



Introduction

Recent publication of results from MR Clean, ESCAPE, and EXTEND-IA have dramatically altered the treatment of acute ischemic stroke by demonstrating the efficacy of mechanical thrombectomy over intravenous alteplase. EXTEND-IA was stopped early due to overwhelming efficacy of thrombectomy group compared to control by using physiologic imaging study for patient selection. The very elderly (age > 80) was only barely included in the EXTEND-IA trial (age up to 81 for the interventional group). We present a series of 13 patients (age 80 – 97) whom received mechanical thrombectomies for acute ischemic stroke and their outcomes.

Age of Patients in Representative Trials	
Table 1. Representative stroke trials and the age of patients represented.	
Clinical Trials	Age of Patients (yrs)
IMS-III	18-82
SYNTHESIS EXPANSION	18-80
SWIFT	22-85
PENUMBRA PIVOTAL TRIAL	63.5 +/- 13.5
MERCI	67 +/- 15.5
NINDS Part I	<77
NINDS Part 2	<81
MR CLEAN	23-96 (IQR 54.5-76)
ESCAPE	No upper age limit, (IQR 60-81)
EXTEND-IA	No upper age limit, (oldest patient enrolled 81)

Methods

We retrospectively reviewed all mechanical thrombectomies presented at our institution from January 2012 to June 2014 and identified 18 patients whom received endovascular intervention for stroke. The CT perfusion findings, vessel occluded, TICI revascularization score, 3-month mRS were recorded and analyzed.

Results

Of these, 14 had physiologic imaging in the form of CT perfusion pre-operatively. 8 of these 14 patients had mostly penumbra on CT Perfusion study, while 6 patients had moderate penumbra and some core infarct pre-op. Good outcome (mRS = 2) was achieved in 5 patients, and 4 of those received pre-operative physiologic imaging studies (80% had physiologic imaging study among all patients with good outcomes, and 28.5% of all thrombectomy candidates based on CT Perfusion). Among patients whom showed mostly penumbra on CT Perfusion, 37.5% had good outcome after thrombectomy.

Patient Demographics and Outcomes			
Table 2. Baseline demographics with descriptive and univariate statistics for 18 study patients dichotomized by outcome			
	Good Outcome (n=5)	Bad Outcome (n=13)	p Value / t score
CT Perfusion Performed	4/5	9/13	0.8247
Vessel Occluded	LMCA = 2, RMCA = 1, RICA = 2	LMCA = 4, RMCA = 7, LICA = 1, Basilar = 1	0.1362
Gender	Male = 3, Female = 2	Male = 1, Female = 12	0.0168
iv-tPA given	0/3	3/3	0.2393
No iv-tPA	5/15	10/15	
Pre-op NIHSS (mean (St. Dev))	16.4 (9.5)	18.8 (5.5)	t: -0.68 critical value: 2.12
TICI score (mean (St.Dev))	2.6 (0.89)	2.38 (0.97)	t: 0.43 critical value: 2.08

Conclusions

Physiologic imaging studies in the form of CT Perfusion, although can be subjective, does play a role in selecting appropriate candidates for thrombectomies in the very elderly patient.

Learning Objectives

Being Very Elderly should not be excluded from mechanical thrombectomy, Physiologic imaging may play an effective role in providing a basis for patient selection.