

OUTCOMES OF INVESTIGATION OF URINARY AND SERUM OSMOLALITY AND ELECTROLYTES IN PATIENTS WITH BENIGN PROSTATIC HYPERTROPHY (BPH)

Hypothesis / aims of study

A disorder of micturition in patients with BPH may be due not only to infravesicular obstruction but also to changes in the amount of urine produced. Nocturia is considered to be the most significant clinical symptom of inappropriate urination. The purpose behind this investigation was to refine the dynamics of diuresis and regulation of excretion of water and electrolytes in patients with BPH.

Study design, materials and methods

A retrospective observational study was conducted in the period between 2012 and 2013. Patients with BPH were asked to fill out a frequency volume chart over three consecutive days. Once the voiding diary has been completed by the patient, urine osmolality obtained immediately after the patient woke up was measured as well as serum osmolality, levels of sodium, potassium, urea and glucose. All patients also completed an IPSS questionnaire to evaluate lower urinary tract symptoms and the Nocturia Quality-of-Life questionnaire (N-QoL) to estimate the effect of nocturnal urination on quality of life.

The data are presented using the parameters of descriptive statistics in the form of the median, the 5th and 95th percentiles. Linear regression is used to compare the parameters. A P-value of less than 0.05 is taken as statistically significant.

Results

The 39 patients enrolled in the study had a median age of 65 years (range: 50-82), the IPSS scale score was 14 (4-31), the total N-QoL score was 17 (6-40). A positive significant correlation was observed between the 24-h diuresis and nocturnal urine volume ($r=0.768$, $p=0.001$) when comparing the results of analysis of voiding charts, the osmolality of blood and urine, sodium, potassium and chlorides. The nighttime diuresis correlated negatively with morning urine osmolality ($r=0.768$, $p=0.001$). Plasma osmolality correlated positively with serum sodium level ($r=0.586$, $p=0.01$)

Interpretation of results

Elevated nighttime urine output in patients with benign prostate hypertrophy is associated with an increased diurnal urine volume. Nocturnal diuresis is due to decreased urine osmolality. An association was observed in this patient category between increased plasma osmolality and the sodium concentration in the blood plasma.

Concluding message

The nocturia in patients with BPH is the result of variation in water exchange. Elevated nighttime diuresis adds a further dimension to symptomatology together with obstructive and irritative symptoms of prostate adenoma. In routine medical practice it is feasible to detect a change in water exchange and its probable causes by analyzing the frequency volume chart, the level of electrolytes and serum and urine osmolality.

Disclosures

Funding: N/A **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Ethics Committee of Sechenov First Moscow State Medical University **Helsinki:** Yes **Informed Consent:** Yes