

## STROKE

## Embolus detection could predict risk of stroke

People with previously asymptomatic carotid stenosis account for a large proportion of stroke cases, but identifying those who are most at risk and require surgery is both difficult and controversial. Now, however, a group of neurologists has suggested a new means of identifying those patients who are most at risk from ipsilateral stroke.

“...identification of emboli ... provided an independent predictor of ... elevated risk of stroke...”

Problematically, most patients with asymptomatic carotid stenosis will not experience a transient ischemic attack before a major, disabling stroke, and no markers exist for predicting such an occurrence. As a result, needless, risky pre-emptive surgery is often carried out on patients who have a very low risk of

stroke—for every stroke prevented in this group of patients, around 85 operations must be performed.

The research team used transcranial Doppler ultrasound to examine the flow of blood within the brain's blood vessels and to detect small blood clots, also known as emboli. According to lead author Hugh Markus, of St George's, University of London, UK, “emboli reflect more ultrasound than the surrounding blood cells, resulting in short-duration, high-intensity signals, which are seen on the recording and heard as characteristic blips or chirps.”

Being able to spot these emboli means that it may be possible to plan an appropriate surgical intervention—namely, carotid endarterectomy—before the emboli break up and pass into the brain, thereby preventing stroke.

The Asymptomatic Carotid Emboli Study, which was funded by the British Heart Foundation, UK, was larger than previous studies, which produced

unconvincing and inconclusive results. The researchers recruited 482 patients (467 of whom provided usable data) with asymptomatic carotid stenosis from around the world, over the period 1999–2007.

The team showed that identification of emboli by their painless and noninvasive technique provided an independent predictor of those groups at elevated risk of stroke over the next 2 years, and “could be used to identify individuals in whom one should operate, and [those] in whom operation should not be performed,” says Markus. He adds that a reliable automated technique must now be found to identify the specific embolic signals so that this technique can be widely applied in clinical practice.

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