

Factors associated with failure of targeted temperature management of malignant hemispheric infarction

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Background: Therapeutic hypothermia (TH) is known as effective treatment for cerebral edema and brain herniation in patients with malignant cerebral infarction with high osmotic pressure therapy and decompressive hemicraniectomy. In spite of TH, some patients need decompressive hemicraniectomy or expire due to cerebral herniation. Hence this study was performed to determine associated factors in case of failure of TH in patients with malignant cerebral infarction. Subject and methods: From January 2011 to December 2014, a study was performed in patients with malignant cerebral infarction occurred within 24 hours at neurological intensive care unit of Seoul National University Bundang Hospital. All patients were diagnosed through the brain CT or MRI. And they were treated by treatment guidelines of acute ischemic stroke and performed hyperosmotic fluid therapy and TH to prevent cerebral edema. We defined failure of TTM to cases treated by decompressive hemicraniectomy or death due to brain herniation despite treatment. Results and Conclusion: A total of 31 patients, TTM were failed in 21 patients. Failures of TTM were common in patients without recanalization after thrombolysis significantly (9.5% vs 60.0%, $p=0.006$). Leukocytosis on admission (28.6% vs 0.0%, $p=0.141$), failures of maintaining target blood pressure within 24 hours after stroke (47.6% vs 20.0%, $p=0.24$), larger volume of infarction on MCA territory (100.0% vs 20.0%, $p=0.097$) and multiple territorial infarctions (47.6% vs 10.0%, $p=0.055$) were common in patients with TTM failure, but there was no statistical significance. In conclusion, it may be related to the risk of brain herniation in case of failure of recanalization after acute middle cerebral artery occlusion. Although the study were not shown statistical significance due to the small number of patients, leukocytosis, failures of maintaining target blood pressure, larger volume of infarction and multiple territorial infarction may have relevance which is necessary to check through the further studies.