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A Notable Prevalence of HIV-Associated Stroke in an Endemic Region

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Low- and middle-income countries (LMICs) shoulder a disproportionate burden of HIV infection, which frequently intertwines with a high prevalence of non-communicable diseases (NCDs) such as stroke. Sub-Saharan Africa, for example, has 12% of the world population but 71% of HIV infections worldwide, and the prevalence of patients with stroke and co-existing HIV infection has risen.[1] This is supported by data from the USA which shows that admissions of patients with stroke and concurrent HIV infection have increased by 43% over 9 years.[2] Furthermore, people living with HIV (PLWH) are twice as likely to develop cardiovascular disease, and the global burden of HIV-associated cardiovascular disease has tripled over the past 2 decades.[3] HIV is now responsible for 2.6 million cardiovascular disease associated disability-adjusted life years (DALYs) per year, with the greatest impact in

Sub-Saharan Africa. This increase has occurred despite good antiretroviral therapy (ART) uptake. Despite this compelling evidence, the national stroke guidance in the continent of Africa makes no mention of HIV.[4]. Burden assessments, including incidence, prevalence, risk attribution, risk reduction, mortality and disability rates of HIV associated stroke in HIV endemic populations at a national, regional and continental level, are lacking, and would help drive the agenda forward. Although we have increasing certainty about the etiological role of HIV infection in stroke and our knowledge about the multifactorial mechanisms is improving, disproportionately few research articles are emerging from the regions most affected by HIV infection, limiting progress.

In this issue of Neurology®, Corbett at al.[5] report on a retrospective matched case-control study that gives important insight into the prevalence of HIV in patients with acute stroke. In addition, they describe the characteristics of HIV-associated stroke in a tertiary hospital setting in South Africa. They used electronic health records of adults presenting with any stroke to Tygerberg Hospital over a 12-month period and matched them by age to a group of PLWH and HIV-uninfected stroke patients [HIV(-)] in a 1:2 ratio. Among 884 patients presenting with an acute stroke, 82 (9.3%) were PLWH, 496 (56.1%) were HIV(-), and in 306 (34.6%) their HIV status was unknown. The minimum HIV prevalence was 9.3% and the adjusted prevalence was 13.3% when the HIV unknown stroke group were assumed to have a similar distribution of HIV prevalence as the the population in the Western Cape province.

Compared to the HIV(-) stroke group, PLWH and stroke were nearly a decade younger and had fewer traditional risk factors but more concurrent infections. This difference was more evident among those with a CD4 counts of <200 cells/mcl, who had more than double the risk of concurrent infection. Among PLWH, 68.3% were on ART, and 39.3% had been started or restarted on ART within the past 6-months. Ischemic strokes in PLWH were more likely to involve multiple vascular territories and the basal ganglia regions in HIV patients with stroke. Consistent with other studies, there was no noted difference in clinical presentation, ischemic stroke type, and in-hospital outcomes between the two groups.

This study adds to the understanding of the evolving interplay of HIV infection and stroke in Sub-Saharan Africa, with a growing burden in the ART era. It confirms the prominent role of HIV as an important risk factor for stroke, and the effort in estimating the HIV prevalence in acute stroke admissions is novel and applauded. The study also provides several important confirmations; 1) stroke in PLWH tends to occur in younger patients and usually in the absence of traditional risk factors,[6] 2) underlying infection may catalyze an inflammatory pathway when initiating or reinitiating ART, with immune reconstitution inflammatory syndrome (IRIS) hypothesized to underlie the mechanism leading to a stroke. The highest risk was among those with lower nadir CD4 count, and within 6 months of ART initiation,[7]

A key limitation of the study is its retrospective nature, which makes it subject to bias and confounding, but the consistency of the results with other published studies provides some external validity. The authors also acknowledged the limitation of the hospital-based study design, which may bias against the extremes in stroke severity. As a result, they can only estimate the prevalence of HIV in acute stroke admissions. This study's comprehensive and meticulous foundation introduces a more systematic approach to studying HIV and Stroke in HIV endemic regions. Their burden estimation gives insight into the merging epidemics of ageing HIV and stroke populations; currently, we can approximate that 1 in 10 acute stroke admissions will have HIV infection in this setting. Without any focused population interventions, the burden may increase. Thus, the study provides further evidence that more needs to be done to reduce this growing burden of stroke in PLWH. We commend the investigators for implementing this study in a resource-limited environment with many complexities to overcome to perform a research study that will undoubtedly contribute to improving the care of PLWH worldwide.

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