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Differences in Water and Solute Excretion in Patients with Nocturia

Prior research has shown that patients with nocturia who adhered to dietary sodium restriction had a significant decrease in their number of nighttime voids. This study aims to characterize nighttime and 24h urine production and solute excretion in patients with nocturia.
Methods: Subjects with hypertension completed 24 hour voiding diaries and urine collection in three aliquots: first nighttime void, all subsequent nighttime plus first morning void, and daytime voids. The mild nocturia group had 0-2 nighttime voids (n=18) and the severe nocturia group had 3+ nighttime voids (n=12).
Results: Groups were comparable in age (M=62 (sd=11) y), gender (21 females), systolic (139 (16) mmHg) and diastolic (80 (9) mmHg) BP, serum creatinine (0.9 (0.2) mg/dL), HbA1c (6.6 (1.5) %), and maximum void volume (347 (125) mL). Compared to the mild group, the severe group had greater nighttime excretion of sodium (1.06 (0.82) vs 2.05 (0.17) g, p=.02), potassium (0.60 (0.34) vs 0.93 (0.58) g, p=.03), and urea (3.07 (1.91) vs 4.35 (1.45) g, p=.03), as well as 24h sodium excretion (2.11 (1.26) vs (3.20 (1.98) g, p=.04), nighttime urine volume (524 (298) vs 1058 (304) mL, p<.001), and 24h urine volume (1150 (427) vs 1713 (510), p=.001). The severe group excreted significantly more sodium, potassium, urea, and creatinine in the subsequent nighttime plus first morning void aliquot compared to the first nighttime void, while no significant differences were observed in the mild group.
Discussion: Those with severe nocturia excreted 52% more sodium in 24h than those with mild nocturia and surpassed the maximum daily sodium intake of 2.3 g recommended by the AHA. Further, in contrast to those with mild nocturia, those with severe nocturia excreted more solutes later in the night compared to the first nighttime void, suggesting increased late-night natriuresis may play a role in the pathophysiology of nocturia and provides a simple dietary approach to initial treatment of nocturia.