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Comparison Between Distal Diuretics and Dietary Sodium Restriction for Hypertension in Chronic Kidney Disease : A Systemic Review

Shinta Retno Wulandari, Asticha Erlianing Sari
Department of General Medicine, Sebelas Maret University, Indonesia

Objectives: Chronic kidney disease (CKD) is characterized by salt – sensitive hypertension and overhydration. It is unknown whether dietary or pharmacologic approaches are preferable to reduce sodium in CKD. This systematic review evaluates the effect of distal diuretics and dietary sodium restriction on hypertension in CKD.

Methods: We did a comprehensive searching on distal diuretics and dietary sodium restriction for hypertension in CKD published in 2016 - June 2021 through Pubmed and Cochrane Library. We found 19 studies and two eligible studies were included in this study. Risk of bias analysis was performed using the Cochrane Risk of Bias.

Results: Twenty-six patients with CKD stage 3 or 4 and hypertension were included in this study (baseline eGFR 39 ± 13 ml/min/1.73 m²). We compared dietary Na⁺ restriction (60 mmol/day) versus amiloride/hydrochlorothiazide (5/50 mg once daily). Both interventions lasted for two weeks and were separated by a 2-week wash-out period. Urinary Na⁺ excretion was successfully lowered with dietary Na⁺ restriction (160 ± 66 to 64 ± 37 mmol/day, $p < 0.01$), and remained similar with diuretics (154 ± 47 to 153 ± 63 mmol/day, $p = 0.95$). Dietary Na⁺ restriction lowered 24-hour SBP (134 ± 12 to 129 ± 14 mmHg, $p < 0.05$), while diuretics had a greater effect (138 ± 12 to 124 ± 13 mmHg, $p < 0.01$ for within and between interventions). Both maneuvers significantly lowered indices of fluid overload, including body weight, NT-pro-BNP (median -10 and -7 pmol/L) and overhydration as assessed by bioimpedance (-0.6 ± 0.6 and -1.3 ± 0.7 L).

Conclusions: Diuretics produce greater effects than dietary Na⁺ restriction. Distal diuretics and dietary Na⁺ restriction effectively lower blood pressure in CKD 3 and 4 in the absence of renin-angiotensin inhibitors. Both interventions also lower indices of fluid overload.

Figure 1. Figure of PRISMA


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