Is the COVID-19 pandemic magnifying disparities in stroke treatment?

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The coronavirus disease 2019 (COVID-19) pandemic has had widespread effects across healthcare systems worldwide.[1–3] Mounting evidence supports a relationship between COVID-19 and both stroke pathophysiology[4 5] and stroke systems of care, with decreased stroke presentations and delays in care.[6 7] The pandemic's effects have been felt at the patient level where fears of contagion may foster avoidance of the hospital environment,[8] at the provider level where working conditions have been strained, and at the healthcare system level where protean resource limitations have emerged. These challenges may be responsible for magnifying well-described and long-standing disparities in stroke care, including those involving race, ethnicity, sex, socioeconomic status, and disability.[9]

In their paper entitled "Alarming downtrend in mechanical thrombectomy rates in African American patients during the COVID-19 pandemic: insights from STAR", Al Kasab *et al* describe a retrospective study using prospectively collected data from the Stroke Thrombectomy and Aneurysm Registry (11 US centers, 1 German).[10] During the COVID-19 pandemic there were significantly fewer black patients treated with thrombectomy than expected based on historical data (24% of 235 patients in February to May 2020 compared with 33% of 1848 patients between January 2017 and February 2020, P=0.004). Only 2.1% of patients undergoing thrombectomy during the pandemic were positive for COVID-19. Furthermore, the pandemic was associated with longer procedure times (44 vs 38 min, P=0.006), longer hospitalization stays (6 vs 4 days, P<0.001), higher discharge modified Rankin Score (mRS) (4 vs 3, P=0.015), and higher in-hospital mortality (19% vs 11%, P<0.001). Among black patients only, there was a longer symptom onset-to-groin puncture time during the pandemic (362 vs 275 min, P=0.047).

Highlighting the critically important topic of disparities in neurointerventional surgery, this analysis raises many questions and should prompt readers to examine their own institutions for similar trends. The authors conducted a rigorous analysis of a multicenter cohort with a relatively large sample size: 1848 patients before the pandemic versus 235 during it. Institution level data included in the supplement reveal that these findings were not driven by any particular center. The study's greatest limitations are its retrospective design and its exclusion of patients with emergent large vessel occlusion (ELVO) who were not treated with thrombectomy. A better understanding of the denominator of all patients with ELVO who presented for acute care could help in understanding the results more completely.[11]

While there is no pathophysiologic expectation or evidence that different patient groups would experience different mechanisms of ischemia, infarction, and repair after stroke,[12 13] there are reports that black patients have a higher incidence of vascular risk factors and higher mortality after stroke.[14] System limitations may underlie reduced availability of thrombectomy in some regions,[15] but they do not readily explain disparities in this primarily US-based cohort. Furthermore, black patients have a higher risk of COVID-19 infection and higher associated mortality.[16] Al Kasab *et al* hypothesize that a key driver in their dataset may be that black patients are more reluctant to seek medical attention than those of other racial/ethnic backgrounds because of their perceived higher COVID-19 risk. A higher rate of medical mistrust is likely an additional contributor.[17] Their data may support this as black patients were the only subgroup to have a longer symptom onset-to-groin puncture time during the pandemic, and delays have been previously associated with reduced odds of treatment.[18] Another study during the pandemic showed that black patients were less likely to present with acute stroke symptoms in general.[19] However, other explanations are also possible. Added strain at the patient, provider, and system levels may be simply exposing and exacerbating pre-existing healthcare disparities.[20] Pervasive disparities related to cardiovascular health in general and stroke care have been described before the pandemic.[21]

Understanding disparities in neurointerventional surgery is of paramount importance in delivery of the best care, yet may be challenging despite their prevalence. Prior analyses have suggested that vulnerable groups of patients including racial and ethnic minorities have reduced access to other neurointerventional treatments as well, such as those for carotid stenosis and intracranial aneurysms.[22 23] There are similar examples of racial disparities in interventional cardiology; black patients undergo less coronary angiography, stent placement, and atherectomy.[24] Explanations have included an underuse of procedures among minorities driven by racial differences in presentations, access, and provider bias. Evidence-based strategies to target these problems specifically have made substantial progress and include policy change to expand access and bias reduction training.[25 26]

Further research is needed within these and other institutions to better understand the determinants of disparities and to develop informed action plans for their prompt mitigation.[27] These efforts should optimally include: (1) standardized collection and reporting of data on race, ethnicity, sex, socioeconomic status, disability, and the relationship of these variables to treatment status and outcomes; (2) development and deployment of measurable and standardized benchmarks of access to and equity in treatments; (3) work to understand and improve inclusion of historically under-represented groups within clinical trials. Empowered by data and enabled by action, clinicians, researchers, and policymakers can craft more equitable and ethical systems of neurointerventional care in our communities and around the world.

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