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Session Topic : -

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Electro: Diuretic Strategies in Patients With Heart Failure and Kidney Dysfunction

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Expansion of extracellular fluid volume, resulting in congestion, is central to the pathophysiology of heart failure (HF) and chronic kidney disease (CKD). Diuretic therapy, particularly loop diuretics, remains a cornerstone in managing congestion in these patients. However, unlike other HF treatments, robust clinical trial evidence guiding optimal diuretic use is relatively limited, especially in patients with concurrent CKD. Loop diuretics, while widely used, have specific pharmacological characteristics, including a steep dose-response curve requiring careful titration. Effective diuresis is only achieved after surpassing a threshold concentration, highlighting the importance of appropriate dosing strategies. In patients with CKD, alterations in renal blood flow, reduced glomerular filtration rate (GFR), increased sodium reabsorption, and heightened intrarenal resistance frequently lead to diuretic resistance. This resistance is a significant clinical challenge, often associated with adverse outcomes. To overcome diuretic resistance, therapeutic strategies include increasing loop diuretic doses or utilizing combination nephron blockade approaches. Commonly, adding a thiazide-type diuretic can enhance diuresis effectively. More recently, adjunctive therapies such as acetazolamide have been explored. These strategies, however, must be carefully managed due to potential electrolyte imbalances and worsening renal function. Long-term management should focus on optimizing HF treatment and maintaining the lowest effective diuretic dose to minimize adverse effects and enhance clinical outcomes. Emerging clinical research emphasizes novel therapeutic strategies, including alternative administration routes such as subcutaneous diuretic formulations and outpatient intravenous diuretic clinics, which may reduce hospitalization rates. This presentation will comprehensively review the fundamental mechanisms underlying diuretic therapy, current management strategies for diuretic resistance, and recent clinical trial findings, providing practical guidance for clinicians managing patients with concurrent HF and CKD.

Keywords: Heart failure, Chronic kidney disease, Volume overload, Diuretic resistance, Diuretics