Study shows metformin is safe for patients with advanced heart failure and diabetes mellitus

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A new study has shown that metformin, a drug often used in the treatment of diabetes mellitus, is safe for use in treating patients who have both diabetes and advanced heart failure. The study was published in the *Journal of Cardiac Failure* by researchers at the David Geffen School of Medicine at UCLA and is now online.

"There may be over two million individuals with heart failure and type II diabetes mellitus in the U. S. alone, so this important finding will have fairly broad impact," said Dr. Tamara Horwich, senior author of the study and an assistant professor of medicine in the division of cardiology at the David Geffen School of Medicine at UCLA.

Previous studies have shown that diabetes increases not only the risk of developing heart failure, but also the risk of death among heart failure patients. This is due in large part to the fact that diabetes, because it increases the amounts of sugar and fat circulating in the bloodstream, accelerates the onset of coronary atherosclerosis. This hardening and thickening of blood vessels is the hallmark of atherosclerotic heart disease, the most common cause of death in the country. The optimal treatment for high glucose and fat blood levels among heart failure patients has not been demonstrated.

The new study involved 401 patients of an average age of 56, with type II diabetes and advanced systolic heart failure. This patient cohort was

followed for 14 years in a comprehensive heart failure management program.

The study results suggest that, in patients with both advanced heart failure and diabetes, use of metformin is safe, and may be associated with better heart failure survival.

"The diabetes drug metformin previously carried a "black box warning" from the FDA against its use in treating diabetes in heart failure patients," said Horwich. "In fact, many medications commonly used to lower serum glucose levels have theoretic or demonstrated adverse effects on heart failure.

"As a result," she continued, "many physicians have been reluctant to use metformin and other similar medications to treat this patient group. However, our analysis shows that using metformin to treat diabetes in patients with advanced, systolic heart failure is not only safe, but may also play a role in improving outcomes compared to conventional diabetes care."

Dr Gregg Fonarow, Eliot Corday Professor of Cardiovascular Medicine at UCLA and coauthor of this study, noted, "Experimental studies suggest that metformin improves myocardial function via activation of a signaling mechanism (AMP-activated protein kinase) independent of antihyperglycemic effects. Together, these studies suggest that metformin may be cardioprotective by augmenting heart function at the molecular level, and should be further investigated as a treatment for heart failure, irrespective of diabetes."

In a previous study, diabetes with heart failure was shown to be an independent risk factor for progression from asymptomatic ventricular disease to symptomatic heart failure, and a risk factor for death from multiple causes. In the current study, metformin was shown to be safe,

and may be associated with favorable clinical outcomes. Patients taking metformin had a significantly lower risk of dying after one year than those not taking the medication. In addition, the study showed that there are potential mechanisms by which metformin may improve cardiac function.

Horwich's research group at the Ahmanson-UCLA Cardiomyopathy Center is now conducting a prospective study to investigate metformin's potential benefits in diabetic heart failure patients.

More information:
http://www.onlinejcf.com/article/S1071-9164(09)01132-4/abstract

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