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Initiation of hydration therapy based on blood urea nitrogen/creatinine ratio contributes to more favorable clinical outcome at 3 months after acute ischemic stroke

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Background: Dehydration is associated with poor outcome after acute ischemic stroke. However, the relationship between hydration therapy during acute ischemic stroke and clinical outcome remains unclear. Our study aimed to determine whether providing hydration therapy to patients with a blood urea nitrogen/creatinine (BUN/Cr) ratio ≥ 15 improves their clinical outcome.

Methods: A non-blinded, phase II single arm prospective study of patients with acute ischemic stroke and BUN/Cr ratio ≥ 15 was conducted from January 2011 to December 2013, with historical controls from November 2007 to June 2010. The hydration group received intravenous bolus (300–500 mL) saline followed by maintenance saline infusion (40–80 mL/h for the first 72 h), while the control group received maintenance saline infusion (40–60 mL/h for the first 24 h and 0–60 mL/h for 24–72 h). The study endpoint was the proportion of patients with favorable outcome, defined as modified Rankin scale (mRS) ≤ 2 at 3 months post stroke.

Results: Overall, 237 patients were enrolled (hydration group, $n = 134$; control group, $n = 103$). The median volume of infused saline from day 1 to day 3 was significantly larger ($P < 0.001$) and the rate of favorable outcome at 3 months post stroke was significantly higher ($P = 0.016$) in the hydration group. Dividing acute ischemic stroke into lacunar and non-lacunar subtypes, the difference was significant only in the lacunar stroke subtype ($P = 0.020$). Conclusion: Thus, providing saline hydration therapy to patients with acute ischemic stroke based on BUN/Cr ratio can significantly increase the rate of favorable clinical outcome with functional independence at 3 months post stroke.

Biography

Lin Leng Chieh, Medicine Doctor, now is a Clinical Assistant Professor and Deputy Director, Department of Emergency Medicine, Chang Gung Memorial Hospital, Taiwan. He got his Medicine Doctor's degree at National Yang Ming University, Taipei, Taiwan. And Dr. Lin Leng Chieh got the Clinical Applications Award in 2012 and 2014. Currently Dr. Lin Leng Chieh researches focus on the biomarkers of dehydration and fluid therapy of acute ischemic stroke.

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