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SGLT2 INHIBITORS BEYOND DIABETES

A RETROSPECTIVE AUDIT OF PRESCRIBING PATTERNS IN PATIENTS WITH HEART FAILURE WITH PRESERVED EJECTION FRACTION

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Abstract:

Heart failure with preserved ejection fraction (HFpEF) constitutes a substantial and increasing proportion of heart failure cases worldwide, with historically limited evidence-based therapeutic options. Sodium–glucose co-transporter 2 (SGLT2) inhibitors, initially developed for the management of type 2 diabetes mellitus, have demonstrated significant cardiovascular benefits, including reductions in heart failure hospitalizations and improvement in functional outcomes, irrespective of glycemic status. This retrospective audit aimed to evaluate prescribing patterns of SGLT2 inhibitors in patients with HFpEF, with particular emphasis on their utilization beyond diabetes. Medical records of 124 patients diagnosed with HFpEF over a 12-month period were analyzed. Data collected included frequency of SGLT2 inhibitor prescription, indications for initiation, associated comorbidities, and adherence to contemporary clinical guidelines.

Among the study population, 62% of patients were prescribed SGLT2 inhibitors. Utilization was significantly higher in patients with coexisting diabetes (78%) compared to non-diabetic individuals (41%). Despite guideline recommendations, approximately 36% of eligible patients did not receive SGLT2 inhibitors. Variability in prescribing patterns was influenced by clinician familiarity with evolving evidence, presence of comorbid conditions, and differences in risk stratification.

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The findings demonstrate a progressive increase in the adoption of SGLT2 inhibitors in HFpEF management; however, a notable treatment gap persists, particularly among non-diabetic patients. These results highlight the need for improved clinician awareness and adherence to updated guidelines to optimize therapeutic outcomes. SGLT2 inhibitors are emerging as a cornerstone therapy in HFpEF, and targeted interventions are required to bridge the gap between evidence-based recommendations and real-world clinical practice.

Introduction:

Heart failure with preserved ejection fraction (HFpEF) represents an escalating global health burden, currently accounting for nearly 50% of heart failure-related hospitalizations. Characterized by complex pathophysiology often driven by an aging population and metabolic comorbidities: specifically hypertension, obesity, and diabetes, HFpEF management was historically limited to palliative symptom relief and the control of underlying risk factors. However, the emergence of Sodium-Glucose Co-transporter 2 inhibitors (SGLT2i) has fundamentally redefined the standard of care, providing the first evidence-based therapy to demonstrate significant prognostic benefits in this population. This retrospective audit of 124 patients evaluates the clinical uptake of SGLT2i and identifies prevailing gaps in guideline-directed medical therapy (GDMT) within real-world practice.

Pathogenesis:

The pathophysiology of HFpEF involves diastolic dysfunction due to impaired ventricular relaxation and increased myocardial stiffness. Contributing mechanisms include systemic inflammation, endothelial dysfunction, myocardial fibrosis, and neurohormonal activation. SGLT2 inhibitors exert beneficial effects through osmotic diuresis, natriuresis, reduction in preload and afterload, improved myocardial metabolism, and attenuation of inflammatory pathways.

Clinical Features:

-Core Symptoms

Exertional Dyspnea. Paroxysmal Nocturnal Dyspnea (PND) & Orthopnea, fatigue and lethargy, reduced cardiac output, reduced exercise tolerance

-Objective Clinical Signs

Peripheral Edema, swelling in the lower extremities (pedal edema)

Elevated jugular venous pressure (JVP)

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Pulmonary Crackles (Crepitations)

Displaced Apex Beat or S3/S4 Gallop.

-Common Comorbidities in HFpEF

Hypertension: leading to myocardial stiffness.

Obesity: Frequently associated with systemic inflammation in HFpEF patients.

Atrial Fibrillation: Often found in HFpEF populations and contributes to symptomatic worsening

Diagnosis:

Diagnosis was based on a combination of clinical presentation and supportive investigations. All patients demonstrated preserved left ventricular ejection fraction (≥50%) on echocardiography, along with evidence suggestive of diastolic dysfunction.

Additional investigations, including natriuretic peptide levels (BNP/NT-proBNP), electrocardiography, and chest radiography, were used to support the diagnosis and assess disease severity. Common associated findings included atrial fibrillation, left ventricular hypertrophy, and features of pulmonary congestion.

It was further strengthened by the presence of typical symptoms such as exertional dyspnea and signs of fluid overload, while alternative causes of similar clinical presentation were systematically excluded.

Treatment and Management:

Management of HFpEF focuses on symptom relief and treatment of underlying comorbidities. Diuretics are used to control congestion. Control of hypertension, diabetes, and obesity is essential. SGLT2 inhibitors such as empagliflozin and dapagliflozin have shown significant benefits in reducing heart failure hospitalization and improving clinical outcomes. Lifestyle modifications and regular follow-up are important components of management.

Results:

The retrospective audit demonstrated a progressive increase in the prescription of SGLT2 inhibitors among patients with HFpEF over the 12-month study period.

Out of 124 patients, 62% were prescribed SGLT2 inhibitors. Among these:

• Empagliflozin was used in 55%

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• Dapagliflozin in 45%

A significant disparity in prescribing patterns was observed based on diabetic status:

• Patients with diabetes: 78% received SGLT2 inhibitors

• Non-diabetic patients: only 41% received therapy

Despite eligibility based on current guidelines, 36% of patients did not receive SGLT2 inhibitors. The most commonly documented reasons included:

• Lack of clinician familiarity with updated guidelines - 31%

• Concerns regarding renal function - 26%

• Cost or accessibility issues - 22%

• Absence of diabetes (perceived indication bias) -21%

Temporal analysis revealed an increase in prescription rates from 48% in the first quarter to 68% in the final quarter, reflecting growing adoption following guideline updates.

Patients receiving SGLT2 inhibitors demonstrated:

• Reduced frequency of hospitalization (18% vs 29% in non-users)

• Improved symptomatic status, with a higher proportion in NYHA class II at follow-up

However, due to the retrospective nature of the audit, causal relationships could not be definitively established.

Conclusion:

SGLT2 inhibitors have emerged as a key therapeutic option in HFpEF beyond their role in diabetes management. Despite strong evidence supporting their use, their adoption in routine clinical practice remains suboptimal. Increased awareness and adherence to updated guidelines are necessary to improve patient outcomes and reduce the burden of heart failure.

References:

1. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine. 12th ed. Philadelphia: Elsevier; 2022.

2. Harrison's Principles of Internal Medicine. 21st ed. New York: McGraw Hill; 2022.

ISSN: 3060-4737 Volume 3, Issue 5 IF(Impact Factor) 10.98 / 2025
3. API Textbook of Medicine. 11th ed. Mumbai: Association of Physicians of India; 2019.

4. European Society of Cardiology. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure.

5. American Heart Association / American College of Cardiology. 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure.

6. Stefan D. Anker, et al. Empagliflozin in Heart Failure with a Preserved Ejection Fraction. The New England Journal of Medicine. 2021;385:1451–1461.

7. Scott D. Solomon, et al. Dapagliflozin in Heart Failure with Mildly Reduced or Preserved Ejection Fraction. The New England Journal of Medicine. 2022;387:1089–1098.

8. National Institute for Health and Care Excellence (NICE). Chronic heart failure in adults: diagnosis and management. 2021.