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# Complications from IV Alteplase in Mild Stroke Patients in a Multi-state Hospital System

L Yanase MD, L Lucas MS, L Corless MPH, E Baraban MPH PhD



## Background/Objectives

- Risk of complication versus potential benefit is considered when deciding whether to treat acute ischemic stroke with IV alteplase (tPA).
- Symptomatic intracerebral hemorrhage (sICH) rate is often quoted as 6.4% based on the NINDS trials.
- sICH risk often makes patients and physicians wary of tPA treatment for mild ischemic stroke (MIS)<sup>1</sup>.
- 2018 ASA guidelines removed MIS as a relative contraindication to tPA<sup>2</sup>.
- A few small studies have revealed mixed outcomes and treatment complications in MIS<sup>2,3</sup>.
- This study compared tPA-related complications in MIS vs. moderate-to-severe stroke in a large hospital system.

## Methods

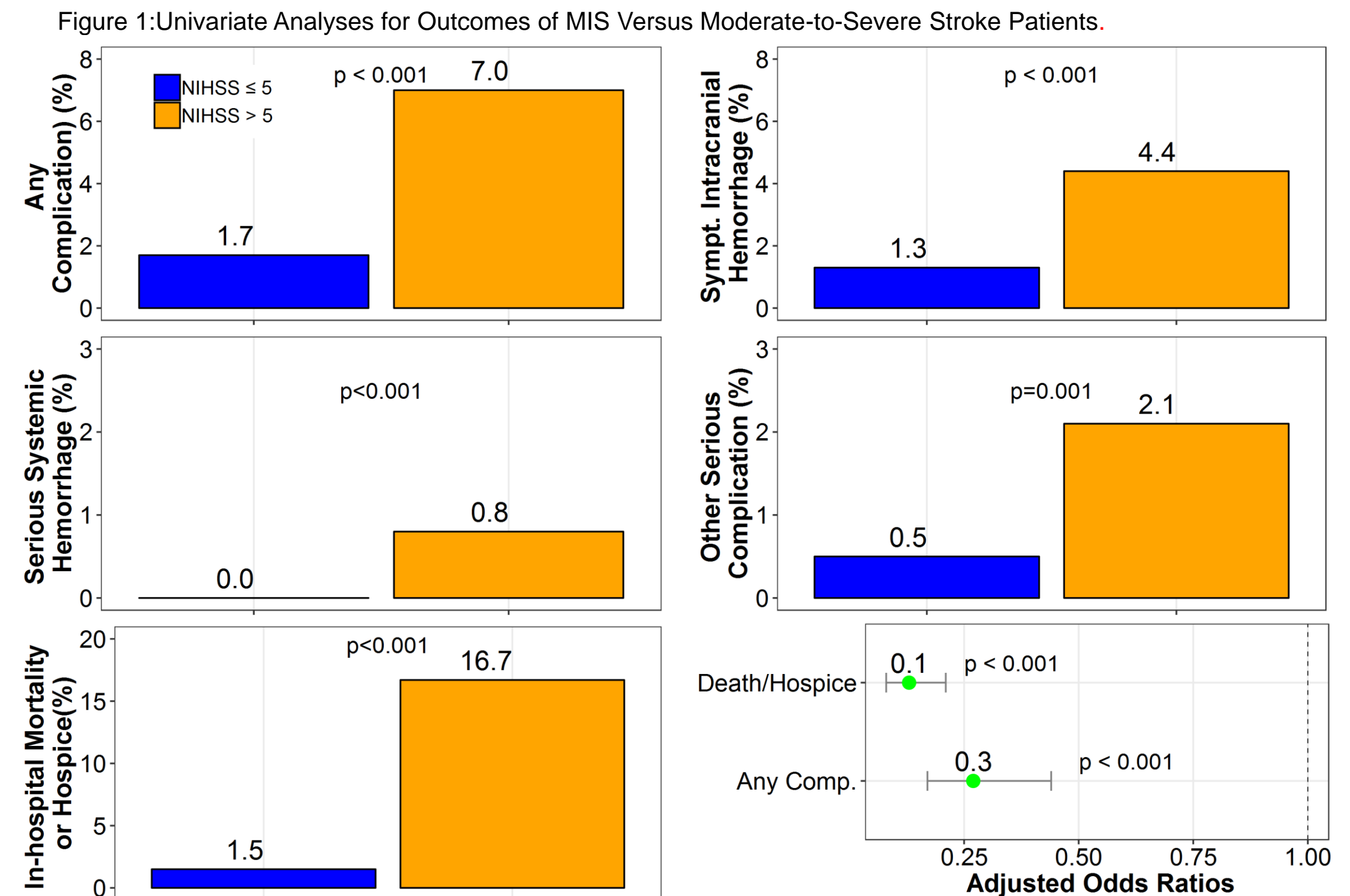
- Data from a multi-state hospital system included all tPA-treated patients discharged between January 2011 and May 2018.
- Patients who were <18 years old, received thrombectomy, transferred to another hospital, or had an inpatient stroke were excluded.
- Outcomes included percentage of patients who experienced any complication, sICH, life-threatening systemic hemorrhage, other serious complication, or in-hospital mortality or discharge to hospice.
- Chi-squared and Fisher's exact tests and generalized linear models were used to compare outcomes between patients with MIS (NIHSS≤5) and moderate-to-severe strokes (NIHSS>5).

Table 1. Patient Characteristics<sup>1</sup>

	NIHSS≤5 (n=1,111)	NIHSS>5 (n=1,976)	P-value
Age, mean (SD)	65.53 (14.52)	73.02 (15.08)	<0.001
Admit NIHSS, median [IQR]	3.00 [2.00, 4.00]	12.00 [8.00, 19.00]	<0.001
Female, % (n)	45.0 (500)	52.1 (1,029)	<0.001
Stroke Certification Level, % (n)			<0.001
Comprehensive	14.3 (159)	8.1 (160)	
None	4.7 (52)	5.2 (103)	
Primary	81.0 (900)	86.7 (1,713)	
Arrived via EMS, % (n)	61.7 (685)	86.9 (1,718)	<0.001
History of Atrial Fibrillation, % (n)	11.5 (130)	25.3 (517)	<0.001
History of Hypertension, % (n)	66.2 (745)	74.2 (1,490)	<0.001
History of Diabetes, % (n)	25.0 (282)	28.6 (573)	0.038
History of Coronary Artery Disease or Prior MI, % (n)	19.9 (224)	24.9 (500)	0.002
Smoker, % (n)	16.9 (190)	16.7 (335)	0.935

1. Multivariate analyses adjusted for variables listed above.

## Results



- A total of 3,087 patients met inclusion criteria, of these 36.0% (1,111) had a mild stroke.
- MIS patients were less likely than moderate-to-severe stroke patients to have sICH (1.3% vs. 4.4%; p<0.001), life-threatening systemic hemorrhage (0% vs. 0.8%; p<0.001), or other serious complications (0.5% vs. 2.1%; p<0.001) (Figure 1).
- In multivariate analysis, patients with MIS were 73% (95% CI: 56, 83; p<0.001) less likely than those with moderate-to-severe stroke to have any complication and 87% (95% CI: 79, 92; p<0.001) less likely to die or discharge to hospice after adjusting for age, sex, hospital, and history of atrial fibrillation, hypertension, diabetes, and coronary artery disease or prior myocardial infarction (Figure 2).

## References

1. Demaerschalk B, et al. Scientific Rationale for the Inclusion and Exclusion Criteria for Intravenous Alteplase in Acute Ischemic Stroke. *Stroke* 2016;47:581-641.
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3. Shoujiang Y, et al. Efficacy and safety of intravenous recombinant tissue plasminogen activator in mild ischaemic stroke: a meta-analysis. *Stroke and Vascular Neurology.* 2018;3:e000106. doi:10.1136/svn-2017-00016.

Disclosures: LY, LL, LC, EB have no disclosures

## Conclusions

- Complications from tPA, including sICH and in-hospital mortality or discharge to hospice, were less frequent than in the NINDS studies.
- Complications from tPA in MIS were less frequent than moderate-to-severe stroke.
- Our data suggests that tPA treatment poses minimal risk in MIS.