Contractile protein

Work with fluorescent transgenic reporter mice has identified subpopulations of brain pericytes with variable structure and expression of specific proteins, such as the contractile protein a-SMA [1].

Pericyte contractile protein expression is also altered in a number of disease states, such as ischemic stroke or subarachnoid hemorrhage [2]. [3].

Evidence from a variety of sources suggests that pericytes have contractile properties and may therefore function in the regulation of capillary blood flow. However, it has been suggested that contractility is not a ubiquitous function of pericytes, and that pericytes surrounding true capillaries apparently lack the machinery for contraction.

A study used a variety of techniques to investigate the expression of contractile proteins in the pericytes of the CNS. The results of immunocytochemistry on cryosections of brain and retina, retinal whole-mounts and immunoblotting of isolated brain capillaries indicate strong expression of the Smooth muscle actin (alpha-SM actin) in a significant number of mid-capillary pericytes. Immunogold labelling at the ultrastructural level showed that alpha-SM actin expression in capillaries was exclusive to pericytes, and endothelial cells were negative. Compared to alpha-SM actin, non-muscle myosin was present in lower concentrations. By contrast, smooth muscle myosin isoforms, were absent. Pericytes were strongly positive for the intermediate filament protein vimentin, but lacked desmin which was consistently found in vascular smooth muscle cells. These results add support for a contractile role in pericytes of the CNS microvasculature, similar to that of vascular smooth muscle cells [4].

1)
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2)
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3)
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