Brittle Diabetes Presents a Diagnostic Challenge

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NEW YORK — True brittle diabetes is a rarity, with characteristic blood glucose lability, frequent hospitalizations, and life disruption often reflecting underlying psychiatric or organic disease, according to Dr. Irl B. Hirsch.

Diagnosis and management of this potentially lethal condition present significant challenges, as was shown in several cases Dr. Hirsch presented at a meeting sponsored by the American Diabetes Association.

One case involved a 23-year-old woman who presented with a 15-year history of type 1 diabetes in 2000. She had been on an insulin pump for 5 years, and her hemoglobin A1c (HbA1c) levels ranged from 9% to 12%. As a teenager, she had had an eating disorder and had multiple hospitalizations for diabetic ketoacidosis. In the previous 2 years, she had been hospitalized twice for gastroparesis, and had developed severe peripheral neuropathy and osteoporosis.

By 2002 she developed nonproliferative retinopathy and proteinuria. "All those years of poor control were already catching up with her at age 24," said Dr. Hirsch, professor of medicine in the division of metabolism, endocrinology, and nutrition at the University of Washington, Seattle. In 2004 she had an unplanned pregnancy and was hospitalized for 4 months, delivering the child 3 months prematurely. Her glucose was well controlled while she was in the hospital, but subsequently it became elevated once again, reaching 10.4%.

Finally, in the summer of 2006, she had a kidney-pancreas transplant. "So the question is, does she have brittle diabetes?" Dr. Hirsch asked.

A diagnostic work-up determined that she had underlying celiac disease, with an important clue being the osteoporosis. "When you see osteoporosis in a young person, you have to think about calcium absorption," he said. "Celiac disease often goes hand in hand with type 1 diabetes."

These patients can have extremely irregular blood glucose patterns because their food absorption is so erratic, he added.

A further concern with these patients is that between one-third and one-half of all teenage girls with type 1 diabetes will withhold insulin at some time for weight loss. "Unfortunately, this is a very effective and dangerous way to lose weight."

A second case involved a 30-year-old man who had nine hospitalizations during the first half of 2000 because of severe gastroparesis. The patient was eventually diagnosed with cannabis hyperemesis syndrome, a condition associated with long-term cannabis use that is characterized by cyclical episodes of vomiting in a susceptible patient.

The likely mechanism for this little-known phenomenon is a slowing of gastric emptying caused by the cannabis. "This patient does not have brittle diabetes when he’s not smoking dope," he said.

A third case involved a single, 29-year-old woman with a 20-year history of type 1 diabetes and an HbA1c of 12% despite being on an insulin pump. She had frequent hospitalizations for pyelonephritis during the previous 10 years, although none for diabetic ketoacidosis.

"These patients are very good at taking just enough insulin to stay out of really bad ketoacidosis even though they’re ketogenic most of the time," Dr. Hirsch said. In 2001 she switched from the insulin pump to glargine and lispro, with no change in HbA1c. She denied having depression and refused evaluation by a psychiatrist or psychologist.

In 2002 she developed mucormycosis and was hospitalized for 2 weeks and released on home intravenous antibiotics. "One week after discharge, the mother found the patient dead at home. The home antibiotics had never been opened," he said.

Like many patients with uncontrolled or brittle diabetes, this patient had severe major depression. With no family support, she was totally incapable of taking care of her diabetes and too depressed and overwhelmed even to take the antibiotics.

It can be quite dramatic how poorly some of these patients do, Dr. Hirsch continued.

In one series where 20 patients whose mean age was 19 were followed for 8 years, 2 of the patients died. In another series of 33 patients followed for a decade, 5 were lost, and of the remaining patients, 19% died from diabetic ketoacidosis, hypoglycemia, or end-stage renal disease. "What you want to do when you present cases to a group like this is talk about ... how everybody lived happily ever after. That doesn’t often happen with brittle diabetes."