

Endovascular stroke intervention: A Retrospective Analysis of Functional Outcomes in Elderly Stroke Patients Undergoing Endovascular Therapy

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Background

Advances in medicine have made quite an impact in the mortality of acute ischemic strokes, so much so that stroke has fallen from the second to the fifth leading cause of death in the United States, however stroke remains a leading cause of acquired long-term disability. The implementation of endovascular therapy (EVT) has been significant in the management of acute ischemic stroke (AIS) in allowing a broader time window from symptom onset, and wider category of patients considered eligible for attempt at revascularization. There is very limited data comparing the efficacy of EVT in the elderly compared to those <75 years old. The purpose of our study is to assess the benefit of EVT in the elderly, specifically 80 years or older, by looking at functional outcomes as ascertained by the modified Rankin scale, as well as mortality outcomes compared to standard medical management, in a city with a particularly elderly population.

Objective

To evaluate modified Rankin scores of patients who are 80 years or older who underwent mechanical thrombectomy and/or thromboaspiration between 2020-2022.

Methods

Compiling a descriptive study by evaluating data from 97 thrombectomy patients with the age range of 80-100 years old. Data was ascertained via a retrospective analysis of 97 stroke patients 80 years or older, from January 2020 to May 2022 who underwent mechanical thrombectomy/thrombo-aspiration and/or tPA.

Phase 1 Questions:

- What was the percentage of men and women in the population?
- What was the age proportions of the population?
- What was the breakdown of TICl scores?
- What percentage received tPA?
- What proportion of patients achieved a discharge mRS of 3 or less?

*Favorable outcome is defined as: if Pre-Morbid modified Rankin Score is <3, the post procedural mRS will also be <3. If pre-morbid mRS is 3 or greater, post procedural mRS will match their pre-morbid mRS. Definition of “favorable outcome” obtained from previous research: Majidi, S., Lee, J., Fifi, J. T., & Singh, P. (2020). Endovascular thrombectomy in octogenarians and nonagenarians with large vessel occlusion: Technical aspects and clinical outcomes. Journal of Stroke and Cerebrovascular Diseases, 29(10), 1–5.

Results

Age Cat	Frequency	Percent	Cum. Percent	Exact 95% LCL	Exact 95% UCL
80-89	69	71.13%	71.13%	61.05%	79.89%
90 or older	28	28.87%	100.00%	20.11%	38.95%
TOTAL	97	100.00%	100.00%		

mRS during ED Course of care	Frequency	Percent	Cum. Percent	Exact 95% LCL	Exact 95% UCL
2	2	2.53%	2.53%	0.31%	8.85%
3	3	3.80%	6.33%	0.79%	10.70%
4	9	11.39%	17.72%	5.34%	20.53
5	65	82.28%	100%	72.06	89.96
Total	79	100%	100%		

Tissue plasminogen activator (TPA)	Frequency	Percent	Cum. Percent	Exact 95% LCL	Exact 95% UCL
Yes	39	40.21%	40.21%	30.37%	50.65%
No	58	59.79%	100.00%	49.35%	69.53%
Total	97	100%	100%		

Thrombolysis in cerebral infraction	Frequency	Percent	Cum. Percent	Exact 95% LCL	Exact 95% UCL
2a - Some perfusion with distal branch filling of <50% of territory visualized	1	1.03%	1.03%	0.03%	5.61
2b - Substantial perfusion with distal branch filling of ?=50% of territory visualized	12	12.37%	13.40%	6.56%	20.61
2c - Near complete perfusion except for slow flow in few distal cortical vessels, or presence small distal cortical embolli	8	8%	22%	3.63%	15.61
3 - Complete perfusion with normal filling of all distal branches	75	77.32	98.97	67.70%	85.21
N/A	1	1.03	100	0.03%	5.61
Total	97	100	100		

Modified Ranking Score (mRS) at DC	Frequency	Percent	Cum. Percent	Exact 95% LCL	Exact 95% UCL
0	7	7.22%	7.22%	2.95%	14.30
1	4	4.12%	11.34%	1.13%	10.22
2	2	2%	13%	0.25%	7.25
2 to 3	3	3.09	16.49	0.64%	8.77
3	7	7.22	23.71	2.95%	14.3
4	13	13.4	37.11	7.33%	21.83
5	15	15.46	52.58	8.92%	24.22
6	30	30.93	83.51	21.93%	41.12
N/A	16	16.49	100	9.73%	25.4
Total	97	100	100		

Discussion

○71% of participants were 80-89 years old, 29% were 90+ years old

○66% of participants were women, 34% were men

○82% of participants had an ED mRS of 5

○40% of participants received Alteplase

○77% of cases achieved a TICl 3 reperfusion score

○Approx. 24% reached goal mRS with 16 participants not having any recorded mRS

Conclusion

- Results revealed 77% received a TICl 3 reperfusion score and approx. 24% reached goal mRS. COVID delta surge might have played a confounding role in the mortality rates.
- With this data, we hope to be able to identify specific risk factors, based on past medical history or imaging findings, which may place these patients at a higher risk for morbidity/mortality after thrombectomy. Ultimately, this may help with decision making in terms of acute management of those =/> 80 years old presenting with AIS.

References

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