

Cerebral small vessel disease (CSVD) is the most common brain wide manifestation of ageing-related insidious and chronic cerebrovascular disease that primarily affects the microcirculatory network (small arteries, capillaries, arterioles and venules) which could inflict parenchymal changes and/or abnormalities. It serves as a precursor to a quarter of ischaemic strokes, and is the most common pathology for cognitive decline and dementia in the current setting of global ageing population. In the past five decades since its first description, despite progress seen in neuroimaging for detection and classification, our understanding of its pathophysiology and therapeutic option remains poor, and largely based on the large artery disease. More recently, evidence on brain fluid dynamics shed light to expand on the CSVD pathomechanism from the rheological perspective of the blood-brain barrier. In this talk, building from our own CSVD research, we feature the current concepts on CSVD and the rheological viewpoint of the brain fluid dynamics, and highlight the challenges and opportunities for basic and clinical research to contribute towards aetiopathogenesis understanding, diagnostic, preventive as well as therapeutic strategies for CSVD.