

Predictors of Functional Outcome in Post-Mechanical Thrombectomy Patients

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Background

- Patients who have suffered acute ischemic stroke and are found to present large vessel occlusion are often managed with mechanical thrombectomy (MT) should they present within the prescribed procedure window. Past studies have raised concerns regarding over-selection and underutilization of endovascular therapy
- The need to recognize the best candidate for an invasive procedure, predict potential complications and outcomes, could possibly open the door for more inclusive patient selection and examine the feasibility of including patients previously thought to not benefit from MT.

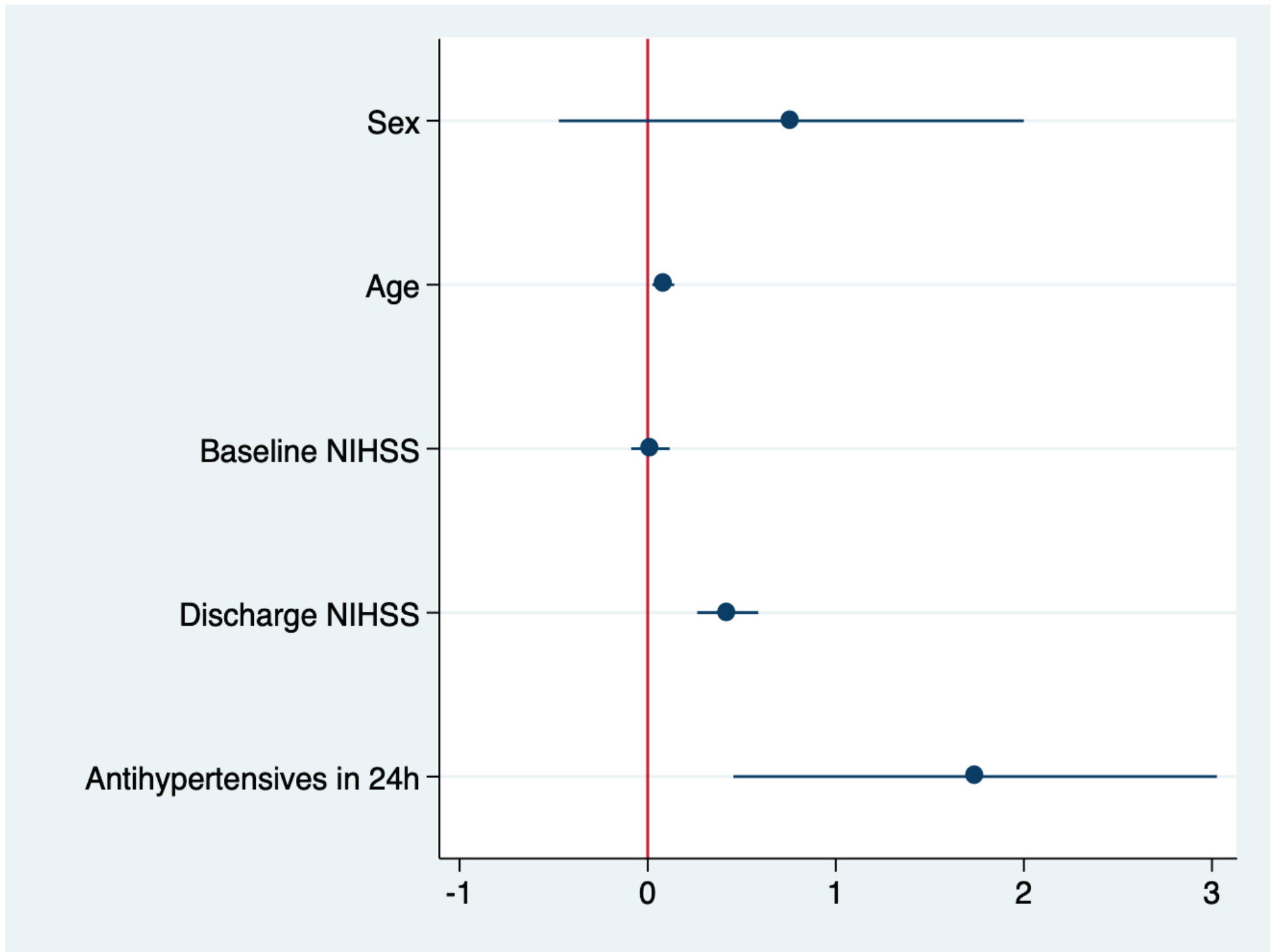
Methods

- A retrospective review of patients admitted to the neurocritical care unit at Baylor St. Luke’s Medical Center in Houston, Texas was conducted.
- Demographic data along with baseline and 24-hour post-MT NIHSS, vital signs, laboratory and radiological data. Neutrophil-lymphocyte (NLR) and platelet-lymphocyte (PLR) ratios were calculated.
- Data for continuous variables is presented as means and medians according to their normality distribution, and percentages for categorical variables.
- We compared means and medians with t-student and Wilcoxon-Mann-Whitney tests, respectively; as well as Fisher exact test for the comparison of proportions.
- Functional outcome, as indexed by 90-day mRS was modeled through univariate and multivariate logistic regression, significance was set at $p < 0.05$.
- Outcomes were dichotomized as poor (90-day mRS ≥ 3) or good (90-day mRS < 3).

Objectives

- The aim of this study is to identify potential variables that will serve as predictors of functional outcome, aid in patient selection and anticipate potential complications.

Multivariate Analysis



Odds ratios for independent significant predictors of poor outcome (mRS 3-6) after mechanical thrombectomy, sex and age adjusted multivariate analysis

Univariate Analysis

Variable	Odds Ratio	<i>p</i> -value
Age	1.04	0.0001
Baseline NIHSS	1.10	0.001
NIHSS 24 hours post procedure	1.31	0.0001
Discharge NIHSS	1.44	0.0001
History of DM	2.42	0.019
Hyperlipidemia	2.48	0.01
Hypertension 24 hours post procedure	2.63	0.005
Need for 2 antihypertensives	3.95	0.007
Pressor 24h	2.42	0.07
Acute Kidney Injury	2.72	0.001
PLR baseline	1.03	0.044
NLR baseline	1.12	0.008
PLR 24	1.03	0.013
NLR 24	1.15	0.001
LMR 24	0.50	0.0001

Results

- A total of 176 acute ischemic stroke patients underwent mechanical thrombectomy (MT).
- 52.3% male, age (65.6 ± 14.9 years) and median baseline NIHSS of 16.
- Patients with poor outcome were significantly older ($p = 0.0001$), had higher baseline ($p = 0.001$) and 24 hour post-MT ($p = 0.0001$) and discharge ($p = 0.0001$) NIHSS.
- Poor outcome was also associated to the use of antihypertensives within 24 hours post-MT ($p = 0.003$), the presence of acute kidney injury ($p = 0.0001$).
- Elevated baseline levels of PLR ($p = 0.044$), 24 hour post-MT PLR ($p = 0.013$) and baseline NLR ($p = 0.008$) were also associated with poor outcome.
- Multivariate analysis adjusted for sex and baseline NIHSS established age, discharge NIHSS and the need for antihypertensive in 24 hour post-MT as independent significant predictors of poor functional outcomes at three month follow up.

Conclusions

- Patients with poor outcome (90-day mRS ≥ 3), were significantly older, had higher baseline/24h and discharge NIHSS, more frequently required antihypertensives post MT, had greater incidence of AKI and higher values of baseline and 24-h PLR and NLR.
- Univariate and multivariate analysis confirmed these factors as independent predictors of poor outcome at 90 days follow up.
- Interestingly, the highest odds ratio for poor outcome was associated with the need for two or more antihypertensive medications during the post-MT period.

