142 Can hyperoxaluria cause kidney damage in women with recurrent pyelonephritis?

Eur Urol Suppl 2019; 18(1);e184

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Introduction & Objectives: Lack of scientifically proven information on clinical relevance of hyperoxaluria in patients with recurrent pyelonephritis (rPN) stipulates the objective of our work. The purpose of the present study was to assess the relationship between the hyperoxaluria and markers of kidney damage in non-stone formers patients with recurrent pyelonephritis.

Materials & Methods: A cross-sectional study involved 97 women with recurrent pyelonephritis caused by E. coli or S. faecalis, non-stone formers. Patients with diabetes, pregnancy, urolithiasis, concomitant decompensated diseases or acute conditions were excluded. The average age of the women was 34 ± 4.8 years. The duration of the disease was between 6 months and 16 years (6.0 [4.1-8.7] years). The average number of recurrences was 6.4 ± 1.9 per year. According to the presence of hyperoxaluria (? 44 mg in 24 hours), the women were stratified into 2 groups: the 1st group of the patients (n = 58) had hyperoxaluria and the 2nd one (n = 39) didn't have any hyperoxaluria. Glomerular filtration rate (GFR) level and the blood concentration of neutrophil gelatinase-associated lipocalin (NGAL) were evaluated in all patients. Urinary levels of β2 microglobulin (β2M) and N-acetyl-β-D-glucosamidase (NAG) were measured as the markers of renal tubular damage. All the statistical analyses were performed using MedCalc. For the statistical analysis we used the Student's t-test and nonparametric (U-test) Mann-Whitney test. Linear regression analysis was used to correlate the values of hyperoxaluria and kidney damage markers.

Results: The level of daily urinary oxalate excretion in the patients of the 1st Group was significantly increased compared with the women of the 2nd Group: 81.5 [53.9-101.8] vs 42 [37-41.9] mg (p ? 0.0001). The women with hyperoxaluria had a significantly lower GFR, higher level of the blood concentration of NGAL and higher urinary levels of β2M and NAG (table 1).

Table 1. The comparative analysis of the kidney damage markers according to the oxaluria status.

The markers	Hyperoxaluric patients (Group I, n = 58)	Normo-oxaluric patients (Group II, n = 39)	P
GFR, mL/min/1.73 m^2	68.9 ± 12.1	81.2 ± 13.6	? 0.0001
NGAL, pg/mL	19.3 [16.8-26.7]	11.2 [9.0-17.6]	? 0.0001
β2M , µg/mL	50.0 ± 23	40.8 ± 15.5	0.03
NAG, µmol p-nitrophenol/ h/mmol creatinine	16.25 ± 1.56	13.9 ± 3.06	? 0.0001

Linear regression analysis demonstrated a significant correlation of the daily oxalate excretion with the blood level of NGAL (R = 0.9; p ? 0.0001) and the GFR (R = -0.69; p ? 0.0001), which is indicative of oxalate-induced renal damage.

Conclusions: Accordingly, our findings have accurately demonstrated a potential power of hyperoxaluria to cause of kidney damage in the women with recurrent pyelonephritis, which can be due to proximal tubular injury.