Matrix metalloproteinase-9 in cerebral-amyloid-angiopathy-related hemorrhage.

許重義

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Abstract

Spontaneous intracerebral hemorrhage (ICH) is one of the most recognized complications of cerebral amyloid angiopathy (CAA), but little is known about the molecular pathogenesis of this life-threatening complication. In this review, we present preliminary evidence which suggests that the extracellular-matrix-degrading protease, matrix metalloproteinase-9 (MMP-9), may play a role in the development of spontaneous ICH resulting from CAA. The amyloid-beta peptide (Abeta) induced the synthesis, cellular release, and activation of MMP-9 in murine cerebral endothelial cells (CECs), resulting in increased extracellular matrix (ECM) degradation. Furthermore, in a mouse model of CAA (APPsw transgenic mice), MMP-9 immunoreactivity was observed in amyloid-laden cerebral vessels in aged APPsw mice but not in young APPsw or aged wild-type mice. More extensive MMP-9 immunostaining was present in amyloid-laden vessels with evidence of microhemorrhage. These results suggest that increased vascular MMP-9 expression, stimulated by Abeta, may play a role in the pathogenesis of spontaneous intracerebral hemorrhage (ICH) in patients with CAA.