Apolipoprotein E

Apolipoprotein E (ApoE) is a glycoprotein with a major role in brain lipoprotein metabolism. It has three isoforms encoded by distinct alleles: APOE $\epsilon$ 2, APOE $\epsilon$ 3 and APOE $\epsilon$ 4.

## Apolipoprotein E and subarachnoid hemorrhage

Apolipoprotein E (Apoe) genetic polymorphisms have been implicated in the long term outcome of subarachnoid haemorrhage (SAH), but little is known about the effect of Apoe on the early brain injury (EBI) after SAH. A study investigated the potential role of APOE in EBI post-SAH. Multiple techniques were used to determine the early BBB disruption in EBI post-SAH in a murine model using wild-type (WT) and Apoe-/- (KO) mice. Progressive BBB disruption (Evans blue extravasation and T2 hyperintensity in magnetic resonance imaging) was observed before the peak of endogenous APOE expression elevation at 48h after SAH. Moreover, Apoe-/- mice exhibited more severe BBB disruption charcteristics after SAH than WT mice, including higher levels of Evans blue and IgG extravasation, T2 hyperintensity in magnetic resonance imaging, tight junction proteins degradation and endothelial cells death. Mechanistically, we found that APOE restores the BBB integrity in the acute stage after SAH via the cyclophilin A (CypA)-NF-κB-proinflammatory cytokines-MMP-9 signalling pathway. Consequently, although early BBB disruption causes neurological dysfunctions after SAH, we capture a different aspect of the effects of APOE on EBI after SAH that previous studies had overlooked and open up the idea of BBB disruption as a target of APOE-based therapy for EBI amelioration research in the future <sup>1</sup>.

1)

Pang J, Wu Y, Peng J, Yang P, Kuai L, Qin X, Cao F, Sun X, Chen L, Vitek MP, Jiang Y. Potential implications of Apolipoprotein E in early brain injury after experimental subarachnoid hemorrhage: involvement in the modulation of blood-brain barrier integrity. Oncotarget. 2016 Jul 24. doi:



10.18632/oncotarget.10821. [Epub ahead of print] PubMed PMID: 27463015.

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