Torsemide versus Furosemide Therapy in Patients with Chronic Heart Failure: An updated Meta-analysis

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Introduction: Torsemide's oral bioavailability and half-life theoretically render it a more efficient diuretic than Furosemide, but the clinical outcomes of torsemide compared with furosemide remain unclear. A rigorous meta-analysis performed by Bishoy et al 2019 showed Torsemide as compared to Furosemide improved hospitalization though it was not statistically significant. We performed an updated meta-analysis to evaluate the effects of Torsemide vs. Furosemide in heart failure hospitalization and mortality.

Methods: In addition to the studies included in previous meta-analyses, we performed a literature search using Medline from 2019 till 07/25/2023. We used the MESH term 'Torsemide' AND 'Furosemide[Mesh]) AND 'Heart Failure'. Eligible studies were 1) Randomized control studies (RCT), non-RCT, and observational prospective and retrospective cohort studies, 2) with English abstract 3) compared torsemide with furosemide, and 4) assessed outcomes of all-cause hospitalization or all-cause mortality. When studies reported both short-term and long-term outcomes, a preference was given to long-term outcomes. Study quality was assessed by the Ottawa scale. RevMan 5.4 was used for analysis. Study results were analyzed using a random effects model. I2 statistics were applied to assess the between-study heterogeneity. Further subgroup analysis was performed for RCTs only.

Results: In addition to the previous studies, our literature search returned 27 studies. Two studies met the inclusion criteria. A total of twenty studies (8 randomized control trials [RCTs] and 12 observational studies) with a total of 22,749 patients were included. New-Castle Ottawa scale was used to assess the quality of each study, score of each study ranged from 7 to 9 which reflected high quality. Intra-study risks of bias were also assessed. During a mean follow-up duration of 12 months, risk of hospitalization due to heart failure in patients treated with Torsemide was not different from those treated with Furosemide (odds ratio [OR] 0.80, 95% confidence interval [CI] [0.59, 1.07], $p< 0.23$, $I2 = 24\%$) also no difference in risk of all-cause mortality (odds ratio [OR] 0.94, 95% confidence interval [CI] [0.87, 1.02], $p< 0.001$, $I2 = 96\%$, respectively) noted between the two groups. The results remained consistent when subgroup analysis was conducted using only RCTs.

Conclusions: Compared with Furosemide, Torsemide use was not associated with a significant difference in hospitalization for heart failure or all-cause mortality in patients with heart failure. The studies included in hospitalization analyses showed lower heterogeneity while for all-cause mortality a higher heterogeneity was noted.