

Diffusion MRI and Proton MR Spectroscopic Findings in a Child with Uremic Encephalopathy: Pathogenetic Implication

최충곤, 김현주, 이호규, 서대철, 윤종현

울산의대 서울중앙병원 방사선과

Purpose: To discuss about the role of diffusion MR imaging and proton MR spectroscopy to understand the pathogenetic mechanism of uremic encephalopathy.

Method and Results: A 14-year-old boy with Henoch-Schoenlein Purpura became stuporous on the 39th day of hospitalization. At that time, he was complicated by the nephritis-induced hypertension and uremia. Initial brain MRI showed bilateral symmetrical lesions in the basal ganglia and an acute hematoma in left caudate head. Echo-planar spin-echo diffusion weighted MRI with a largest b-factor (1000 sec/mm²) revealed a focal hyper-intensity in right caudate head. Localized proton MR spectrum (stimulated echo acquisition mode sequence, TR/TE = 3000/30 msec) obtained from right basal ganglia detected increased lipid peaks at 0.5 - 1.5 ppm. Typical inverted doublet peak of the lactate was not observed in a long-echo time proton MR spectrum (point resolved spectroscopy sequence, TR/TE = 3000/135 msec). After continued hemodialysis, his mentality was gradually improved. Follow-up MRI, performed on the 73th day of hospitalization, showed atrophy of right caudate head and resolution of previous symmetrical lesions in the basal ganglia.

Conclusion: Multiple lines of evidences such as increased lipid peaks and absence of the lactate on proton MR spectroscopy, no definite cytotoxic edema on diffusion MRI, and reversible changes of the basal ganglia lesions on follow-up MRI, suggest the vasogenic edema and demyelinating process as main pathogenetic mechanisms in uremic encephalopathy.