Glycemic Control Influences Heart Failure Risk

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STOCKHOLM – Suboptimal glycemic control is an independent risk factor for a linear increase in the rate of new-onset heart failure in patients with type 2 diabetes, a large Scottish prospective case-control study indicates.

Moreover, in type 2 diabetes patients who already have established heart failure, poor glycemic control is independently associated with increased mortality, Dr. Chim Choy Lang reported at the congress.

These were the key findings in a new analysis from the Tayside Study, which is directed by Dr. Lang. The ongoing project provides an unusual opportunity to prospectively follow an entire Scottish community, population 400,000.

"We can track patients with diabetes mellitus, looking at mean [hemoglobin A_{1c}] over time, and see who develops heart failure," Dr. Lang said in an interview.

"Our bioinformatics platform allows us to track all sorts of biologic variables, prescribing information, and outcomes data," he explained.

The analysis of Tayside Study data was performed because controversy has arisen surrounding the relationship between glycemic control in type 2 diabetes and heart failure.

Some recent evidence has suggested that tight metabolic control in type 2 diabetes is actually associated with worse survival of patients in the setting of heart failure.

"It should be noted that most of these studies were based on a single measure of HbA_{1c}," observed Dr. Lang, a cardiologist at the University of Dundee. "I think there's always cause for concern about that kind of analysis," he added.

Dr. Lang reported on more than 9,000 Tayside residents with type 2 diabetes, 841 of whom developed heart failure during the period from 1991 to 2008. Each diabetic heart failure patient was matched by age, gender, and date of diagnosis of diabetes to five controls.

Each 1% increase in HbA_{1c} was independently linked to a 19% increase in incident heart failure.

DR. LANG

When Dr. Lang and his coinvestigators conducted a multivariate logistic regression analysis, they found that the mean HbA_{1c} level during the study period was associated in linear fashion with the risk of later developing heart failure.

Each 1% increase in HbA_{1c} was independently linked to a 19% increase in incident heart failure after the researchers controlled for patients' mean arterial pressure and use of thiazolidinediones.

Further, in type 2 diabetic patients who were diagnosed with heart failure, each 1% increase in mean HbA_{1c} was independently associated with an adjusted 16% increase in all-cause mortality, according to Dr. Lang.

"I think our findings are an argument for tight glycemic control in diabetic patients with heart failure. The question is how to achieve that. I'm a big believer in metformin for that purpose," the cardiologist said.

When Dr. Lang was asked whether the increased risk of mortality documented in diabetic patients with poor glycemic control and heart failure is a marker for poor adherence to standard heart failure medications or is due to the adverse effects of high blood glucose, he said that's a key unsettled question.

"We have the ability to look at treatment adherence in this cohort and are doing so at the moment," Dr. Lang noted.

He declared that he had no financial conflicts in connection with the study, which was conducted free of industry involvement. ■