Final Study Report November 22nd 2022

Study: TrimetaziDine as a Performance-enhancING drug in Heart Failure with Preserved Ejection Fraction (DoPING-HFpEF)

Description: Trimetazidine in heart failure with preserved ejection fraction: a phase II randomized, placebo-controlled, double-blind cross-over clinical trial.

This study was performed in compliance with Good Clinical Practices (GCP).

Clinical Trial Registration: European Union Clinical Trials Register (2018-002170-52) and the Netherlands Trial Register (NL7830).

First patient enrolled: May 2019

Study completion (last patient's last follow-up visit): November 2021.

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Final Study Report: Summary

Background: Impaired myocardial energy homeostasis plays an import role in the pathophysiology of heart failure with preserved ejection fraction (HFpEF). Left ventricular (LV) relaxation has a high energy demand, and LV diastolic dysfunction has been related to impaired energy homeostasis. This study investigated whether trimetazidine, a fatty acid oxidation inhibitor, could improve myocardial energy homeostasis and consequently improve exercise hemodynamics in patients with HFpEF.
Methods: The DoPING-HFpEF trial was a phase II single-center, double-blind, placebo-controlled, randomized cross-over trial. Patients were randomized to trimetazidine treatment or placebo for three months, and switched after a two-week wash-out period. The primary endpoint was change in pulmonary capillary wedge pressure (PCWP), measured with right heart catheterization at multiple stages of bicycling exercise. Secondary endpoint was change in myocardial phosphocreatine (PCr) / adenosine triphosphate (ATP), an index of the myocardial energy status, measured with phosphorus-31 magnetic resonance (MR) spectroscopy.
Results: The study included 25 patients with the diagnosis of HFpEF confirmed with (exercise) right heart catheterization either before or during the trial. There was no effect of trimetazidine on the primary outcome PCWP at multiple levels of exercise (P=0.60). Myocardial PCr/ATP in the trimetazidine arm was similar to placebo (P=0.08). There was no change by trimetazidine in the exploratory parameters: six-minute walking distance, NT-proBNP, overall quality-of-life, parameters for diastolic function measured with echocardiography and cardiac MR, or metabolic parameters.
Conclusions: Trimetazidine did not improve myocardial energy homeostasis and did not improve exercise hemodynamics in patients with HFpEF.