Letters

Correspondance

Thermometer rising

John Sievenpiper and colleagues recently reported significantly higher blood glucose levels at 30, 45 and 60 minutes after a 900-mL meal than after a 600-mL or 300-mL meal of 75 g of glucose.[1] Any increase in volume or decrease in osmolarity leading to an increase in the rate of gastric emptying during the first hour of the test with no effect on the result at 2 hours is intriguing.

There is also evidence that blood glucose levels might be affected by the ambient temperature. In Brazil, a 75-g load of glucose given to 1030 pregnant women resulted in a glucose concentration that was 0.2 mmol/L higher at 25–31°C than at 20–24°C. The corresponding value at 5–14°C was 1.03 mmol/L lower than at 25–30°C.[2] This variable might affect test results in Canada given that ambient room temperature fluctuates. For the findings of Sievenpiper and collegues to be beneficial globally, comprehensive investigations should be carried out at high and low ambient temperatures.

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[Two of the authors respond:]

We agree with Subhash Arya that ambient temperature during an oral glucose tolerance test might be another important determinant of outcome. However, the findings of Schmidt and coworkers,[1] which form the basis of this suggestion, are complicated by several factors. Their analysis involved pregnant subjects, was observational (temperature was measured, not controlled) and did not differentiate between the effects of acute and chronic ambient temperature. Three earlier studies that investigated differences in blood glucose levels at 2 clinically controlled temperatures (23°C v. 33°C) in nonpregnant subjects are more directly applicable.[2–4] All 3 support the findings of Schmidt and coworkers,[1] demonstrating that an increase in ambient temperature increases 2-h plasma glucose levels after a 75-g oral glucose tolerance test.

To avoid the possibility that changes in ambient temperature might confound our results, the temperature is controlled in our clinic by a thermostat set at 22°C and subjects acclimatize for a minimum of 15 minutes before commencing testing. The blood glucose raising effect of dilution we observed at 30, 45 and 60 minutes and for the area under the curve, therefore, is relevant for this temperature.[5] Whether our observations at 22°C would hold at higher or lower temperatures is unclear. Temperature should not interact with the effect of dilution, provided the temperature is constant for each dilution. There is no direct evidence to suggest that the gastric-emptying mechanism, by which dilution is thought to increase glycemia, is influenced by ambient temperature within normal testing limits, although cold stress might affect gastric emptying.[6]

It would be interesting to explore the interaction between the effects of temperature and dilution on postprandial glycemia in a further study, but such a study likely would not yield practical results. It is probably sufficient to be aware that both of these factors affect the outcome of oral glucose tolerance testing. In this regard, attempts might be considered to standardize ambient temperature and account for its effects when comparing across centres. The same might be considered for dilution when using oral glucose tolerance testing criteria that rely on intermediate time points for diagnosis, as these points, but not 2-h postprandial glucose levels, appear to be sensitive to alterations in dilution.[5]

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Reactions to alteplase in patients with acute thrombotic stroke

Michael Hill and colleagues have made an important contribution by documenting the occurrence of serious adverse reactions to alteplase in pa-