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The drainage of brain interstitial fluid (ISF) is partitioned in rat brain

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Abstract

The knowledge of brain extracellular space (ECS) and interstitial fluid (ISF) is crucial to understand the fundamental mechanisms of neural functions and to validate the various treatments via brain interstitium against central nervous diseases. The nature of brain interstitium and ISF has been a subject of controversy for more than 100 years, and existing methods cannot detect ISF drainage in the whole living brain. In the present study, the drainage of ISF was traced in rat brain *in vivo*after Gd-DTPA infusion by using magnetic resonance imaging (MRI). The local diffusion parameters of brain ECS and clearance rate of Gd-DTPA were simultaneously obtained on a voxel-by-voxel basis. Our study revealed distinct ISF drainage patterns in different regions of rat brain. It is suggested that rat cerebrum can be divided into 11 sub-regions based on the regional property of ISF and ECS, which would be helpful to give a reference for performing brain interstitial drug delivery.

Keywords of research
Neuroscience, Medical Imaging, Biomedical Engineering.

Biography:

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