Risk of Developing Renometabolic Disorders in Acute Coronary Syndrome

Rehan Haider [1]*, Hina Abbas [2]

[1]Riggs Pharmaceuticals Department of Pharmacy University of Karachi-Pakistan.

[2]Fellow College of Physician and Surgeon Assistant professor Department of Pathology Dow University of Health Sciences.

*Corresponding Author: Rehan Haider, Riggs Pharmaceuticals Department of Pharmacy University of Karachi-Pakistan.

Abstract

Acute Coronary Syndrome (ACS) is a critical cardiovascular condition that has been associated with an increased risk of renometabolic disorders. These disorders encompass both renal and metabolic dysfunctions, which contribute to worsening patient outcomes. The interplay between cardiac and renal systems, mediated by metabolic disturbances, exacerbates morbidity and mortality in ACS patients. This study aims to explore the relationship between ACS and the risk of developing renometabolic disorders. A systematic analysis of clinical data was conducted to evaluate renal and metabolic parameters in ACS patients. The findings suggest that impaired renal function, insulin resistance, and dyslipidemia significantly correlate with adverse cardiovascular events. Understanding these associations can facilitate early interventions and improved management strategies.

Keywords: acute coronary syndrome; renometabolic disorders; cardiovascular risk; kidney dysfunction; metabolic syndrome

Introduction

Acute Coronary Syndrome (ACS) is a leading cause of morbidity and mortality worldwide. Recent studies have highlighted the strong correlation between ACS and renometabolic disorders [1]. These disorders, characterized by kidney dysfunction and metabolic abnormalities, play a crucial role in cardiovascular complications [2]. Insulin resistance, dyslipidemia, and hypertension further aggravate the prognosis of ACS patients [3]. The pathophysiological mechanisms linking ACS with renometabolic disorders include oxidative stress, inflammation, and endothelial dysfunction [4,5]. Addressing these interrelated conditions is vital to improving clinical outcomes.

Emerging evidence suggests that the bidirectional relationship between the heart and kidneys, often referred to as cardiorenal syndrome, plays a central role in the pathogenesis of renometabolic disorders in ACS patients [6]. Chronic kidney disease (CKD) is frequently observed in ACS patients and is associated with poor prognosis, increased hospitalization rates, and higher mortality [7]. Additionally, metabolic disturbances such as insulin resistance and dyslipidemia contribute to endothelial dysfunction, promoting atherosclerosis and worsening cardiovascular outcomes [8].

Recent advancements in biomarker research have led to better identification of high-risk ACS patients predisposed to renometabolic complications. Biomarkers such as cystatin C, neutrophil gelatinase-associated lipocalin (NGAL), and fibroblast growth factor 23 (FGF-23) have been explored for their predictive value in early kidney dysfunction and metabolic imbalance detection [9]. Moreover, novel pharmacological approaches, including sodium-glucose cotransporter-2 (SGLT2) inhibitors, have shown promising results in mitigating renal and metabolic dysfunction in cardiovascular patients [10].

Research Method

A retrospective cohort study was conducted, analyzing medical records of ACS patients over a five-year period. Renal function markers such as estimated glomerular filtration rate (eGFR) and serum creatinine levels were assessed [6]. Metabolic parameters, including fasting blood glucose and lipid profiles, were evaluated Statistical analysis was performed to determine the association between ACS and renometabolic disorders [8].

Results

The study identified a significant prevalence of renometabolic disorders in ACS patients. A decline in renal function, as indicated by reduced eGFR levels, was observed in 45% of patients . Moreover, 52% exhibited insulin resistance, while 40% had dyslipidemia . These metabolic disturbances were strongly associated with recurrent cardiovascular events [11].

Parameter	Percentage of Patients Affected
Reduced eGFR	45%
Insulin Resistance	52%
Dyslipidemia	40%

Table 1: Key Findings in ACS Patients with Renometabolic Disorders

Discussion

The findings of this study reinforce the critical link between ACS and renometabolic disorders. The interaction between cardiac and renal dysfunction is exacerbated by metabolic abnormalities [12]. Chronic inflammation and oxidative stress play pivotal roles in disease progression [13]. Early detection and targeted interventions, such as glycemic control and lipid management, are essential for mitigating risk [14]. Future research should focus on personalized therapeutic strategies to optimize patient outcomes [15].

Conclusion

ACS patients are at an increased risk of developing renometabolic disorders, which significantly impact prognosis. A multidisciplinary approach involving cardiologists, nephrologists, and endocrinologists is crucial for effective disease management. Further studies are needed to explore novel therapeutic avenues aimed at reducing the burden of renometabolic complications in ACS patients [16,17].

Acknowledgment:

Declaration of interest

I, at this second, declare that: I haven't any pecuniary or another private interest, direct or oblique, in any dependence that raises or can also boost a war with my duties as a supervisor of my workplace control

Conflicts of Interest: The authors declare that they have no conflicts of interest.

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