

N95**Heavy metals in stones and urine of stone formers**

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Introduction and Objectives: The formation of the stones is a complicated process that results from combination of factors in which the main phenomenon is the supersaturation of some compounds in urine that might crystallize forming solid concretions. This process is affected by the lack of crystallization inhibitors, the presence of crystallization promoters and some morpho-anatomic factors. The presence and role of heavy metals in lithogenesis is debated and little definitive information has been presented linking the presence or absence of selected metals in the stones and urine to the pathogenesis of the disease. The goal of this pilot study was to investigate the distribution of heavy metals in stones and urine of stone formers in order to evaluate their possible role in lithogenesis.

Material and Methods: Material was collected from 116 patients treated due to symptomatic upper urinary tract lithiasis. Mean age was 54.4 years (min 19, max 80). Stones were obtained after PCNL, URSL, ureterolithotomy or nephrectomies. Each stone was analyzed together with urine from 24-hour sample for heavy metals determination. The specimens were mineralized in microwave oven ETHOS (Milestone, Connecticut, USA). The analysis was performed with atomic absorption spectrometer (ICP-OES) Optima 5300 DV (Perkin Elmer, Massachusetts, USA) according to Polish Standard PN-EN ISO 11885. Results were described in terms of mean, standard deviation, median and 25th-75th percentile with W Shapiro-Wilk test. Correlation analysis was performed using Spearman's rang test. A value of $p < 0.05$ was considered significant.

Results: Following parameters were statistically significant among analyzed:

- strong negative correlation between the concentration of zinc in stones and the content of calcium oxalate,
- strong positive correlation between the concentration of zinc in stones and the content of calcium phosphate and magnesium phosphate,
- negative correlation between the concentration of chrome in stones and the content of magnesium phosphate,
- negative link between the concentration of zinc, vanadium, molybdenum and copper in stones and the content of uric acid.

Strong correlations were also seen in following metallic elements analyzed in urine and stones:

- positive link between the concentration of nickel, chromium, molybdenum, cobalt and vanadium both in urine and stones,
- negative link in case of cadmium.

Conclusions:

1. The preliminary results of our studies confirms the conclusions of other authors about the potential role of some metals as inhibitors or promoters of crystallization process in urinary tract. This deals with such an elements as zinc, copper and chromium.
2. In order to thoroughly evaluate the relationship between the distribution of particular heavy metals in urine and stones of stone formers further studies on larger group are needed.
3. The question about the role and influence of heavy metals elements on lithogenesis is still to be answered.

N96**Urethral pull-through operation for posterior urethral stricture: Outcomes of a 20-year experience**

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Introduction and Objectives: We present technique and long-term results of the urethral pull-through operation for posttraumatic posterior urethral stricture.

Material and Methods: A total of 73 patients with posterior urethral stricture resulting from pelvic fracture injury underwent the urethral pull-through operation at our institute from August 1989 to March 2009. Patient age was 6 to 75 years (mean 31.2). Stricture length was 1.5 to 3.2 cm (mean 2.1). In 36 patients (49.3%) previous management with open or endoscopic procedures had failed. Follow-up included symptomatic and urinary flow rate evaluation, which was performed 6 and 12 months after the urethral pull-through operation in all patients and thereafter when needed, and urethrography and/or urethroscopy in patients with voiding symptoms.

Results: Patients were followed for 12 to 120 months (mean 62.5). During that period 58 patients were symptom-free and required no further procedures. The maximal flow rate in each case was greater than 12 ml per second. Recurrent stricture developed in 15 patients. All treatment failures occurred within the first 6 months postoperatively. Failed repairs were successfully managed by endoscopically in 10 patients and by open reconstruction in 5 patients a primary success rate of 96.5% and a final success rate of 100%. All patients were continent. Erectile dysfunction was noted postoperatively in 7 patients (9.5%). There was no chordee, penile shortening or urethral diverticula.

Conclusions: The urethral pull-through operation is effective for the surgical treatment of posterior urethral stricture even after multiple prior procedures.

N97**Calcium phosphate stone morphology: plain radiographic findings and interobserver variabilities**

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Introduction and Objectives: Visual appearance of pure calcium phosphate (CaP) urinary stones by its morphology from plain radiographs(KUB),were investigated.

Material and Methods: We reviewed patients with urinary stone disease who underwent stone surgery.Among cases with crystallographically analyzed stones; 60 patients with pure CaP renal or ureteral stones (greater than 1 cm) were selected.Two endourologists and a uroradiologist familiar with the radiographic patterns of different types of pure stones were invited separately,to evaluate pretreatment KUB.

Results: Four different radiographic patterns were identified mainly with the assistance of previous studies.Smooth edged,homogenous stones with denser opacity were included in Group 1. Stones with irregular edges and stippled border were included in Group 2. Relatively uniform stones with radial striations and moderate density were decided to form Group 3. Calculi with the least radiodensity and loosely aggregated with a lacy structure were included in Group 4. Overall, 68.9% of CaP calculi were included in Groups 1 and 2 by all participants. Best concordance between endourologists and the uroradiologist was demonstrated in the evaluation of smaller calculi (<150 mm²).