The correlation of carotid plaque pathohistological features and neurological symptoms: A meta-analysis of observational studies

The authors[1] have carried out an important service by their meta-analysis, which strengthens the evidence that plaque characteristics are strongly associated with clinical outcomes. They have shown clearly that ulceration is a feature of plaques that are vulnerable to rupture; intraplaque hemorrhage is also associated with events in their linear analysis. In the search for identifying patients with vulnerable plaque prone to events before their plaques can be examined histologically, it will be necessary to bring forward the recognition of vulnerable plaques to identification before the plaques can be examined histologically. This task will fall to those developing methods for imaging of atherosclerosis.

Although ulcers cannot be seen well by angiography, they can now be reliably detected by three-dimensional ultrasound.[2] Fenster and colleagues are now working on quantifying plaque surface roughness,[3] an approach that may identify vulnerable plaques at an earlier stage. Magnetic resonance imaging (MRI) with multiple sequences has been used to analyze plaque characteristics such as calcification, intraplaque hemorrhage and lipid core,[4] and gray-scale analysis of carotid ultrasound images, though not yet as advanced as MRI, shows promise for revealing features of plaques at risk.[5] Three-dimensional ultrasound is a powerful approach for assessing response to therapy.[6] An interesting approach has been assessment of “hot” plaques by positron emission tomography with fluorodeoxyglucose.[7]

To bridge these two worlds of imaging and histology will require preoperative imaging studies in patients scheduled for endarterectomy; this approach has been used to some extent,[8] but requires more work using multiple imaging modalities, perhaps including transcranial Doppler detection of microemboli, which are strongly predictive of vascular events in patients with asymptomatic carotid stenosis.[9]

J. David Spence
Stroke Prevention and Atherosclerosis Research Centre, 1400 Western Rd, London, ON, Canada N6G 2V2. E-mail: dspence@robarts.ca

References