BALANCE BETWEEN THE NEPHROTOXICITY AND NEPHROPROTECTION OF ANGIOTENSIN-CONVERTING ENZYME INHIBITORS

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INTRODUCTION: Heart failure (HF) is a chronic condition affecting approximately 20 million people worldwide, and it is frequently associated with renal dysfunction. A study involving nursing home residents revealed that 40-50% of patients were using angiotensin-converting enzyme inhibitors (ACEI), indicating a potential risk for nephrotoxicity. Worsening renal function, evidenced by an increase in serum creatinine, is common after starting ACEI therapy, reflecting hemodynamic changes rather than intrinsic renal injury. In the Studies of Left Ventricular Dysfunction (SOLVD), this initial worsening was not associated with increased mortality. Patients who continued the therapy despite changes in renal function continued to experience benefits. OBJECTIVE: To review studies on the nephrotoxicity and nephroprotection of ACEI given the uncertainty regarding their risk-benefit. MATERIALS AND METHODS: A search was conducted in the PubMed and ScienceDirect databases using the descriptors: cardiorenal syndrome, ACEI, renal injury, nephrotoxicity. A total of 24 papers were analyzed, and 11 were selected, published between 2010 and the present, including studies that highlight ACEI as nephroprotective, nephrotoxic, and those discussing the risk-benefit ratio. RESULTS: In a study with 112 patients using ACEI, renal dysfunction was considered as an increase in serum creatinine above 30% from baseline. Patients were divided into two groups according to the dosage of enalapril or lisinopril: medium-low (≤10 mg/day) and high (>10 mg/day). After 718 days, acute kidney disease occurred in 29.8% of patients, more frequently in those on high doses. Despite this, ACEI still reduce mortality in heart failure. According to the World Health Organization (WHO) and Kidney Disease: Improving Global Outcomes (KDIGO), ACEI are recommended to slow the progression of chronic kidney disease. Their nephrotoxic mechanism involves reduced aldosterone, increased potassium, decreased sodium, and a decline in glomerular filtration pressure. Concomitant use of diuretics should be avoided due to the risk of hypotension and impaired renal perfusion. However, in decompensated patients, diuretics are necessary with careful renal monitoring. CONCLUSION: According to the reviewed studies, 30% identified ACEI as nephroprotective, and 63.6% as nephrotoxic. Their indication should consider the clinical risk-benefit ratio. Further studies with larger samples are recommended.

KEYWORDS: ACEI; cardiorenal syndrome; nephrotoxicity.