Systemic glycemic variation predicts inflammation and in-hospital mortality of acute Ischemic Stroke after mechanical thrombectomy: A prospective study using continuous glucose monitoring

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Background: The association between glycemic variation (GV) and inflammation and short-term outcomes of acute ischemic stroke (AIS) after reperfusion therapy remains to be elucidated.

Methods: Glucose levels were assessed through intermittent continuous glucose monitoring in 124 patients with AIS after reperfusion therapy, of whom 70 underwent mechanical thrombectomy (MT). The percentages of time above range, time below range, time in range (TIR), coefficient of variation (CV), standard deviation (SD), mean amplitude of glycemic excursion, largest amplitude of glycemic excursion, mean of daily difference, high blood glucose index and low blood glucose index of glucose were calculated. The association between GV, systemic inflammation and outcomes was analyzed.

Results: The average period of glucose monitoring was 3.5 days and serum glucose was recorded 728 times for each person immediately following reperfusion therapy. Among all patients, the TIRs in different ranges, CV and SD were different in survival and mortality. In the MT subgroup, the National Institutes of Health Stroke Scale score at 24 h and CV were independently associated with in-hospital mortality. CV was correlated separately with tumor necrosis factor (TNF)-α and interleukin-8 (IL-8) levels. Significant differences in TNF-α and IL-8 levels were found between the groups divided by the mean CV. In the intravenous thrombolysis subgroup, no difference was found in glucose variation metrics between the groups regarding survival and in-hospital mortality.

Conclusions: Increased systemic GV was associated with in-hospital mortality of large vessel occlusion (LVO)-AIS after MT. Therapeutic approaches that reduce GV may affect systemic inflammation and short-term outcome of LVO-AIS after recanalization.

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