

Title:

Does Tenecteplase (TNK) Improve Door to Needle (DTN) Time compared to Alteplase (tPA) in Acute Ischemic Strokes at UMC?

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Background:

University Medical Center New Orleans (UMCNO), an Advanced Primary Stroke Center changed the thrombolytic of choice for acute ischemic stroke from Alteplase (tPA) to Tenecteplase (TNK) due to its longer half-life, fibrin specificity, and ease of administration in mid-2023. TNK is administered as a one-time intravenous injection making it considerably less intensive for nursing staff, when compared to tPA which requires a bolus followed by an infusion. Several studies have shown that the door-to-needle time for TNK is shorter than for tPA, thought to be related to the ease of administration. The goal of this review of the stroke registry data was to determine if door-to-needle time at our center improved after switching to TNK. Our secondary objective was to determine if the change from tPA to TNK impacted the mean improvement in the patients' National Institute of Health Stroke Score (NIHSS).

Methods:

We retrospectively analyzed data from our Advanced Primary Stroke Center Registry of consecutive patients with acute ischemic strokes at our facility who met indications for thrombolytics to determine the mean door-to-needle times in the six months prior and the six months post changing to TNK. We excluded data from the full month of the changeover to avoid potential spurious results due to staff using a new medication. The secondary outcome data were also obtained from the Stroke Registry during the same time periods, but we included only patients with a final diagnosis of acute ischemic stroke in our final analysis. Data were presented with 95% confidence intervals and means were analyzed using unpaired t-test.

Results:

A total of 38 patients received thrombolytic during the entire study period. 13 patients received tPA and 25 received TNK. The mean Door to Needle time of 76.8 minutes (95%CI = 56.5-97.1) in the tPA group, and 56.1 minutes (95% CI=47.9-64.3) in the TNK group. Using unpaired t test, the 20-minute mean lower Door to Needle of TNK was statistically significantly at $p = 0.0347$. 13 total patients received Alteplase (tPA), although only 4 had an acute ischemic stroke. 25 total patients received Tenecteplase (TNK), although only 12 had an acute ischemic stroke. Our secondary outcome of change in NIHSS between groups who received tPA vs TNK did not reach statistical significance ($p = 0.2175$). We identified a total of 16 patients who received thrombolytics and had a final diagnosis of acute ischemic stroke, and only 4 were in the tPA group.

Conclusion:

Tenecteplase (TNK) was associated with a statistically significant reduction in Door to Needle (DTN) time compared with those treated with Alteplase (tPA) in those with acute ischemic strokes at University Medical Center (UMC), an LCMC facility, in New Orleans, LA. Confounding factors were noted in the data. UMCNO began accepting prehospital stroke activations during the TNK data period. This increase in volume via Emergency Medical

Services likely led to an increase in the number of patients with acute ischemic strokes during that time period, but we are uncertain if this impacted our results. In addition, due to the small sample size of patients with a final diagnosis of acute ischemic stroke, we were unable to determine if the shorter door to needle time impacted patient-centered outcomes (the discharge NIHSS).

A future study with more patients may show the clinical effectiveness of thrombolytics in patients with acute ischemic strokes at UMC. Furthermore, this study may be expanded to include other nearby hospital systems to add more data.

References:

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