Evaluating the Impact of the COVID-19 Pandemic on Acute Ischemic Stroke Outcomes in the Stroke Belt

CO142

Erin Stitzlein, Farah Pathan, Ian Weimer, Kunal Lodaya, Fabian T.W. D'Souza

Boston Strategic Partners, Inc.

Presented at ISPOR 2023

BACKGROUND

- States in the South and Southeastern United States make up a region known as the Stroke Belt
- Data suggests that the Stroke Belt experiences both a higher incidence rate and higher mortality rate of stroke than other regions of the US[1]
- During the COVID-19 pandemic, hospitals experienced overwhelming capacities of critical patients, canceled elective procedures, and experienced delayed care seeking from patients[2,4]
- Therefore, it is important to evaluate how ischemic stroke outcomes in the vulnerable Stroke Belt region were impacted by the stress placed on the healthcare system during the COVID-19 pandemic

OBJECTIVE

Use electronic health record (EHR) data to assess the impact of COVID-19 pandemic on ischemic stroke outcomes, namely in-hospital mortality, 30-day mortality, morbidity, and thrombolytic administration in the Stroke Belt region of the US

METHODS

- A nationwide EHR database (Cerner Real-World Data) was used to evaluate patients (utilizing ICD-10 codes) in the Stroke Belt region of the US who were admitted to the Emergency Department (ED) with ischemic stroke
- Hospitals located in the US with zip codes beginning in 2, 3, and 7 (South/Southeastern States) were identified as the Stroke Belt[3]
- The pre-COVID-19 pandemic study period was from March 2019 to February 2020 and the COVID-19 study period was from March 2020 to February 2021
- Outcomes of interest were in-hospital mortality, 30-day mortality, morbidity rates (physical disability up to 1 year after ischemic stroke), and administration of thrombolytics within 3 hours of ED admission

RESULTS

- A total of 2,338 patients presented to the ED with ischemic stroke events during the pre-COVID-19 study period (49.5% males, mean age of 64.8 years, 69.6% were white) **(Table 1)**
- A total of 2,052 patients presented to the ED during the COVID-19 study period (50.9% males, mean age of 65.8, 71.5% were white) **(Table 1)**
- Administration of thrombolytics was significantly higher in the pre-COVID period than the COVID-19 period (14.5% vs. 12.2% respectively, p=0.028) **(Figure 1)**
- In-hospital mortality, 30-day mortality, and morbidity rates during the pre-COVID-19 study period were not significantly different as compared to the COVID-19 study period **(Figure 1)**

FIGURE 1. Ischemic Stroke Outcomes in the Stroke Belt

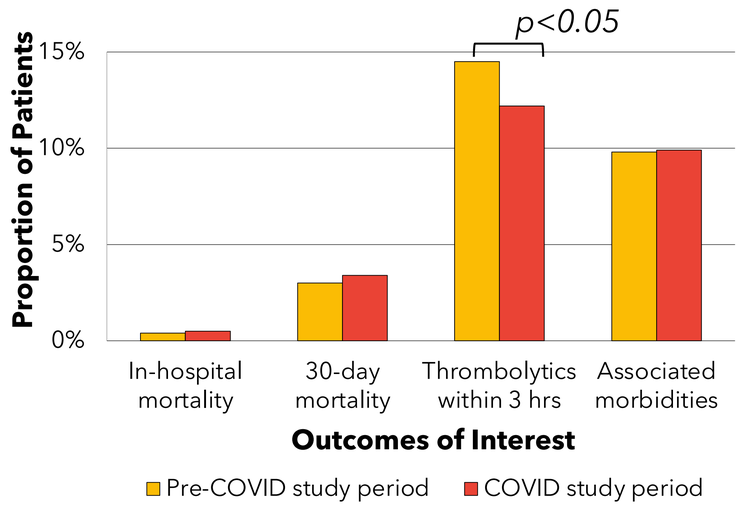

TABLE 1. Patient Demographics by Study Period

Characteristic	Pre-COVID (N = 2,338)	COVID (N = 2,052)
Age, mean ±SD	64.8 ± 15.2	65.8 ± 15.0
Sex, n (%)		
Male	1,158 (49.5%)	1,046 (50.9%)
Female	1,172 (50.1%)	999 (48.6%)
Other	8 (0.3%)	7 (0.3%)
Race, n (%)		
White	1,627 (69.6%)	1,468 (71.5%)
Black	475 (20.3%)	389 (19%)
Other*	80 (3.4%)	61 (2.9%)
Not Specified	156 (6.7%)	134 (6.5%)

**Includes those who identify as American Indian or Alaskan, Asian, Hispanic, Micronesian, or Mixed Race*

CONCLUSIONS

- The COVID-19 pandemic did not have a statistically significant impact on the mortality and morbidity of ischemic stroke patients located in the Stroke Belt despite a significant reduction of thrombolytic administration rate
- Due to the administration of thrombolytics within 3 hours being significantly reduced in during the pandemic without quantitative impact on mortality or morbidity, future studies should continue to assess the importance of thrombolytic administration with ischemic strokes
- Future studies should also account for other socio-demographic and policy related factors to assess the impact of the COVID-19 pandemic on ischemic stroke outcomes in the Stroke Belt and the rest of the US

REFERENCES

1. Burgansky, A., Coletta-Lucas, J., & Garcia, M. S. (2020). COVID-19 in a community hospital. Seminars in perinatology, 44(6), 151292. 2020.151292.
2. Czeisler, M. É., Marynak, K., Clarke, K., et al. (2020). Delay or Avoidance of Medical Care Because of COVID-19-Related Concerns - United States, June 2020. MMWR. Morbidity and mortality weekly report, 69(36), 1250–1257. PMID: 32915166.
3. Howard, G., & Howard, V. J. (2020). Twenty Years of Progress Toward Understanding the Stroke Belt. Stroke, 51(3), 742–750.
4. Karp, D. N., Wolff, C. S., Wiebe, D. J., Branas, C. C., Carr, B. G., & Mullen, M. T. (2016). Reassessing the Stroke Belt: Using Small Area Spatial Statistics to Identify Clusters of High Stroke Mortality in the United States. Stroke, 47(7), 1939–1942. PMID: 27197853