

<シンポジウム (1)—1—4>脳卒中：脳保護研究の現状と展望 (Neuroprotection-Update)

## Biphasic Inflammatory Responses in Injury and Repair after Stroke

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Inflammation may be an important contributor to the pathophysiology of brain injury after stroke. During the acute phase, various neurovascular mediators may augment endothelial activation and infiltration of inflammatory cells into damaged brain. These early events may serve to increase blood-brain barrier leakage, edema, hemorrhage and cell death. During the delayed phase however, continued inflammatory signals may conversely serve to mediate endogenous substrates of remodeling. These mechanisms of neurovascular plasticity and repair may underlie angiogenesis and neurogenesis as stroke patients recover over time. In this presentation, two representative examples of this overall theme will be discussed: matrix metalloproteinases and the alarmin protein HMGB1. During the initial stages of cerebral ischemia, dysregulated matrix metalloproteinases may degrade blood-brain barrier integrity and amplify neurovascu-

lar injury. Thus, blocking matrix metalloproteinases may be useful as combination therapy together with thrombolysis and reperfusion. But during delayed stages post-ischemia, matrix metalloproteinases may contribute to neuroblast migration and peri-infarct cortical remodeling. During the early stages of cerebral ischemia, release of HMGB1 from dying cells in the core may serve to expand neuronal necrosis and inflammation. But during the later stages of stroke, upregulation of HMGB1 in reactive astrocytes may contribute to dendritic plasticity and angiogenesis. Taken together, these findings suggest that biphasic responses in neurovascular inflammation may blur the boundaries between injury and repair after stroke.

※The authors declare there is no conflict of interest relevant to this article.