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## **Renal Denervation versus Spironolactone in the Treatment of Resistant Hypertension: A Meta-Analysis**

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**Objectives:** Resistant hypertension (RH) is defined as blood pressure that remains above guideline-directed goal despite the use of at least three antihypertensive agents of different classes, one of which is a diuretic. Several studies revealed impressive BP reductions when spironolactone was added. There has also been a growing perception that controlling BP in RH is beyond the reach of existing drug therapies, leading to the emergence of device-based therapies, such as renal denervation (RDN). Our aim is to do a systematic review of RCTs that compares the use of Spironolactone and RDN in patients with RH.

**Methods:** A comprehensive literature search from PubMed was performed using the search terms: Resistant Hypertension, Spironolactone, Renal Denervation. The search was limited to RTCs that compared Spironolactone to RDN in patients with RH. Three RCTs were selected and analyzed using Cochrane Revman. Primary outcome were mean changes in 24-hour Ambulatory Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP). Secondary outcomes include mean changes in Office SBP and DBP. Safety was assessed by changes in eGFR and potassium levels.

**Results:** Two trials comprising 130 patients were selected - 63 patients treated with RDN and 67 patients with Spironolactone. Pooled analysis for 24H SBP and DBP showed an adjusted standardized mean difference of 0.55 mmHg (CI -0.72-1.82; P = 0.39) and 0.32 mmHg (CI -0.72-1.35; P = 0.55) with significant heterogeneity. No significant differences were noted in terms of decline in eGFR ( $p = 0.07$ ) and changes in serum potassium ( $p = 0.29$ ) from baseline to 6 months.

**Conclusions:** RDN appears to be safe and effective treatment for RH. However, additional larger studies should be done including a cost-benefit analysis to explore that possibility of RDN as treatment alternative for those intolerant of spironolactone or as a possible 5<sup>th</sup> line of treatment for those already taking spironolactone.