A new treatment option for diabetic cardiomyopathy

9 September 2019

Credit: CC0 Public Domain

An article published in *Experimental Biology and Medicine* reports a new treatment option for heart disease in patients with diabetes. The study, led by Dr. ZuoYing Hu in the Department of Cardiology at Nanjing First Hospital in Nanjing (China), reports that an FDA-approved drug used to treat chronic heart failure improves heart function in an animal model of diabetes.

The term diabetes mellitus is used to denote diseases that alter how the body uses sugars, specifically glucose. Glucose is the main source of energy for the brain and an important energy source for all cells in the body. Eventually, all types of diabetes lead to excess glucose in the blood. Over time, high blood glucose levels cause serious health problems, including damage to blood vessels and nerves that control the heart. Heart disease, diabetic cardiomyopathy (DCM), is a common cause of death in patients with diabetes. LCZ696 is FDA-approved for the treatment of patients with chronic heart failure. However, the role of LCZ696 in DCM has not been determined.

In the current study, Dr. Hu and colleagues investigated the effects of LCZ696 treatment in streptozotocin-induced diabetic mice and high glucose-treated H9C2 cardiomyocytes. LCZ696 treated diabetic mice exhibited reduced apoptosis (cell death), inflammation, oxidative stress, cardiac remodeling and cardiac dysfunction when compared to untreated diabetic mice. LCZ696 treatment also reduced the expression of apoptotic and pro-inflammatory factors in H9C2 cardiomyocytes under high-glucose conditions. These results indicate that LCZ696 improves DCM by reducing inflammation, oxidative stress and apoptosis. Dr. Hu said "LCZ696 is considered to be one of the most important clinical breakthroughs in the field of cardiology over the past 10 years. Exploring the role of LCZ696 in diabetic cardiomyopathy and related potential mechanisms will provide new therapeutic ideas for the treatment of diabetic cardiomyopathy."

Dr. Steven R. Goodman, Editor-in-Chief of Experimental Biology & Medicine, said, "Hu and colleagues have demonstrated that LCZ696 can protect against diabetic cardiomyopathy (DCM), in a mouse model, by decreasing oxidative stress, inhibiting inflammation and attenuating programmed cell death. This suggests that this FDA approved drug that reduces heart failure may also prove efficacious in the treatment of DCM."

More information: Qing Ge et al. Feature article: LCZ696, an angiotensin receptor-neprilysin inhibitor, ameliorates diabetic cardiomyopathy by inhibiting inflammation, oxidative stress and apoptosis, *Experimental Biology and Medicine* (2019). DOI: 10.1177/1535370219861283

Provided by Experimental Biology and Medicine