

Blood Pressure Indices as Predictors of Nocturia and Nocturnal Polyuria

Purpose: The purpose of this study was to investigate the association of blood pressure (BP) indices with nocturia and nocturnal polyuria (NP).

Methods: Patients ≥ 18 years were recruited in the cardiology/medicine clinics at University Hospital of Brooklyn between 6/1/21-1/21/22. Demographic data (e.g., age, race, sex) was collected and BPs (systolic/diastolic at brachial artery and central aorta) were measured using a standard cuff and applanation tonometry. Patients completed a nocturnal voiding diary and were divided by status of nocturia, defined as ≥ 2 nocturnal voids, and NP, defined as the nocturnal urine production (NUP; nocturnal urine volume/hours asleep) > 90 ml/hour. The Mann-Whitney U and chi-square tests were used to compare groups. Logistic regression was performed to determine odds of nocturia and NP.

Results: Of the 86 recruited patients, 75 patients (median age 64, IQR 57-74 years; 44% male and 56% female) followed up with a completed bladder diary. Compared to patients without nocturia (N=42), patients with nocturia (N=33) did not differ in age, gender and race distributions, or BMI; baseline characteristics also did not differ between patients with NP (N=66) and patients without NP (N=9). Higher total nighttime urine output, number of nighttime voids, maximum voided volume, and NUP were found for patients with nocturia or NP compared to controls. Median diastolic BP was higher in patients with NP compared to those without NP (89 IQR 85-92 vs 80 IQR 74-86 mm Hg, $p=0.029$). Systolic BP was associated with nocturia (OR 1.30, 95%CI 1.03-1.64, $p=0.030$) and diastolic BP was associated with NP (OR 1.58, 95%CI 1.36-1.94, $p=0.026$). No associations were seen between central aortic BPs and nocturia/NP.

Conclusions: Systolic BP was associated with nocturia while diastolic BP was associated with NP, implying that different mechanisms may be at play when NP is the primary etiology of nocturia. Additionally, central aortic BPs show no associations to nocturia/NP.