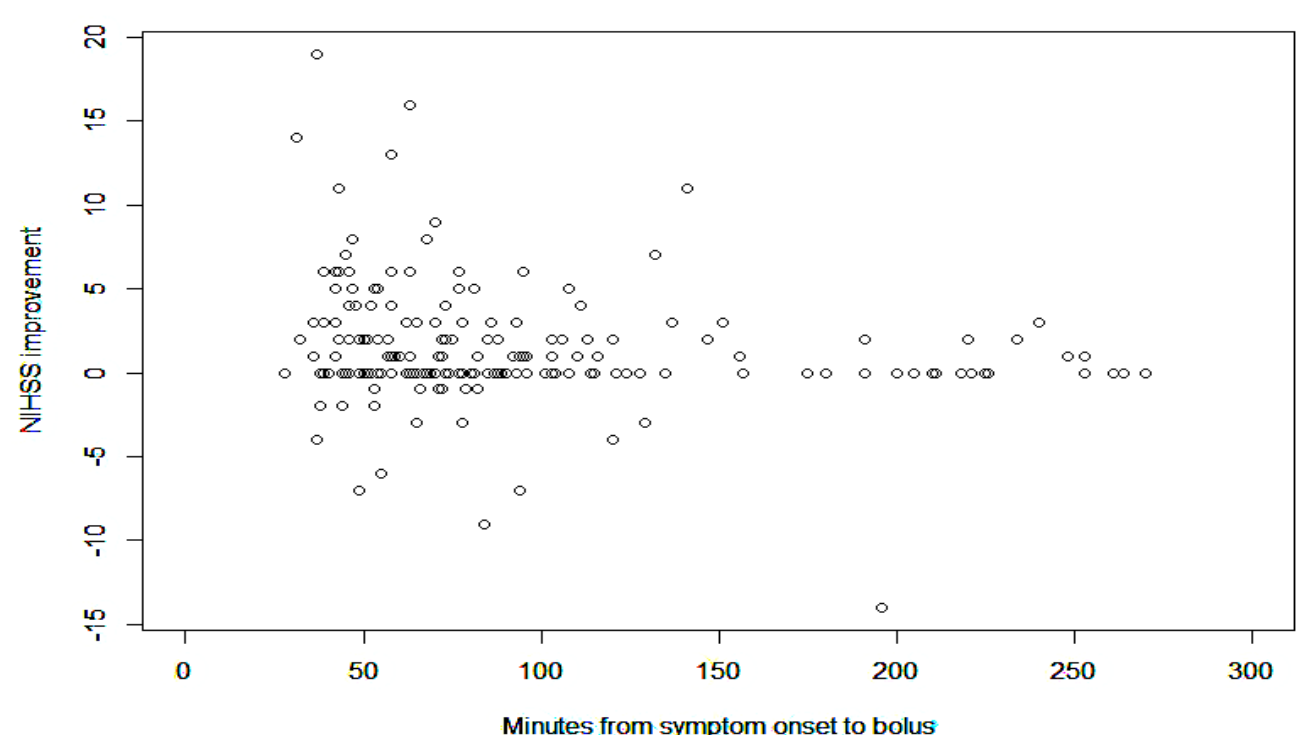
NIHSS comparison by last known normal to tPA-bolus time

Times (min)	Baseline NIHSS, mean (SD)	ED arrival NIHSS, mean (SD)	Improvement, N (%)	P-value	NIHSS 0 or 1, N (%)
Entire group (N=191)	10.5 (7.8)	9.1 (7.9)	94 (49%)	<0.001	19 (10%)
0-60 (N=69)	11.6 (8.5)	9.3 (8.5)	41 (59%)	<0.001	9 (13%)
60-120 (N=86)	9.7 (7.3)	8.5 (7.5)	40 (47%)	<0.001	9 (10%)
120-180 (N=15)	14.6 (8.1)	13.1 (9.7)	7 (47%)	0.15	1 (7%)
>180 (N=21)	7.6 (4.8)	7.8 (5.6)	6 (29%)	0.85	0 (0%)

NIHSS comparison by MSU on-scene to tPA-bolus time

Times (min)	Baseline NIHSS, mean (SD)	ED arrival NIHSS, mean (SD)	Improvement, N (%)	P-value	NIHSS 0 or 1, N (%)
Entire group (N=189)	10.6 (7.8)	9.1 (7.9)	94 (50%)	<0.001	19 (10%)
<20 (N=50)	11.1 (7.6)	9.4 (7.8)	21 (42%)	0.02	3 (6%)
20-30 (N=91)	10.7 (8.2)	9.4 (8.3)	45 (49%)	<0.001	11 (12%)
30-40 (N=36)	10.0 (7.2)	8.0 (7.2)	23 (64%)	0.01	5 (14%)
>40 (N=12)	9.4 (8.1)	9.3 (9.1)	5 (42%)	0.87	0 (0%)

Association of NIHSS improvement and last known well to tPA bolus



**Higher numbers indicate more improvement

Conclusion

Early clinical improvement mainly occurs with treatment within the **first two hours** from LKN in patients treated with tPA on a MSU.