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삼성서울병원 신경과

CT and MR-based Acute Stroke Imaging

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Ischemic stroke is an important disease because of its high incidence, disease severity, and socioeconomic burden. Recently, we faced a big change in the management of ischemic stroke; a great success of endovascular treatment for acute ischemic stroke resulted changes in not only guidelines but also clinical practice itself. However, its radical changes left several issues to be solved in the management of acute ischemic stroke. One of the main issues to be solved is acute brain imaging protocol. In terms of acute stroke images, the targets include anatomical information of cerebral vasculature, characterization of thrombus, nature and extent of infarction core, salvageable potential of penumbra, collateral flow, and post-treatment changes.

It is hard to say that which imaging protocol is the most appropriate for the management of acute stroke. Each protocol has both strong points and shortcomings. CT-based protocol is linked with rapid acquisition and interpretation resulting in minimize door-to-treatment time. MR-based protocol can provide clear delineation of infarction core and can reduce the risk of 'stroke mimics'. Target for images is also an important determinant. Tissue-clock directed protocol favors CT or MR perfusion images whereas collateral flow can be assessed by perfusion image, multiphasic CT, or MR perfusion derivatives.

Recent clinical trials usually used CT-based protocol rather than MR-based protocol. However, the successful results of recent trials owe to mechanical thrombectomy rather than imaging protocol itself. Therefore, the real competition between CT-based protocol and MR-based protocol is now starting.

Key Words: Stroke, CT, MRI, Acute therapy

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