HIV and stroke

HIV infection and stroke: if not protein S deficiency then what explains the relationship?

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The use of anti-retroviral agents in HIV infection is associated with an increased risk of cardiovascular disease

Over the last two decades, reports have suggested that cardiovascular diseases such as angina, myocardial infarction, and stroke can be observed in young patients with human immunodeficiency virus (HIV) infection.[1] As we review this issue, three questions need to be addressed: (1) is the risk of stroke higher in HIV infected patients?; (2) what is the underlying mechanism for the increased risk; and (3) how is the risk modified by the use of new anti-retroviral agents?

Engstrom *et al*[2] conducted a retrospective study of 1600 patients with acquired immunodeficiency syndrome (AIDS) and recorded 12 strokes (0.75%) in 5 years. Comparing this number with the annual incidence of stroke among young adults (aged 35–45 years) in the general population (0.025%), they concluded that patients with AIDS seem to be at substantially higher risk for stroke. We performed a case control study to determine the association between HIV infection and stroke among young persons.[3] HIV infection was associated with stroke and ischaemic stroke after adjustment for other cerebrovascular risk factors. It was initially postulated that the increased risk of stroke, particularly ischaemic stroke, was mediated by the increased susceptibility of HIV infected patients to meningitis and protein S deficiency. The report by Mochan *et al* in this issue of the Journal of Neurology, Neurosurgery, and Psychiatry is an extension of a previous study conducted by the investigators.[4] In the previous report, the clinical, laboratory, and radiological characteristics of 33 heterosexual, HIV infected patients who presented with ischaemic strokes were prospectively studied. Underlying causes identified included coagulopathies, meningitis, cardioembolism, and hypertension. The most common coagulopathy was protein S deficiency observed in 11 of the 33 patients. In the present study, the investigators use a case control study to evaluate the relationship between protein S deficiency and ischaemic stroke in HIV infected men.[5] A comparison between HIV infected men with and without stroke suggests that protein S deficiency is a relatively common occurrence in HIV infected patients and is not related to the increased risk of stroke. The next question is: what explains the increased risk? Vasculopathies related to meningeal infections remain an important mechanism underlying the increased risk.[3] Novel mechanisms associated with HIV infection such as the promotion of atherosclerosis by a proinflammatory effect on endothelial cells, or the indirect induction of lipid abnormalities,[1] such as a reduction in HDL cholesterol and an elevation in triglycerides, may contribute to the increased risk.

Large studies have suggested that use of anti-retroviral agents is associated with an increased risk of cardiovascular disease, particularly myocardial infarction.[1] Anti-retroviral drugs can lead to premature atherosclerosis by inducing elevations in cholesterol and triglyceride levels, insulin resistance, and lipodystrophy.[1] Further studies are nedded to evaluate the effect of anti-retroviral agents on the risk of stroke.

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