EMBOLUS EXTRAVASATION IN THE CEREBRAL MICROCIRCULATION: A MECHANISM WITH POTENTIAL IMPLICATIONS IN ALZHEIMER’S AND VASCULAR DEMENTIA

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We recently described a novel mechanism for recanalization of cerebral microvessels alternative to the fibrinolytic system. This process involves the engulfment of entire emboli by the endothelium of capillaries and microarterioles followed by their extrusion through a vessel opening into the perivascular parenchyma. If an analogous clearance mechanism is present in humans it could play an important role in preventing neurovascular injury throughout life given that small vessels may be prone to spontaneous occlusion by microclots or debris not susceptible to fibrinolysis. In old mice, emboli clearance was found to be impaired which led to persistent hypoxia and perivascular cell death. Clearance efficiency may be further reduced in Alzheimer's disease due to microvascular amyloid deposition. Therefore, embolus removal failure could constitute an unappreciated mechanism of neurovascular degeneration. Further understanding of this mechanism could generate new insights into stroke recovery, age related cognitive decline and the links between Alzheimer's and vascular pathologies.