Adolescents Omitting Insulin for Weight Control

BY MIRIAM E. TUCKER
Senior Writer

AMSTERDAM — More than 90% of all teenagers with type 1 diabetes omit insulin doses at least occasionally in order to prevent weight gain, according to the results of an international observational study presented by Dr. Soren E. Skovlund at the annual meeting of the European Association for the Study of Diabetes.

Of concern, the practice is associated with significantly poorer glycemic control. "Screening for and dialog with adolescents about omission of insulin injections may be particularly warranted in those who exhibit concern about their weight or engage in weight-reducing activities," said Dr. Skovlund, global director of patient-focused programs at Novo Nordisk A/S, Bagsvaerd, Denmark.

A total of 2,062 adolescents aged 11-18 years with type 1 diabetes of at least 1 year's duration completed the survey, conducted in 2005 by the Novo-Nordisk–funded Hvidoere Study Group. Respondents were from 21 centers in Europe, Australia, Japan, and North America. There was one U.S. center at Children's Hospital, Los Angeles.

The study group was 49.4% female and 50.6% male. Both genders had a mean age of 14.5 years, and mean diabetes duration of 6.3 years for the females and 5.9 years for the males. Mean body mass indices were 22.8 kg/m^2 for the females and 21.7 kg/m^2 for the males, and mean HbA_{1c} levels were 8.3% for the females and 8.1% for the males.

Each adolescent was asked to complete an extensive questionnaire covering topics such as self-management and health behaviors, treatment goals, family dynamics, well-being and quality of life, diabetes burden, and weight perception/dieting. Also included was the question: "How often do you miss insulin to control your weight?" Possible responses were "never," "once a month," "once a week," or "every day."

The majority—91.7% of the females and 93.0% of the males—checked "once a month." "Never" was a distant second, reported by 5.1% of females and 4.2% of males, followed by "once a week" (2.5% female/1.9% male) and "every day" (0.7% female/0.9% male).

"This was not just in general, but specifically to avoid weight gain. Clearly, people are connecting the two aspects," Dr. Skovlund commented.

The nearly equal proportion of males and females is striking. "A lot of the insulin omission literature has focused on this being a female phenomenon. …But we have certainly also seen it in boys," he said.

Not surprisingly, those who reported omitting insulin doses either daily or weekly ("high omitters") had poorer metabolic control, and averaged a significant difference of half a percentage point in hemoglobin A_{1c} values, compared with the "low omitters," those who omitted never or monthly (8.99% female/8.61% male vs. 8.24% female/8.08% male). Insulin omission remained significantly correlated with HbA_{1c} after controlling for age and diabetes duration, but not gender.

Insulin omission also was highly correlated with other weight-loss behaviors, such as fasting, vomiting, and use of diet pills/laxatives, as well as reduced well-being. Insulin omission was reported both by patients on multiple daily injections as well as those on insulin pumps (who made up about 20% of the overall group).

The findings are not all that surprising to pediatric endocrinologist Dr. Francine R. Kaufman, who heads the Los Angeles center: "Kids miss doses all the time. … The question is why."

Her adolescent patient population with type 1 diabetes tends to be well educated and aware that insulin omission can control weight via glycosuria. In fact, in the United States the practice of omitting insulin by young people with type 1 diabetes in order to control weight has been dubbed "Diabulemia" and is currently a hot topic in the lay press, she noted in an interview.

But the thought process may not always be so straightforward. Rather, teens might rationalize to themselves that perhaps they didn't eat as much as they did, or that they don't need as much insulin as they actually do. "A lot of it is not totally willful, but kind of miscalculating the dose," she remarked. ■

RAS Blockers Reduce Renal Events in Kidney Disease

BY PATRICE WENDLING
Chicago Bureau

CHICAGO — Routine use of renin angiotensin system blockers is indicated in patients with chronic kidney disease as part of a strategy to reduce cardiovascular and renal events, Dr. Matthew Weir said at the annual meeting of the American Society of Hypertension.

Patients with chronic kidney disease benefit as much as, if not more than, the general population benefits from the antihypertensive and antiproteinuric effects of renin angiotensin system (RAS) blockade because they are at increased risk for cardiovascular disease.

Decreased glomerular filtration rate (GFR), a specific indication of chronic kidney disease, has consistently been found to be an independent risk factor for cardiovascular disease outcomes and all-cause mortality.

Growing evidence, including a well-designed trial from China (N. Engl. J. Med. 2006;354:131-40), also suggests that the sicker the kidney, the greater the risk-reduction benefit with RAS blockade.

But there is anxiety about using ACE inhibitors or angiotensin II receptor blockers (ARBs) in patients with higher serum creatinine levels or reduced GFR because of concern that those levels will rise, Dr. Weir, director of the nephrology division, University of Maryland, Baltimore, said.

Because RAS blockers are designed to reduce glomerular capillary pressure, there will be a functional increase in serum creatinine or a decrease in estimated GFR. That increase or decrease can average 15%-30%, depending on the volume status of the patient, renal artery anatomy, and other cotherapies the patient is receiving. The functional change in GFR results in a long-term anatomic advantage, because the reduced capillary pressure results in less injury to the glomerular structure, Dr. Weir said.

In addition, fluctuations in serum creatinine and potassium are predictable, and discontinuation of RAS blockade is almost always avoidable.

If creatinine increases by more than 30%, Dr. Weir suggests evaluating the patient's use of diuretics and volume status, and ruling out concomitant use of NSAIDs. If the first two points are unlikely causes, then clinically significant renal artery stenosis should be ruled out.

If serum potassium increases by more than 0.5 mEq/L, then rule out eating too much fruit or other foods that are high in potassium; rule out concomitant use of NSAIDs, salt substitutes, and potassium-sparing diuretics such as triamterene, spironolactone, and eplerenone; and consider type 4 renal tubular acidosis.

Hyperkalemia has been reported in some ARB trials, but medication was discontinued in only a small percentage of patients. Hyperkalemia is unusual, Dr. Weir asserted, because the kidney develops homeostatic mechanisms mediated by an increase in sodium potassium adenosinetriphosphatase activity in the renal tubular epithelial cells of the cortical collecting duct. Only type 4 renal tubular acidosis, NSAIDs, or hypoaldosteronism limit this homeostatic effect, he added.

Other clinical pearls included:

► Adjusting the dose of RAS blocker based on estimated GFR and known excretory routes.

► Monitoring the patient's weight daily, especially if there is a change in the RAS blocker or diuretic dose.

► More frequently assessing serum potassium and creatinine levels with dose changes or diuretic changes, or with gastrointestinal illness.

► Stopping the RAS blocker and checking electrolytes if there is any clinical concern about dehydration. ■