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EDITORIAL

A Noval Role of SGLT-2 Inhibitors: Bridging Diabetes and Cardiovascular Care

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Introduction

In recent past, the evolution of diabetes management has seen remarkable progress, with the development of novel pharmacologic therapies that go beyond simple glucose control to target underlying cardiovascular (CV) risks and complications. Among the innovative advancements in diabetes care are the Sodium-Glucose Cotransporter-2 (SGLT-2) inhibitors such as empagliflozin, Canagliflozin, and dapagliflozin. Although, this drug was primarily introduced as oral ant hyperglycemic agents for type 2 diabetes treatment, but have also shown significant role in cardiovascular risk reduction and kidney protection. Currently, The use of this drug, both by Physicians and cardiologists is expanding as evidence mounts on their multifaceted benefits in managing not just diabetes, but also heart failure, chronic kidney disease (CKD), and overall cardiovascular health.

It is documented that SGLT-2 inhibitors mainly work by blocking the SGLT-2 protein in the proximal tubules of the kidneys, which is responsible for reabsorbing glucose back into the bloodstream. By inhibiting this protein, SGLT-2 inhibitors promote the excretion of excess glucose through urine, resulting in improved blood glucose levels. However, their benefits extend far beyond glucose control, by reducing sodium reabsorption in the kidneys, have direct effects on fluid balance, blood pressure, and ultimately, cardiovascular function[1].

The cardiovascular effects of SGLT-2 inhibitors have given widespread importance, mainly after the publication of large-scale clinical trials study like DECLARE-TIM1-58,DAPA-HF,EMPA-EG,EMPROR-PrEF, EMPROR-roEF and CANVAS[2-5].These Clinical trials have demonstrated a substantial reduction in major adverse cardiovascular events (MACE), including cardiovascular death, nonfatal stroke, and nonfatal myocardial infarction2. Specifically, empagliflozin was shown to reduce cardiovascular mortality by 38% and hospitalization due to heart failure by 35% [1].

The potential role for SGLT-2 inhibitors to modify the course of heart failure, particularly heart failure with reduced ejection fraction (HFrEF), has revolutionized cardiology practice. The DAPA-HF trial highlighted the benefits of dapagliflozin in reducing hospitalizations for heart failure and cardiovascular death in patients with HFrEF, irrespective of the presence of diabetes [3].

The nephroprotective properties of SGLT-2 inhibitors are also noteworthy. Chronic kidney disease (CKD) is a common co-morbidity in patients with diabetes, and managing this condition is critical to reducing morbidity and mortality. The DAPA-CKD trial demonstrated that dapagliflozin significantly reduced the progression of CKD and the risk of kidney failure in both diabetic and non-diabetic patients[4].

Given the compelling evidence for the benefits of SGLT-2 inhibitors beyond glucose control, endocrinologists and cardiologists alike are increasingly incorporating these agents into their treatment regimens. For cardiologists, the evidence supporting the use of SGLT-2 inhibitors in heart failure patients is particularly influential. These agents are now considered first-line therapy in patients with HFrEF, regardless of whether they have diabetes, due to their ability to reduce hospitalizations and

improve survival rates[5]. Their role in kidney protection also aligns with the goals of cardiology, as cardiovascular and renal health are closely intertwined, especially in patients with comorbid conditions.

Despite their proven benefits, the use of SGLT-2 inhibitors is not without challenges. Clinicians must be careful of potential side effects such as urinary tract infections (UTIs), genital infections, and a slight increase in the risk of diabetic ketoacidosis (DKA). Additionally, their use in patients with advanced kidney disease or a history of diabetic ketoacidosis may require cautious evaluation and monitoring.

Moreover, while the evidence for SGLT-2 inhibitors in cardiovascular and renal protection is compelling, the cost of these medications remains a concern in many healthcare systems. Access to these drugs varies across regions, and cost-effectiveness remains an important factor in their widespread adoption.

Conclusion

In conclution, SGLT-2 inhibitors have proven themselves to be transformative in the treatment of diabetes, heart failure, and chronic kidney disease. Their ability to address multiple aspects of cardiovascular and renal health in addition to glycemic control places them at the forefront of modern diabetes and cardiovascular care. Physicians, both endocrinologists and cardiologists, are now positioned to provide more comprehensive care to patients, improving both quality of life and long-term outcomes.

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