Risk factors for stroke in Tanzania

Stroke is a leading cause of death and disability worldwide, mandating the need for a global strategy for stroke prevention.\textsuperscript{1--3} Central to the development of a strategy for stroke prevention is the need to establish the importance of modifiable risk factors for stroke, both globally and within regions and countries. Whereas the age-adjusted incidence of stroke is decreasing in high-income countries, it is increasing in low-income and middle-income countries.\textsuperscript{4}

Until recently, our knowledge of risk factors for stroke was derived almost exclusively from western Europe and North America. Phase 1 of the INTERSTROKE study,\textsuperscript{3} which assessed the importance of risk factors in 22 high-income, middle-income, and low-income countries, reported that 90% of the population-attributable risk for stroke was associated with ten risk factors: hypertension, smoking, physical inactivity, poor diet, obesity, dyslipidaemia, diabetes mellitus, psychosocial stress, depression, and cardiac causes (eg, atrial fibrillation). Despite inclusion of 3000 cases and 3000 controls, this study was not large enough to reliably assess whether there were important regional variations in the effect of risk factors. Such information is essential to implement region-specific population-based interventions to reduce the burden of stroke. The full-scale INTERSTROKE study, which now includes more than 26,000 participants from 31 countries, and which is expected to be reported in 2014, will provide reliable estimates of the importance of risk factors for stroke (both overall and by subtype) in different regions of the world. Regional variations in the importance of risk factors for stroke might relate to variations in the prevalence or strength of association of common risk factors, or to the presence of unique risk factors in some regions or populations (eg, specific infections or rheumatic heart disease).\textsuperscript{5}

In The Lancet Global Health, Richard Walker and colleagues\textsuperscript{6} report the results of a case-control study of risk factors for stroke in Tanzania. Their study makes several important contributions. First, they provide the first information about importance of risk factors for stroke in urban and rural Tanzania, and confirm the feasibility of undertaking challenging stroke research in a low-income setting, for which the investigators should be congratulated. A key challenge in stroke research is identification of stroke subtype, because even the major distinction between ischaemic and haemorrhagic stroke requires neuroimaging, which is not completed in many patients in low-income settings because of poor availability and access and high costs. Neuroimaging is also required for exclusion of some non-stroke causes. In Walker and colleagues’ study, less than half of patients underwent CT scans of the brain.

Second, the investigators report the importance of known modifiable risk factors for stroke, of which hypertension, smoking, and hypercholesterolaemia were the most important. The prevalence of hypertension in cases and controls was very high, making it a key modifiable risk factor for stroke in Tanzania. Country-specific and region-specific information about risk factors for stroke is an essential step for raising of local awareness to inform health policy, even when information about some risk factors, such as hypertension, is largely confirmatory. The risk associated with dyslipidaemia (odds ratio 4·54, 95% CI 2·49--8·28) was higher than that reported in previous epidemiological studies,\textsuperscript{3,7} which might suggest that this disorder could be a greater risk factor in Africa than in other regions; however, this notion requires confirmation in larger studies. The study did not obtain data for diet, physical activity, or obesity, which are also likely to be important.

Third, Walker and colleagues provide information about emerging risk factors for stroke, which might have importance for specific approaches to prevent stroke in Tanzania. In this regard, the importance of HIV infection is a notable finding, and associated with a increase of five times in risk of stroke, which is larger than that reported in previous studies.\textsuperscript{8--10} However, HIV status was missing in 44% of the cohort and the methods of case recruitment might have introduced a selection bias for this risk factor. Furthermore, because only 40% of cases underwent neuroimaging, non-stroke causes might have been included among cases. Nevertheless, these findings are provocative, and should prompt future studies to examine this important issue in larger studies.

If these studies confirm the association of HIV with stroke, studies to better understand the pathophysiology of why HIV increases stroke risk and
specific interventions to reduce the risk will be needed. In the meantime, more vigorous efforts at control of hypertension, treatment of dyslipidaemia, and tobacco control should be the main focus of strategies to reduce the burden of stroke in Africa. In parallel, efforts to control the HIV epidemic should continue.

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