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Results of Acute Cerebral Anoxia in Adults: is it a Reversal Sign?

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Abstract: Objective: The aim of this study is to describe the results of acute cerebral anoxia in adults as a reversal sign. Methods: We retrospectively examined the CT and MR images of 9 patients in a vegetative state due to acute prolonged anoxia. Each of them had at least one MRI and 4 CT exams 6-12 hours, 10-14 days, 6-8 months and 1 year after the anoxic event. The degree of the cerebral atrophy and the mean density values of cerebral white matter were measured and calculated to demonstrate quantitative changes over time. Results: We detected a diffuse density decrease of cerebral cortical gray and white matter with a decreased or lost gray/white matter interface and relative preservation of the densities of the thalami, brain stem and cerebellum in CT scans. In addition to CT findings, we found hyperintense areas in periventricular white matter on T2W SE sequences probably due to myelin loss, glial proliferation, microinfarcts and extracellular edema, and bright signals on T1W SE sequences due to paramagnetic pigment deposits. Conclusions: As a result, we thought that the reversal sign was a characteristic finding of the ischemic state of the adult brain in CT, and it demonstrated irreversible brain damage and carried a poor prognosis.

Key Words: Reversal sign, computed tomography, magnetic resonance imaging, brain damage, cerebral anoxia

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