

Tailored Insulin Tames Cystic Fibrosis Diabetes

BY BRUCE JANCIN
Denver Bureau

KEYSTONE, COLO. — Treatment of cystic fibrosis-related diabetes is essentially insulin adjusted to a largely unrestricted diet, Dr. Robert H. Slover said at a conference on the management of diabetes in youth.

"Never calorie-restrict these patients. High energy intake is necessary for their survival," he stressed. "These kids can eat 10,000 calories per day and still lose weight."

The oral medications used to treat type 2 diabetes can't be used in cystic fibrosis-related diabetes (CFRD). They carry unacceptable risks of liver damage in this population. Plus, the sulfonylureas interfere with the chloride transporter, added Dr. Slover of the Barbara Davis Center for Childhood Diabetes at the University of Colorado, Denver.

Basal/bolus insulin regimens can be used, although some patients are able to maintain excellent glycemic control with mealtime injections only.

It's important to bear in mind, however, that glycosylated hemoglobin measurements may underestimate the degree of abnormal glucose metabolism in patients with CFRD. That's because they have increased red blood cell turnover, which dilutes the HbA_{1c}, he explained at the conference sponsored by the university and the Children's Diabetes Foundation at Denver.

Intermittent insulin is used during episodes of

infection or corticosteroid administration. Insulin infusion may be necessary when enteral feeding is used.

The dietary management principles operative in CFRD are markedly different than are those in type 1 diabetes. The recommended caloric energy intake in type 1 diabetes is 100% of the recommended daily allowance—and less if the patient is overweight. Patients with CFRD are encouraged to consume 120%-150% of the caloric RDA. They don't fuss over the glycemic index of foods, either.

Type 1 diabetic patients are encouraged to restrict intake of refined carbohydrates to less than 25 g/day while consuming a high-fiber, low-salt diet. In contrast, patients with

CFRD are allowed to take

in refined carbohydrates liberally throughout the day, although between-meal sugary drinks are discouraged. They are also advised to eat a high-salt diet and minimize intake of soluble and insoluble fiber because fiber promotes satiety, which has the unwanted effect of limiting energy intake.

The more than 22,000 Americans with CF receive much of their health care in the nation's 117 CF centers. Dr. Slover urged physicians with expertise in diabetes management to make themselves available at their nearby CF center. The centers traditionally have been staffed mainly by pulmonologists, who at times feel a bit overwhelmed the increase in the number of CFRD patients as a result of the marked life span gains in the CF population. ■



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DR. SLOVER

Lower Threshold Confirmed For Gestational Diabetes

BY MITCHEL L. ZOLER
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LISBON — Pregnant women with serum glucose levels as low as 7.8 mmol/L 2 hours following an oral glucose tolerance test should be diagnosed with gestational diabetes, according to results from two independent studies.

Our data "make it hard to ignore 'mild' gestational diabetes," Dr. Daghni Rajasingam said at the annual meeting of the International Society of Obstetric Medicine. She and her associates reviewed the outcomes of 184 pregnant women seen at St. Thomas' Hospital, London, who had a serum glucose level of 7.8-8.9 mmol/L 2 hours after an oral glucose tolerance test (OGTT) at 28 weeks' gestational age, and found a high incidence of cesarean sections and macrosomia.

The second study, conducted in Australia at the Royal North Shore Hospital in Sydney, reviewed 478 women with a serum glucose level of at least 7.8 mmol/L 2 hours after an OGTT and compared treated and untreated subgroups of these women with a comparator group with no gestational diabetes. Again, the results showed untreated, mild gestational diabetes led to a higher rate of adverse outcomes.

"Our results support the conclusions of the Australian Carbohydrate Intolerance Study in Pregnant Women [ACHOIS]," Dr. Michelle H. Kwik, an ob.gyn. at Royal North Shore Hospital, said at the 15th World Congress of the International Society for the Study of Hypertension in Pregnancy.

ACHOIS established the efficacy of diabetes intervention—dietary advice, blood glucose monitoring, and insulin therapy when needed—in pregnant women, while defining gestational diabetes as a serum glucose level of 7.8-11.0 mmol/L 2 hours after an OGTT (N. Engl. J. Med. 2005;352:2477-86). This definition, endorsed by the World Health Organization, uses a minimum serum glucose level significantly lower than the 8.6 mmol/L minimum the American Diabetes Association adopts.

The goal of both of the new studies was to examine whether women with serum glucose levels as low as 7.8 mmol/L have complications consistent with more severe gestational diabetes.

The St. Thomas' Hospital study reviewed the outcomes of women who were treated there during April 2002-July 2005. The outcomes of the 184 women with mild gestational diabetes were compared with those of a group of pregnant women without gestational diabetes seen at the hos-

pital at the same time, and with the intervention and controls groups from the ACHOIS trial.

The incidence of induced labor in the mild diabetes group at St. Thomas' Hospital was 18%, not much higher than that of the normal women there (15%), and less than the intervention and control groups in ACHOIS (28% and 38%, respectively). But for the two other criteria examined, the mild diabetes group had a substantially higher rate of complications.

The cesarean section rate was 39% in the mild diabetes group, compared with 25% in the healthy group. And the macrosomia rate was 20% in newborns in the mild diabetes group, compared with 9% in the healthy group, reported Dr. Rajasingam, an ob.gyn. at St. Thomas' Hospital. More than 60% of the cesarean deliveries in the women with mild diabetes were emergency deliveries.

Use of a more restrictive definition of gestational diabetes, with a higher minimum glucose level, had been driven by the difficulty of providing gestational-diabetes care to a larger number of women. But the new finding showed all women with a serum glucose level of at least 7.8 mmol/L 2 hours after an OGTT need more intensive prenatal care, Dr. Rajasingam said.

The Royal North Shore Hospital study reviewed three groups of pregnant women who were seen there during February 2000-May 2005. The untreated group included 213 women with a normal fasting serum glucose level, but with a serum level of at least 7.8 mmol/L 2 hours after an OGTT.

A second group (those who received treatment) included 265 women with an OGTT serum level of at least 7.8 mmol/L as well as an abnormally high fasting glucose level. Treatment consisted of dietary counseling for 182 of these women and insulin treatment for the other 83. The third group, the comparison group, included 197 women who failed a 50-g glucose challenge test, but whose serum glucose was less than 7.8 mmol/L 2 hours after an OGTT.

The study's primary outcomes were the incidence of macrosomia, defined as a birth weight greater than the 90th percentile, and the incidence of shoulder dystocia. The incidence of macrosomia was 15% in the comparison group, 23% in the untreated group, and 12% in the treated group. Shoulder dystocia occurred in 1% of comparison deliveries, 5.2% of untreated deliveries, and 2.6% of treated deliveries. For both outcomes, the difference between the groups was statistically significant. ■

Preeclampsia History Tied to Twofold Increase in the Risk of Type 2 Diabetes

WASHINGTON — Women with a history of preeclampsia have a twofold greater risk of developing subsequent type 2 diabetes—even in the absence of gestational diabetes—than do women without a history of the complication, said Dr. Darcy B. Carr in a report on a retrospective cohort study at the annual scientific sessions of the American Diabetes Association.

Dr. Carr, of the division of maternal-fetal medicine at the University of Washington, Seattle, and her colleagues looked at more than 25,000 women who delivered at the GHC between 1985 and 2002 after having been enrolled in the consumer-owned nonprofit health care system for at least a year. They followed the women, each of whom remained in GHC, for a mean of 8 years.

The women did not have known diabetes

before pregnancy or subsequent type 1 diabetes. Subsequent type 2 diabetes was determined through 2005 based on inpatient and outpatient ICD-9 codes, pharmacy data, or lab data showing two elevated plasma glucose levels.

The two groups—about 2,100 women with preeclampsia and almost 25,000 without—had a similar mean age at the time of delivery, but

those women who had preeclampsia were more likely to be multiparous and have gestational diabetes or preexisting chronic hypertension.

Subsequent type 2 diabetes was significantly more common in women who had preeclampsia (1.9% vs. 0.96%). A similar twofold increased risk remained after adjustment for age, multiparity, gestational diabetes, and chronic hypertension—and after women with gestational diabetes were excluded from the analysis, said Dr. Carr.

—Christine Kilgore

