Elevated HbA_{1c} Raises Heart Risk in Nondiabetics

VITALS

Key finding: People with a baseline hemoglobin A_{1c} of 6.0%-6.4% had a risk-adjusted 41% increase in heart failure, compared with people with baseline values of 5.0%-5.4%.

Source of data: Follow-up data on more than 11,000 people in the Atherosclerosis Risk in Communities study.

Disclosure: Dr. Matsushita and his associates reported no financial disclosures related to the study.

BY MITCHEL L. ZOLER

ORLANDO — Elevated levels of hemoglobin A_{1c} were linked with a significantly increased risk of heart failure in a review of more than 11,000 U.S. adults without diabetes.

"Hemoglobin A_{1c} may be a better biomarker to evaluate the risk of heart failure, compared with fasting glucose, in nondiabetic populations," Dr. Kunihiro Matsushita said at the annual scientific sessions of the American Heart Association.

Prior study results linked higher HbA_{1c} levels with heart failure in patients with diabetes, but no previous study looked at this relationship in people without diabetes, said Dr. Matsushita, an epidemiologist in the Johns Hopkins Bloomberg School of Public Health, Baltimore. Diabetes is an established risk factor for heart failure.

Participants were aged 45-64 years and had enrolled in the Atherosclerosis Risk in Communities (ARIC) study in four U.S. locations in 1987. The analysis focused on the 11,196 study participants who underwent an examination in 1990-1992 that included HbA_{1c} measurement and who did not have diabetes or heart failure at that time. Their average age was 56 years, and 56% were women.

When analyzed by HbA_{1c} level at their examination in 1990-1992, 9% had a level of less than 5%, 47% had a level of 5.0%-5.4%, 35% had a level of 5.5%-5.9%, 8% had a level of 6.0%-6.4%, and in 1% the level was 6.5% or higher.

During a median follow-up of 14 years, 871 cases of incident heart failure developed. The data showed a continuous association between baseline level of HbA_{1c} and subsequent heart failure. In a model that adjusted for age, gender, and race, the rate of heart failure cases per 1,000 person-years of follow-up rose from 5 among those with a HbA_{1c} level of 5% to 6 in those with a level of 5.5%, 9 in those with a level of 6%, and 16 in people with a 6.5% level.

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DR. MATSUSHITA

Dr. Matsushita and his associates ran additional models that adjusted for many other baseline variables, including smoking, alcohol intake, body mass index, blood pressure, cholesterol levels, kidney function, and fasting glucose. In the fully adjusted model, people with a baseline HbA_{1c} of 6.0%-6.4% had a 41% increased risk of heart failure during follow-up, compared with the reference group that started with a HbA_{1c} level of 5.0%-5.4%. People who began with a level of 6.5% or greater had more than a twofold risk compared with the reference group. Both differences were significant.

The analysis also showed that higher levels of HbA_{1c} were more predictive than high baseline levels of fasting blood glucose. In a similar, fully adjusted model that controlled for baseline HbA_{1c}, people whose baseline fasting blood glucose was either 100-109 mg/dL or 110-125 mg/dL did not have a significantly higher risk of developing heart failure than did the reference group with a baseline fasting glucose level of 90-99 mg/dL.

Additional analysis by the researchers showed that the interaction between HbA_{1c} and heart failure did not depend on coronary heart disease to mediate the effect. When the analysis eliminated the 482 cases of coronary heart disease, the significant link between baseline HbA_{1c} and incident heart failure remained, Dr. Matsushita said. ■