

Patterns of Stroke Transfers and Predictors for Thrombectomy Post-MR CLEAN: A Single Center Experience

Raghav Gupta; Luciana Catanese; Christoph J. Griessenauer; Nimer Adeeb; Justin M. Moore; Apar S. Patel; Joseph Tarsia; Wendy Cohen; Ashkan Shoamanesh; Sandeep Kumar; Vaseileios Lioutas; Ajith J. Thomas; Magdy Selim; Christopher S. Ogilvy

Introduction

Recent trial data demonstrating the benefit of endovascular therapy (EVT) in conjunction with chemical thrombectomy for acute ischemic stroke (AIS) patients has led to increased referrals to comprehensive stroke centers for consideration of EVT. We aimed to characterize the baseline predictors and patterns of transfer for patients undergoing EVT at our institution.

Methods

Baseline demographics, vascular risk factors (age, diabetes, hypertension, history of coronary or carotid disease, atrial fibrillation, anticoagulation use, prior history of stroke/TIA), NIHSS scores, ASPECTS, time from symptom onset to CT and to tPA infusion, transfer time and presence of large vessel occlusion between patients who underwent EVT versus those who did not upon transfer, were recorded from June 2015-April 2016 for AIS patients at a single institution.

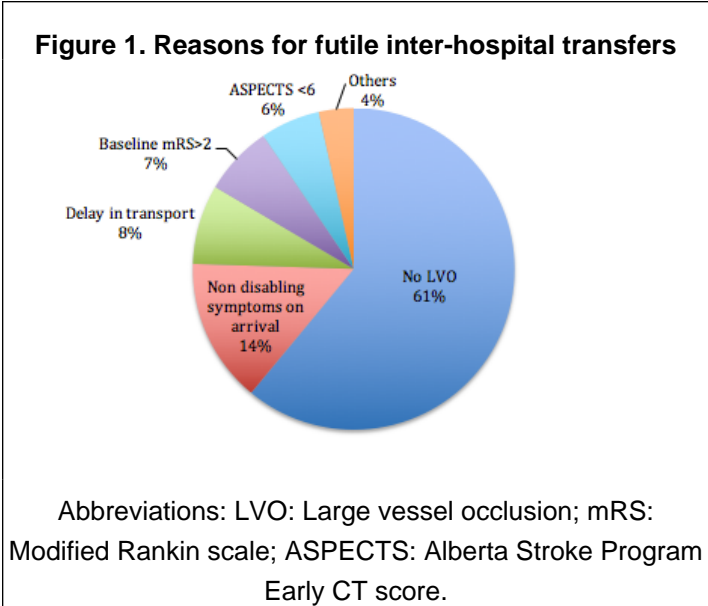


Table 1

Variable	Control (N=62)	Intervention (N=41)	P Value
Demographic characteristics			
Age in yrs (mean ± SD)	69.4 ± 7.7	66.3 ± 17.6	0.38
Female sex	34 (54)	18 (45)	0.38
White race	46 (78)	27 (81.8)	0.66
Medical History			
Hypertension	47 (75)	24 (60)	0.12
Hyperlipidemia	37 (58.7)	19 (47.5)	0.27
Atrial Fibrillation	19 (30.2)	17 (42.5)	0.20
Anticoagulation use	7 (11.1)	6 (15)	0.56
CAD	17 (27)	5 (12.5)	0.08
History of Stroke/TIA	11 (17.5)	11 (27.5)	0.23
Tobacco use	19 (30.2)	9 (22.5)	0.40
Diabetes	17 (27)	8 (20)	0.42
Clinical characteristics			
NIHSS score (median, IQR)	7 (4-11.25)	17 (13.25-21)	0.001
Baseline mRS (median, IQR)	0 (0-0)	0 (0-0.75)	0.85
SBP at hospital arrival in mmHg (mean ± SD)	149 ± 33	153 ± 29	0.47
DBP at hospital arrival in mmHg (mean ± SD)	80 ± 19	84 ± 15	0.22
Level of consciousness at hospital arrival per NIHSS (median, IQR)	0 (0-0)	0 (0-1)	0.01
Imaging Characteristics			
ASPECTS on CT (median, IQR)	10 (9-10)	10 (8-10)	0.27
LVO on arrival angiogram	19 (30.2)	14 (35)	0.61
ICA, M1 and/or basilar occlusion	17 (30)	12 (30)	0.97
Moderate or good collateral score	58 (95.1)	15 (37.5)	0.001
Clot Burden Score (median, IQR)	10 (9-10)	8 (7.25-8)	0.001
Process times in minutes			
Stroke onset to initial CT (median, IQR)	80 (54-131)	75 (47-104)	0.52
Stroke onset to tPA (mean ± SD)	146.5 ± 48.8	134.5 ± 49.9	0.3
Initial CT to ED arrival (mean ± SD)	152.7 ± 64.5	115.3 ± 63.9	0.005
Initial CT to groin puncture (median, IQR)	-	150 (102-214)	-
Initial CT to reperfusion (median, IQR)	-	221.3 (64.9)	-
Treatment with IV alteplase	49 (78)	29 (73)	0.54
Transfer characteristics			
Air transportation	7 (11)	9 (22.5)	0.12
Network Hospital (median, IQR)	45 (71.4)	18 (45)	0.007
Inter-hospital Distance (minutes) (median, IQR)	26 (25-57)	26 (15-50)	0.23
Inter-hospital Distance (miles) (median, IQR)	10 (8-41)	8 (4.8-33)	0.27

Data are presented number (n) and percentage (%) unless otherwise indicated. *p<0.05 **p<0.01 +First available CTA or DSA at receiving hospital. Abbreviations: yrs: years; CAD: coronary artery disease; TIA: transient ischemic attack; NIHSS: National Institute of Health Stroke Scale; CT: Computed Tomography; ASPECTS: Alberta Stroke Program Early CT Score; mRS: Modified Rankin Scale; IV: intra-venous, IQR: interquartile range, SBP: systolic blood pressure, DBP: diastolic blood pressure

Conclusions

In this single center study, lower NIHSS scores, higher collateral scores, lower clot burden scores, and lower age were independent predictors of endovascular therapy in patients transferred within 6 hours of symptom onset presenting with acute ischemic stroke.