About Hyperglycemia During Acute Stroke

To the Editor:

Having completed a pilot clinical trial of aggressive hyperglycemia correction during acute cerebral infarction, we read with interest the recently published American Heart Association guidelines that include new suggestions for managing hyperglycemia during acute stroke. Although the guidelines clearly declare their lack of support by clinical trials (grade or level C), they suggest a relatively aggressive and ambiguous approach. The discussion section suggests that initiating treatment when glucose is >200 mg/dL would be “reasonable”. However, the conclusions and recommendations section suggests that glucose >140 mg/dL “probably should trigger administration of insulin,” and it alludes to using intravenous insulin.

Apparently these guidelines did not have a chance to consider the recently published efficacy trial of aggressive hyperglycemia correction during acute stroke GIST-UK. That trial showed no benefit from intravenous insulin treatment predominantly in patients without diabetes treated within 24 hours after stroke onset. It remains to be determined whether earlier initiation of insulin treatment and in patients with diabetes will be efficacious.

We would like to call attention to some of the challenges of aggressive hyperglycemia correction during acute stroke. First, correcting hyperglycemia aggressively with intravenous insulin requires substantial healthcare effort as patients need to be in special hospital units prepared to administer intravenous insulin and monitor glucose frequently. Second, correcting hyperglycemia aggressively carries a risk of hypoglycemia with possible seizures and other yet undiscovered consequences due to acute cerebral infarction. In the one acute stroke efficacy trial of aggressive hyperglycemia correction, greater correction was associated with higher mortality. Furthermore, the pathophysiology of acute cerebral infarction is considerably different from acute myocardial infarction or postsurgical ventilated states, making it improper to extrapolate the results from positive trials involving these other conditions to cerebral infarction.

Because of the uncertainty about benefit versus risk and effort (equipoise), we call for an international endeavor to carry out an additional large and unequivocal efficacy trial of aggressive hyperglycemia correction during acute stroke. If positive (aggressive treatment better than usual care), a substantial proportion of acute stroke patients could be treated more effectively. If negative (aggressive treatment equivalent or worse than usual care), the effort and cost of aggressive hyperglycemia correction during acute stroke could be redirected toward other proven or promising interventions.

Disclosures

None.

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