**Stuck in the Stenotic Age: What lessons can Stroke learn from Cardiology for the investigation and management of carotid disease?**

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The recent review on the management of carotid atherosclerosis by Bonati et al. is a welcome and comprehensive overview of the advances in the treatment of this important cause of stroke.1 It is now thirty years since the seminal North American Symptomatic Carotid Trial, and Professor Bonati and colleagues rightly highlight the improvements in treatment over the intervening decades. However, these therapeutic advances have not been matched by developments in imaging strategies for identifying vulnerable carotid atherosclerotic plaques. Despite the importance of plaque morphology and pathophysiology in the risk-stratification of carotid atherosclerosis, imaging techniques for evaluating such processes are largely confined to research. Consequently, clinical practice remains entrenched in a stenosis-based approach to risk stratification and management.

In this regard, Stroke Medicine may learn from precision medicine imaging techniques being developed and employed in Cardiology. CT coronary calcium scoring is now used in routine clinical practice, where plaque burden measured by the calcium score – rather than degree of stenosis – is the main predictor for cardiovascular events and death.2 Furthermore, CT techniques have been developed to quantify the inhibitory effect from coronary plaque inflammation on lipid accumulation in adjacent adipocytes, measuring a ‘fat attenuation index’ in peri-coronary fat, the addition of which results in superior risk stratification for cardiac mortality compared to high-risk plaque features on CT angiography alone.3 This approach may aid differentiation between active versus quiescent disease, allowing prognostication and management to be tailored accordingly. These techniques have been further refined by machine learning.4 However, despite the wealth of imaging available in the routine diagnostic work-up of stroke, particularly CT and CT angiography, similar approaches have received little attention in the research or clinical management of carotid disease.

The treatment of carotid atherosclerosis may also benefit from emulating intravascular approaches used clinically in Cardiology. Within coronary arteries, intravascular ultrasound and optical coherence tomography may enhance intraluminal evaluation of plaque morphology, and optimise stent selection and placement. Whether similar approaches may improve the assessment and interventions for carotid atheroma remains under-investigated.

Few aspects of medicine remain unchanged over a thirty-year timeframe, yet the imaging of carotid atherosclerosis is doggedly stuck in the twentieth century. In contrast, investigations for coronary disease have made great advances in moving beyond a stenosis paradigm. A more integrated approach between vascular neurologists and cardiologists to share such techniques holds promise for improving the management of carotid atherosclerosis and bringing it into the 21st century.

**References**

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