Clinical Digest

Diabetes Management

Effects of Stress on Glucose Levels

The effects of stress on glucose concentrations in type 1 diabetes depend on whether it comes during the fed or fasting state, according to two studies conducted at the University Hospital of Zurich, Zurich, Switzerland.

In one study, researchers set out to induce moderate psychosocial stress in 20 patients by having them undergo the Trier Social Stress Test (TSST) during their fasting state. In the second study, the TSST was administered for the same purpose to 20 patients shortly after they had eaten a meal. The test consists of a five-minute preparation task, a five-minute pretend job interview, and a five-minute mental arithmetic task that is completed in front of an audience that includes at least two people wearing white coats. To enhance the stress, the sessions were videotaped.

Blood pressure and heart rate increased promptly in response to the stress test in both fasting and fed states, though these events were not associated with a significant increase in glucose concentrations. Thirty minutes after the TSST, however, stress significantly delayed the reduction in postprandial glucose concentrations. The researchers observed no change in glucose concentrations when the TSST was applied in the fasting state.

Considering that the effect of mental stress on glucose concentrations was modest in absolute terms (compared with a control day, the maximum difference was 1.4 mmol/L at 55 and 80 minutes after the TSST), the researchers say, it might appear that acute mental stress doesn't cause major glucose excursions. They advise caution, though, because the effect that appeared 30 minutes after eating lasted for about two hours.

Source: *Diabetes Care.* 2005;28:1910–1915.

Preventive Medicine

Misleading Lipids?

Heart disease and insulin resistance are more prevalent among blacks than whites. Yet, surprisingly, the opposite is true of metabolic syndrome. Researchers from the National Institutes of Health, Bethesda, MD; University of California at San Diego; and University of Pennsylvania, Philadelphia say the reason for these paradoxical findings is probably the underdiagnosis of metabolic syndrome in blacks, due in large part to diagnostic criteria that rely heavily on lipid (particularly triglyceride) levels.

In their study of 98 blacks with body mass indexes of 25 kg/m^2 or greater, they found that triglyceride levels and the ratio of triglycerides to high-density lipoprotein (HDL) cholesterol are not always reliable markers of insulin resistance in black patients. When the researchers applied the cutoff values that are diagnostic of insulin resistance in whites (triglyceride levels of 130 mg/dL or greater, triglyceride-HDL cholesterol ratio of 3 or higher), only 17 blacks met one of those criteria. Of those 17, only seven were in the insulin-resistant tertile. The lipid criteria had a sensitivity of only 17% in diagnosing insulin resistance in those subjects. By contrast, fasting insulin, body mass index, and waist circumference were "excellent markers," the researchers say.

Although the term "metabolic syndrome" often is used as a synonym for insulin resistance, the researchers emphasize that it is not a diagnostic test of insulin resistance. And when it is used as such, diagnoses go awry. While the metabolic syndrome was somewhat superior to the lipid criteria in identifying people with insulin resistance, it still had a sensitivity of only 30%.

Source: *Arch Intern Med.* 2005;165:1395–1400.

Diet and Exercise

Pros and Cons of Weight Loss in Arthritis

A pound of weight lost could mean a four-pound reduction in the load exerted on the knee at each step, say researchers from Wake Forest University, Winston-Salem, NC and East Carolina University, Greenville, NC. In other words, for each pound lost, the accumulated reduction in knee load is more than 4,800 pounds per mile walked.

The researchers gathered their data from 142 sedentary and overweight or obese adults with osteoarthritis of the knee who participated in an 18-month trial. They were randomly assigned to one of four groups: exercise only, dietary weight loss only, dietary weight loss plus exercise, and healthy-lifestyle (control). They also completed biomechanics tests.

This study built on results from a previous study in which the researchers showed that an average weight loss of 5% over 18 months in overweight adults with knee osteoarthritis improved function by 18%. When they combined diet and exercise, function improved 24%.

In rheumatoid arthritis (RA), on the other hand, there may be benefits to adiposity. When researchers from The University of Texas Health Science Center at San Antonio studied a cohort of 779 patients with RA, they found mortality rates were lower among the

heavier patients. In fact, the more the patients weighed, the lower their risk of dying.

The cohort accrued 123 deaths in 3,460 person-years (3.6 deaths per 100 person-years). Those with a body mass index (BMI) of 30 or more had the lowest mortality: 1.7 deaths per 100 person-years, compared with 15 deaths per 100 person-years among patients with BMIs lower than 20. The BMI benefit was independent of age at RA onset, RA duration, sex, ethnic group, socioeconomic status, smoking status, and use of methotrexate. Only when the researchers adjusted for comorbidity and RA severity did the association falter.

The researchers say the "reverse epidemiology" of obesity and other cardiovascular risk factors has been seen in other contexts, such as congestive heart failure and recovery from heart surgery, where a high BMI is protective. They note that emerging data suggest a relationship between systemic inflammation and obesity. Obese and overweight adults have higher concentrations of inflammatory markers in the blood. Macrophages infiltrate adipose tissue and secrete inflammatory cytokines. In the context of metabolic syndrome, both adipocytes and macrophages can store lipids and secrete cytokines. Despite the findings of adipose tissue as a potential inflammatory organ, the protective effect of adiposity nonetheless remains paradoxical.

Sources: *Arthritis Rheum.* 2005;52:2026–2032.

Arch Intern Med. 2005;165:1624–1629.

GERONTOLOGY

Implications of Post-discharge Hypoalbuminuria

Low serum albumin can be a serious concern in elders, even three months after hospital discharge. Researchers from the Central Arkansas Veterans Healthcare System, Little Rock found that patients with three-month albumin concentrations below 35 g/L had 2.6 times greater five-year mortality than those with levels above 40 g/L. Nearly half of patients with three-month levels of less than 30 g/L died within a year, compared with only 12% of the remaining patients.

The study tracked 282 patients for five years after they were discharged from the VA hospital. Within the first three months, 48% of the patients were readmitted to the hospital. During the follow-up, 190 patients (67%) died. Of the 38 nutritional, functional, demographic, and illness severity variables, the albumin level was the strongest predictor of mortality.

Unfortunately, say researchers, the study was not designed to determine why albumin concentrations improved or remained normal in some patients but not others. They suggest that, in their study, drops in albumin levels likely resulted from a new or recurrent medical problem. None of the patients who had hypoalbuminuria at three months was known to have advanced cirrhosis, severe congestive heart failure, or other conditions that might account for it. But many, they say, had chronic inflammatory conditions.

Source: *J Am Geriatr Soc.* 2005;53:1222–1226.

PRIMARY CARE

When to Consider Soy

Several clinical trials have documented the beneficial effects of lifestyle modifications (such as weight loss, exercise, and alcohol and sodium restriction) on blood pressure in hypertensive and prehypertensive people. Now findings by a group of researchers from Tulane University, New Orleans, LA as well as the Cardiovascular Institute and Fuwai Hospital, Chinese Academy of Medical Sciences, and Peking Union Medical College, Beijing, China, suggest that it might be wise to add some soy to antihypertensive regimens.

In their study, 302 Chinese participants were randomly assigned to receive for 12 weeks either an intervention protocol (150 patients) consisting of 40 g/day of soybean protein or a control protocol (152 patients) consisting of 40 g/day complex carbohydrate from wheat. Blood pressure was reduced in both groups, but compared with the control protocol, the soy intervention lowered systolic and diastolic blood pressure by 4.31 mm Hg and 2.76 mm Hg, respectively. In patients with hypertension, the soy intervention had even greater net effects of –7.88 mm Hg in systolic blood pressure (compared to –2.34 mm Hg in prehypertensives) and –5.27 mm Hg in diastolic blood pressure (compared to –1.28 mm Hg in prehypertensives).

Source: *Ann Intern Med.* 2005;143:1–9.