

GLP-1 Receptor Agonists Reduce Right Heart Failure Risk Compared to SGLT2 Inhibitors in Pulmonary Arterial Hypertension

Glenview, IL – In patients with pulmonary arterial hypertension (PAH), the use of glucagon-like peptide-1 receptor agonists (GLP-1 Ras) was associated with a significant reduction in right heart failure compared with sodium-glucose cotransporter-2 inhibitors (SGLT2-i), according to findings from a large real-world data analysis.

PAH is a progressive and life-threatening disease characterized by pulmonary vascular remodeling and right ventricular failure. In recent years, antidiabetic medications such as GLP-1 RAs and SGLT2-i have demonstrated cardiovascular benefits in patients with type 2 diabetes, raising interest in their potential roles in PAH.

GLP-1 RAs may improve pulmonary vascular function by mitigating mitochondrial stress and abnormal smooth muscle cell growth, while SGLT2-i are thought to enhance cardiac efficiency and oxygen utilization. This study evaluated the comparative cardioprotective effects of GLP-1 RAs versus SGLT2-i in adults with PAH using large-scale real-world data.

At a mean follow-up of 713 days in the PAH and GLP-1 RAs group (without SGLT2-i) and 557 days in the PAH and SGLT2-i group (without GLP-1 RAs), various outcomes were assessed. No statistically significant difference in all-cause mortality was observed between the groups (RR 0.906, 95% CI 0.724–1.135, $p = 0.3915$). The risk of respiratory failure also showed no significant difference (RR 0.929, 95% CI 0.689–1.253, $p = 0.6299$). However, the GLP-1 RAs group exhibited a marked reduction in right heart failure compared with the SGLT2-i group (RR 0.464, 95% CI 0.27–0.798, $p = 0.0043$). Furthermore, the mean BNP level was considerably lower in the GLP-1 RAs group (338) versus the SGLT2-i group (829), indicating potential variations in cardiac stress between the two treatment approaches.

“In this large real-world analysis, GLP-1 receptor agonists were associated with a substantial reduction in right heart failure risk among patients with pulmonary arterial hypertension,” said Saud Alawad, MBBS, lead researcher and CHEST 2025 presenter. “While mortality outcomes were similar, the marked improvement in right ventricular performance highlights a potential new therapeutic direction for management of this disease.”

These results indicate that GLP-1 RAs may provide added benefit over SGLT2-i in protecting right heart function among patients with PAH, although both drug classes demonstrated comparable overall survival.

Further results will be presented at the CHEST Annual Meeting 2025 as part of the *SGLT2 and GLP-1 Inhibitors in Cardiopulmonary Disease original investigation presentations titled, Comparative Cardioprotective Effects of GLP-1 RA vs SGLT2-i Inhibitors in Pulmonary Arterial Hypertension: Insights From a Large-Scale Real-World Data Analysis*. The [study abstract](#) can be viewed on the CHEST® journal website.