Hyperammonemic encephalopathy

Time course of MRI diffusion changes

Figure 1 Diffusion-weighted imaging findings

Diffusion-weighted imaging (DWI) signal and apparent diffusion coefficient (ADC) (A) and evolution of ADC (mm²/s) and plasma ammonia level (PAL) (μM/L) (B) at 2, 4, and 8 days after maximal hyperammonemia.

A 55-year-old man with cirrhosis presented with hyperammonemic encephalopathy, subsequently fatal (plasma ammonia level = 410 μM/L). Three-Tesla MRI initially showed restricted diffusion (figure 1A) in the cerebral cortex, suggesting poor prognosis,¹ thalami, and striatum. Apparent diffusion coefficient pseudo-normalized 8 days after admission (figure 1B), comparable to the evolution of hypoxic encephalopathy.² T2 hyperintensity of the gray matter progressively increased (figure 2A). High glutamate plus glutamine without lactate was detected on day 2 in the right thalamus, while *N*-acetylaspartate progressively declined (figure 2B). These imaging findings illustrate the time course of hyperammonemic encephalopathy.

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Evolution of fluid-attenuated inversion recovery signal (A) and right thalamic (repetition time/echo time = 1,500/30 msec) metabolites (B) at 2, 4, and 8 days after maximal hyperammonemia.

revising the manuscript. Dr. Moritani contributed to the article by analyzing and interpreting the diffusion-weighted imaging data and revising the manuscript. Dr. Yager contributed to the article by analyzing and interpreting the MR spectroscopy data and revising the manuscript.

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