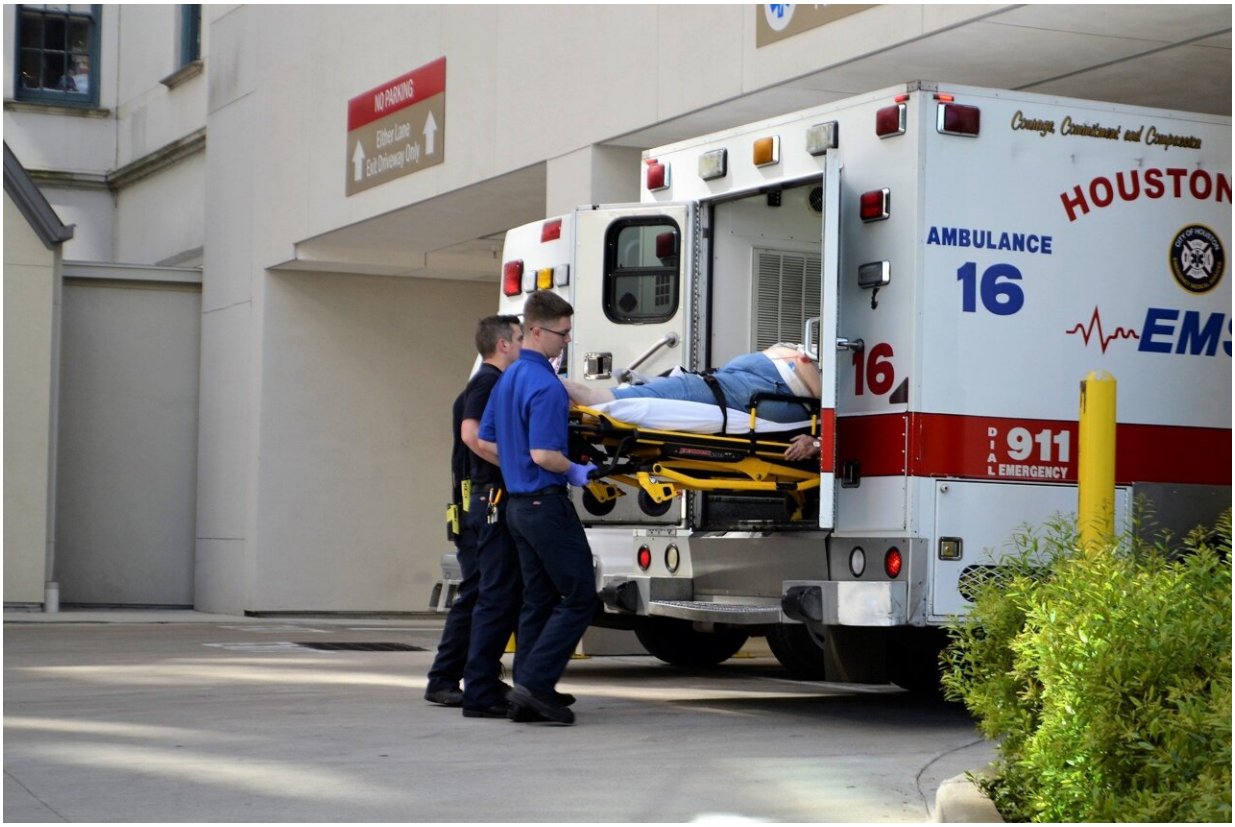
Report points to new therapeutic approach for tough-to-treat heart failure

October 19 2021



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Recent studies may point towards a new therapeutic mechanism for a type of heart failure that currently has no specific treatment option. Researchers from the University of Minnesota Medical School—along

with the University of Vermont and the Medical University of South Carolina—looked into a condition called heart failure with a preserved ejection fraction, or HFpEF. They discovered a mechanism that could prove useful in this common, yet hard-to-treat, condition.

"Heart failure is among the most common reasons for hospital admissions in developed countries, and about half of these patients have HFpEF, which is a type of heart failure with a normal cardiac pump function but a stiffened heart muscle," said Markus Meyer, MD, an associate professor of medicine at the U of M Medical School. "This new approach reduces the exposure to increased cardiac stiffness."

Meyer is the lead author of the report, which was published in *Circulation*. In their research, Meyer and his team built upon recent clinical studies that have shown improvements in HFpEF patients who took milrinone and levosimendan. These two medications are sometimes used to strengthen cardiac contraction in patients with heart failure and a reduced pump function.

In their study, Meyer and team found that:

- These benefits were associated with lower-filling pressures inside the heart chambers;
- All interventions activate calcium cycling, which controls cardiac contraction and relaxation; and
- Calcium cycling leads to a baseline heart muscle tone, which prevents the overfilling of the heart and exposure to high levels of stiffness that result in heart failure symptoms.

Recognition of this therapeutic mechanism may lay the foundation for a more tailored management of these patients who have been proven to derive few benefits from standard heart failure treatments.

However, it remains to be seen if the short-term benefits over several weeks translate into improved long-term outcomes. Meyer said further research is needed to confirm the validity of this conceptual framework as laid out by the research team, and there are already several ongoing pacing and medication studies that test this concept at the U of M Medical School and the University of Vermont.

"Although these very encouraging results may provide a real step forward, we should remain cautious," Meyer said. "It will be very important that we select the right patients and ascertain that these treatments are safe and indeed reduce heart failure in the long run."

The co-authors of this study are Martin M. LeWinter, MD, of the University of Vermont Medical Center, and Michael R. Zile, MD, of the Medical University of South Carolina.

More information: Markus Meyer et al, A Targeted Treatment Opportunity for HFpEF: Taking Advantage of Diastolic Tone, *Circulation* (2021). DOI: 10.1161/CIRCULATIONAHA.121.056412

Provided by University of Minnesota Medical School