

Introduction

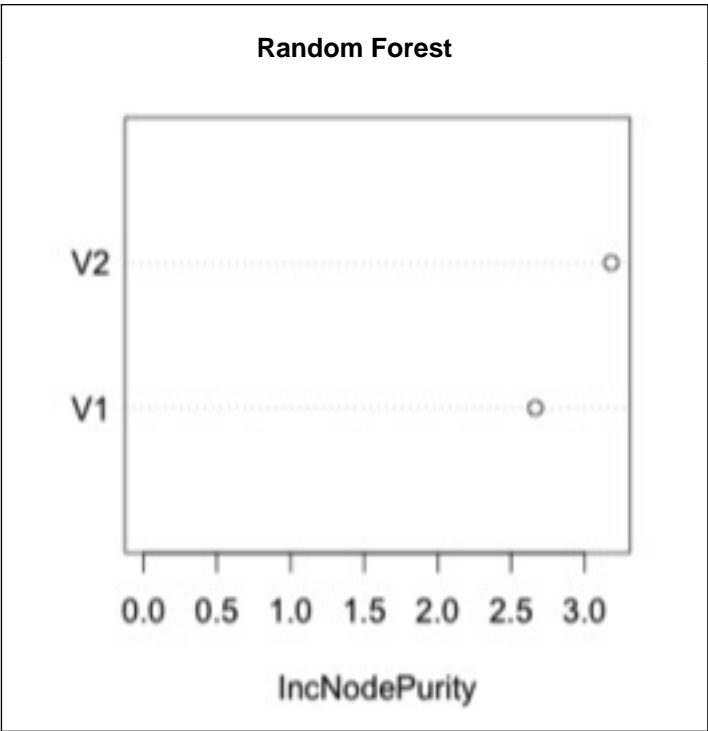
- Onset-to-recanalization is a commonly used metric associated with clinical outcomes in stroke. [1]
- Puncture-to-recanalization time has also been associated with clinical outcomes. [2]
- A more nuanced understanding of the treatment timeline through investigating relative importance of time intervals within onset-to-recanalization may help better define the therapeutic window for thrombectomy in stroke guidelines.

Methods

- We performed a retrospective analysis on 85 stroke patients who received endovascular treatment for acute stroke at four hospitals in Manhattan.
- Exclusion criteria include patients who received neurointervention more than 12 hours after last known well.
- Relative weight of onset-to-puncture and puncture-to-recanalization time intervals were determined using a generalized linear model and node impurity on random forest in R.

Our Aims

To determine relative impact of onset-to-puncture and puncture-to-recanalization times on clinical outcomes.



V1 = Onset-to-puncture  
V2 = Puncture-to-recanalization

	Mean (SD)	
Onset-to-recanalization	310.8	(110)
Onset-to-puncture	262.9	(113)
Puncture-to-recanalization	48.0	(36)
Change in NIHSS	-4.8	(14.4)
Days in hospital	13	(11)

	R value	p-value
Onset-to-recanalization and onset-to-puncture	-0.2032	0.0622
Onset-to-puncture and change in NIHSS	0.1699	0.1199
Puncture-to-recanalization and change in NIHSS	0.3837	0.0003
Onset-to-recanalization and change in NIHSS	0.2970	0.0058
Weighted onset-to-recanalization and change in NIHSS	0.3509	0.0001

Results

- Mean onset-to-puncture time was 311 minutes and mean puncture-to-recanalization time was 48 minutes with -4.8 change in NIHSS from admission to discharge.
- Onset-to-puncture and puncture-to-recanalization intervals were both found to be significant predictors of clinical outcomes in a generalized linear model (P=0.0090, P<0.0001).
- The model coefficients suggest every minute spent in an endovascular procedure is equivalent to 1.6 preprocedure minutes in terms of impact on clinical outcome.

Conclusions

- Procedure times comprised 16% of onset-to-recanalization times but have a disproportionate weight on immediate outcomes.
- This effect may be because puncture-to-recanalization occurs later in the onset-to-recanalization interval, and may not be related to occurrences specific to puncture-to-recanalization. Future studies will need to account for this potential confounder.
- Considering the relative importance of onset-to-puncture and puncture-to-recanalization may inform stroke protocols and therapeutic windows for intervention.

References

1. Saver, Jeffrey L., et al. "Time to treatment with endovascular thrombectomy and outcomes from ischemic stroke: A meta-analysis." *Jama* 316.12 (2016): 1279-1288.

2. Hassan, A. E., et al. "Microcatheter to recanalization (procedure time) predicts outcomes in endovascular treatment in patients with acute ischemic stroke: when do we stop?." *American Journal of Neuroradiology* 34.2 (2013): 354-359.