

# Diabetic Subgroup May Benefit From Vitamin E

BY MITCHEL L. ZOLER

FROM THE ANNUAL SCIENTIFIC SESSIONS OF THE AMERICAN HEART ASSOCIATION

CHICAGO – Evidence continues to build that vitamin E, an antioxidant supplement that became discredited and discarded for preventing cardiovascular disease events through the accumulated results from several large, negative trials, may actually have a substantial benefit for a select subgroup of patients with diabetes.

The key appears to be targeting vitamin E to patients with diabetes who also have a haptoglobin 2-2 genotype, which means they lack a robust antioxidant effect from this blood protein. Roughly a third of people in Western populations carry this genotype. Everyone else has a 1-1 or 2-1 genotype, both of which produce haptoglobin with adequate antioxidant activity.

The latest results to back up this paradigm came from a post hoc analysis of the 1,027 women with diabetes enrolled in the Women's Health Study (WHS). In this analysis, women with diabetes and the haptoglobin 2-2 genotype who received an every-

other-day supplement of 600 IU of vitamin E had a 15% reduced rate of cardiovascular disease events during an average 10 years of follow-up compared with similar women randomized to placebo, Dr. Shany Blum said at the meeting.

In contrast, post hoc analysis of WHS women with diabetes and the 2-1 genotype who received vitamin E showed a 20%-25% increased rate of cardiovascular disease events during follow-up compared with similar women who received placebo.

The stroke rate in women with the 2-1 haptoglobin genotype was 5.7% in those who received vitamin E and 1.2% in the placebo arm, a 4.5-fold increased rate of stroke after adjustment, said Dr. Blum, a researcher at the Technion-Israel Institute of Technology in Haifa.



These findings follow similar observations about the interaction of vitamin E and the haptoglobin genotype in both women and men with diabetes in a post hoc analysis of data from the Heart Outcomes Prevention Evaluation (HOPE) study (N. Engl. J. Med. 2000;342:154-60), and from a prospective test of vitamin E compared with placebo in 1,434 patients with diabetes and the haptoglobin 2-2 genotype in the Israel Cardiovascular Events Reduction With Vitamin E (ICARE) study (Arterioscler. Thromb. Vasc. Biol. 2008;28:341-7).

Both studies used a daily supplement with 400 IU of vitamin E. The Haifa researchers published a meta-analysis of the results from HOPE and ICARE in patients with diabetes analyzed by their haptoglobin genotype last May (Pharmacogenomics 2010;11:675-84).

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DR. BLUM

of these analyses and the ICARE study.

"We've now shown in the HOPE study, ICARE, and WHS that patients with the 2-2 genotype [and diabetes] benefited from receiving vitamin E. In HOPE, they had about a 30% reduction in cardiovascular events [compared with patients who received placebo], in ICARE about a 45% reduction in cardiovascular events, and in the WHS about a 15% reduction in cardiovascular events," Dr. Levy said in an interview.

The HOPE and WHS studies "had previously both shown no overall benefit from vitamin E" compared with placebo when the analysis included all participants, regardless of their diabetes status and haptoglobin genotype status. "But when we specifically targeted people with 2-2, they benefited from vitamin E treatment," he said.

VITALS

**Major Finding:** Among women with diabetes who had the haptoglobin 2-2 genotype, every-other-day supplementation with 600 IU of vitamin E led to a 15% reduction in all cardiovascular events during 10 years of follow-up and a 4.5-fold reduction in stroke compared with similar women who were randomized to placebo.

**Data Source:** Post hoc analysis of 1,027 women with diabetes who were enrolled in the Women's Health Study.

**Disclosures:** Dr. Blum said he had no disclosures. Dr. Levy has served as a consultant for Synviva Therapeutics. Dr. Brinton said that he has served as a consultant to, or as a speaker for, Abbott, Amarin, AstraZeneca, Atherotech, Bristol-Myers Squibb, Daiichi-Sankyo, GlaxoSmithKline, Kaneka, Kowa, Kronos Longevity Research Institute, Merck, and Takeda. He has received research grants from Abbott, the Aurora Foundation, and GlaxoSmithKline, and has been an expert witness for the law firm of Reilly Pozner.

Dr. Levy stressed that in his opinion this paradigm needs additional testing in a large, prospective trial before physicians start routinely prescribing vitamin E to patients with diabetes and a haptoglobin 2-2 genotype. He conceded, however, that such a study may be difficult to fund, as no drug company stands to reap a financial benefit from vitamin E, an inexpensive generic agent.

At least one expert familiar with this work believes the evidence that Dr. Levy and his associates have collected warrants starting vitamin E supplementation immediately in informed and willing patients who have the right risk profile.

A daily dose of 400 IU of vitamin E is "cheap and innocuous," commented Dr. Eliot A. Brinton, director of the metabolism section in the cardiovascular genetics division at the University of Utah, Salt Lake City. "The question that I would pose to my patients with diabetes is 'Do you want this?' Many of my patients would probably say yes, they do."

## Bariatric Surgery Is Effective in Minorities With Diabetes

BY MICHELE G. SULLIVAN

FROM THE ANNUAL MEETING OF THE SOUTHERN SURGICAL ASSOCIATION

PALM BEACH, FLA. – Bariatric surgery resulted in the complete remission of type 2 diabetes and prediabetes in a group of mostly Hispanic and black patients.

Within 1 year of surgery, 100% of the patients with those disorders experienced a normalization of fasting blood glucose and hemoglobin A<sub>1c</sub>, and they lost a mean of 40 kg, Dr. Alan Livingstone said at the meeting.

By the end of the 3-year follow-up period, all patients still had normal levels of blood glucose and insulin.

"Uncontrolled type 2 diabetes is highly prevalent among ethnic minorities," said Dr. Livingstone, the Lucille and DeWitt Daughtry Professor and Chairman of Surgery at the University of Miami Miller School of Medicine and chief of surgery at Jackson Memorial Hospital, Miami. "Bariatric surgery helps to effectively treat these diverse minority groups and is a safe and effective option for permanent weight loss and chronic disease

risk improvement in this population."

He reported on a cohort of 1,603 adult bariatric surgery patients, of whom 66% were Hispanic, 17% were black, and the rest were other ethnicities. They were prospectively entered into a research database and then retrospectively studied.

"Minorities are at a particularly high risk for type 2 diabetes and its associated complications," Dr. Livingstone said. "While only 6% of whites have [the disorder], it's present in 10% of Hispanics and 12% of blacks – a huge burden of disease."

The patients' mean age was 45 years; most (77%) were female. The mean preoperative weight was 130 kg; the mean body mass index, 47 kg/m<sup>2</sup>.

Most of the group already had some insulin abnormality; 377 had diagnosed type 2 diabetes, 107 had undiagnosed type 2 (fasting blood glucose of more than 126 mg/dL), and 276 had prediabetes (fasting blood glucose of 100-125 mg/dL). Among those with elevated blood glucose, the mean HbA<sub>1c</sub> was 8%. The rest of the group had a normal insulin profile.

Most patients underwent gastric by-

VITALS

**Major Finding:** Bariatric surgery normalized blood glucose and insulin in Hispanic and black patients over a 3-year period.

**Data Source:** A review of 1,603 patients found that the 47% with elevated blood glucose and insulin had complete resolution of those abnormalities by 1 year and normal levels over a 3-year follow-up.

**Disclosures:** Dr. Livingstone had no financial disclosures. Dr. Nestor F. De La Cruz-Munoz Jr., a coauthor, is a consultant and proctor for Ethicon.

pass (90%); the rest had gastric banding. "The amount of weight loss was profound in the first year, as expected," Dr. Livingstone said.

There was no significant difference in weight loss between the diagnostic groups. Body mass index also fell quickly, correlating with weight loss. By the end of the first 6 months, the mean BMI had dropped to 35 kg/m<sup>2</sup>, and by the end of the first postoperative year, it was 30 kg/m<sup>2</sup>. Among the 57% of patients with full 3-year follow-up, there was no significant regain of weight.

Fasting blood glucose and HbA<sub>1c</sub> also improved rapidly and significantly in all

those with preoperatively elevated levels. "It's important to note how quickly this happened," Dr. Livingstone said. "Within the first year, all of these patients had normal fasting blood glucose and an HbA<sub>1c</sub> of 6% or below." Again, these values remained steady and in the normal range in the entire 3-year follow-

up cohort. "This is a tremendous accomplishment," he said.

However, Dr. Bruce Schirmer of the University of Virginia, Charlottesville, cautioned that a 3-year follow-up period may not be long enough to proclaim bariatric surgery as a cure for type 2 diabetes in any population.

"In mostly Caucasian populations, if you follow the patients for up to 5 years, you see that 15%-20%, at least, have some weight regain and with it, a return to diabetes. So to make this statement that there is no weight regain and no return to the disorder is a little premature," Dr. Schirmer said.