Use of Midodrine to Achieve Target Doses of Guideline-Directed Medical Therapy in Patients with Heart Failure with Reduced Ejection Fraction

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Objective: The objective of this study is to evaluate the use of midodrine, an alpha agonist used to treat hypotension, as a means to achieve target doses of guideline-directed medical therapy (GDMT) in patients with heart failure with reduced ejection fraction (HFrEF). GDMT for HFrEF includes a renin-angiotensin aldosterone system (RAAS) inhibitor, a beta blocker, a mineralocorticoid receptor antagonist (MRA), and a sodium-glucose cotransporter-2 (SGLT-2) inhibitor.

Methods: A retrospective chart review was performed on patients 18 years of age or older who were initiated and continued on midodrine for at least 30 days for the purpose of achieving GDMT target doses. Patients were excluded if midodrine was used acutely in the hospital setting, if their dosing frequency varied from three times daily, or if they were on midodrine only on dialysis days. Wilcoxson signed-rank tests were used for statistical analysis for ordinal and continuous, non-parametric variables.

Results: Between October 1, 2019 and September 30, 2021, 49 patients met inclusion criteria. If patients were on more than one dose of midodrine during the study period, each was counted separately, resulting in 69 unique prescriptions. At baseline, 81.2% of patients were on a RAAS inhibitor, 94.2% were on a beta blocker, and 63.8% were on an MRA. Based on interim results, initiation of midodrine resulted in a statistically significant mean increase of 4.6% (P=0.011) in RAAS inhibitor dose, and non-significant reductions in beta blocker and MRA doses. Fully optimized GDMT at 100% of target doses of all medications was not achieved for any patients that were included in this study. Non-significant findings included a median increase of 5% in ejection fraction and a mean reduction in pro-BNP of 568 pg/mL after midodrine initiation. Of the 68 patients who had systolic blood pressures taken at their first follow-up visit after midodrine was prescribed, 55.1% had an increased reading. Of note, 34.8% of patients were on an SGLT-2 inhibitor at the time of inclusion in this study.

Conclusions: Based on the results of this study, it appears that initiation of midodrine may allow for uptitration and/or continuation of GDMT for HFrEF while avoiding adverse symptomatic hypotension.