STROKE

Common pathogens increase stroke risk

Results from the Northern Manhattan Study show that infectious disease burden is significantly associated with an increased risk of stroke. "There is evidence that chronic infections may be a contributing risk factor to vascular diseases, such as heart attack and stroke, and we had a large cohort of participants and an excellent opportunity to see whether we could find evidence that the burden of infectious disease might be associated with stroke risk," explains Mitchell Elkind from Colombia University, New York.

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In the US, stroke is the third leading cause of death and the leading cause of serious disability. Many strokes occur in patients without any signs of classic risk factors—hypertension, cardiac disease and smoking—and, therefore, additional stroke risk factors need to be identified. Existing evidence suggests that certain latent or chronic infections with *Chlamydia pneumoniae*, *Helicobacter pylori* or herpesviruses can damage blood vessels and induce atherosclerosis.

Elkind and colleagues enrolled 3,298 people from the Northern Manhattan area between 1993 and 2001 as part of a community-based prospective cohort study to investigate stroke incidence, risk factors and predictors of severity and outcome. They collected baseline data (such as blood pressure, height, weight and history of hypertension or diabetes mellitis) and blood samples from a subset of 1,625 individuals. The researchers conducted an annual follow-up to assess patients' vital status, hospitalizations and presence of stroke or myocardial infarction symptoms. They also measured levels of markers of inflammation—leukocyte count and high-sensitivity C-reactive protein—and conducted serological tests against five common pathogens —*C. pneumoniae*, *H. pylori*, cytomegalovirus, herpes simplex virus 1 and herpes simplex virus 2—to assess their association with stroke. They found that each individual infection was positively associated with stroke and that the combined effects of the infections were significantly associated with stroke after adjusting for risk factors.

"Our scoring system did not artificially assume that all infections were equal in their vascular risk but, rather, allowed each infection to have a different effect," adds Elkind, who plans to validate his approach in other cohorts. His team will also test whether an association exists with other stroke-risk and atherosclerosis measures, such as carotid plaque thickness, or with brain injury and cognitive changes.

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Original article Elkind, M. S. V. *et al*. Infectious burden and risk of stroke: The Northern Manhattan Study. *Arch. Neurol.* **67**, 33–38 (2010)
Further reading Elkind, M. S. V. *et al*. Infectious burden and carotid plaque thickness: The Northern Manhattan Study. *Stroke* doi.10.1161/STROKEAHA.109.571299