

subretinal fibrosis, and exact factors influencing the overall severity of ocular disease manifestation remain to be determined.

### EP-261 PREVALENCE OF KIDNEY CALCULI IN IRANIAN CHILDREN

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**Introduction:** The studies on the prevalence of kidney stones in Iranian children are very limited and only two studies have examined this issue and reported its prevalence of about 1%. Children with nephrolithiasis have a high chance of developing recurrent stones, so they should be thoroughly evaluated. Due to little information in Iranian children, the aim of this study was to investigate the prevalence of kidney stones in this population.

**Material and methods:** This cross-sectional study investigates the prevalence of kidney stones in different university centers among outpatients and inpatients from March-December 2019 in Iran. Twenty-six pediatric

nephrologists from 13 centers were participated in this study and completed questionnaire containing information on the total number of inpatients and outpatients and the number of kidney calculi in them. The diagnosis of the stone was based on radiological findings.

**Results:** A total of 97912 patients were examined, of which 20327 were hospitalized and the rest were outpatients. The prevalence of kidney stones was 1.5% among hospitalized patients and 3.2% among outpatients.

**Conclusions:** In this study, we examined a large population of children and assessed the prevalence of kidney stones in them. Also, we showed that the prevalence of kidney stones in Iranian children has an increasing trend compared to the previous two studies and most of them are outpatients. The total prevalence of stone in Iranian children was reported%2.86. According to the few studies that have been done in this field and also to justify this upward trend, it is recommended that more extensive studies should be performed in collaboration with more centers and demographic characteristics such as age, sex, stone composition, family history and diet.

### EP-262 THE INFLUENCE OF BODY MASS ON METABOLIC DISORDERS THAT CONTRIBUTE TO THE DEVELOPMENT OF UROLITHIASIS IN CHILDREN

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**Introduction:** Urolithiasis is a medical condition marked by presence of calculi in the kidney or urinary tract. These are composed of chemical substances that are normally or pathologically found in urine. About 2% of children are affected by the kidney stone disease. Another serious health issue is the prevalence of obesity that reached epidemic proportions among children and adults. The increasing incidence of urolithiasis in developed countries may be partially due to greater overweight and obese population. American studies revealed a relationship between obesity and incidence of urolithiasis in adults, especially among men. Metabolic disturbances predisposing to urolithiasis linked to excessive body weight include: low urine pH, hypercalciuria, hyperoxaluria, hyperuricosuria and hypocytraturia.

**Material and methods:** The study consisted of 134 children (69 girls, 65 boys) aged 9-18 years with diagnosed urolithiasis. Patients with urolithiasis associated with urinary tract infection, urinary tract malformations, significant urinary retention and rare genetic determinants were excluded. Two study groups were distinguished: group I (95 children :45 girls, 50 boys) consisted of patients with BMI <85 centile, group II(39 children: 24 girls, 15 boys) included children with BMI ≥85 centile. Urolithiasis was diagnosed using abdominal ultrasound. All children underwent anthropometric measurements and laboratory tests. Excretion of following crystalloids was evaluated in 24-hour urine collection and from a fasting second-void morning urine. All patients underwent height, body weight.

**Results:** Following results were obtained using the collected data:

- group with excessive body weight had statistically significant higher serum uric acid concentration compared to children with normal body weight ( $p=0.000009$ ). Uric acid concentration correlated statistically positively with the body weight of the subjects ( $p=0.0001$ ),
- children with excessive body weight had statistically significant lower serum concentration of liver-produced 25-hydroxyvitamin D compared to children with normal body weight ( $p=0.007$ ),
- children with normal body weight had higher daily urinary calcium excretion (mean 3.42 mg/kg/day) than children with excessive body weight (mean 2.75 mg/kg/day). This may be considered a trend ( $p=0.059$ ). No statistically significant differences were noted in the Ca/Cr ratio between the examined groups,
- children with excessive body weight had significantly higher urinary uric acid concentration in the second morning urine compared to children with normal body weight (0.26 vs. 0.23) ( $p=0.04$ ). No statistically

significant differences were noted in the daily urinary excretion of uric acid between the examined groups,

- there was a negative correlation between body weight and daily urinary uric acid excretion ( $p=0.002$ ),

- children with normal body weight had significantly higher daily urinary oxalate excretion compared to children with excessive body weight (0.39 vs. 0.31) ( $p=0.049$ ),

- daily urinary citrate excretion was significantly lower among children with excessive body weight compared to children with normal body weight (201.89 vs 277.72) ( $p=0.040$ ),

- there was a negative correlation between body weight and Ca/Cr ratio in the second void urine ( $p=0.003$ ). No statistically significant differences were noted in the daily urinary calcium excretion between the examined groups,

- there was a negative correlation between body weight and daily urinary magnesium excretion ( $p=0.001$ ) as well as Mg/Cr ratio in the second morning urine ( $p=0.0001$ ),

- there was no statistically significant correlation between the concentration of liver-produced 25-hydroxyvitamin D and daily urinary calcium excretion,

- furthermore, there was no statistically significant correlation between the concentration of liver-produced 25-hydroxyvitamin D and the daily urinary calcium excretion and Ca/Cr ratio once patients were divided into groups with normal and excessive body weight.

**Conclusions:** 1. In the examined material, urolithiasis was more often observed in children with normal body weight, which may indicate that excessive body weight is not a risk factor for the disease.

2. Excessive body weight promoted the occurrence of hyperuricemia and reduced hepatic metabolite of vitamin D. Low excretion of citrates, which are crystallization inhibitors, was more frequently observed in this group.

3. Hypercalciuria and hyperoxaluria were found more frequently in children with normal body weight, and higher magnesium excretion than in overweight children, which did not protect against deposits.

4. Vitamin D concentration did not affect urinary calcium excretion, regardless of body weight.

## EP-263 URINARY STONE DISEASE IN CHILDREN UNDER 2 YEARS OF AGE

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**Introduction:** The purpose of this study is to investigate the demographic, etiological, clinical characteristics and prognosis of UL in children under 2 years of age. The mainly etiological factors in pediatric patients with UL can be categorized as metabolic, urinary system infection related, anatomical anomalies causing urinary stasis and idiopathic.

**Material and methods:** Sixty children were diagnosed with UL under the age of 2 years were recruited to study. All patients have been completely evaluated for etiological factors. Patients have been classified as age at diagnosis, sex, presenting symptoms, family history, physical examination findings, localization and size of urinary stones, laboratory and radiological findings, urinary biochemical examinations, medical and surgical treatments and prognosis.

**Results:** The average age at diagnosis is  $8.5 \pm 4.5$  months and the male to female ratio was 1.6. Forty one of the cases (68.3%) were diagnosed less than 1 year of age. The family history of stone disease was found in 41 (68.3%) cases. Restlessness was noted as the main symptom. Hypercalciuria was found to be the most common metabolic factor. Eight (15%) of patients receiving surgical treatment. Sixteen of the patients (26.7%) received medical treatment and eight patients received both surgical and medical treatments. The recurrence rate was found 15%.

**Conclusions:** The most important thing is to identify the high-risk populations and take measures if necessary. In all patients with infantile stone disorder, anatomical and metabolic tests must be done.

## EP-264 AGE-SPECIFIC EXCRETION OF CALCIUM, OXALATE, CITRATE, AND GLYCOSAMINOGLYCANS AND THEIR RATIOS IN HEALTHY CHILDREN AND CHILDREN WITH UROLITHIASIS

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**Introduction:** We analyzed children with urolithiasis with age- and gender-matched healthy children as a retrospective study to ascertain any differences in urinary stone formation.

**Material and methods:** We used 24-h urine of Ca (mmol/mmol creatinine), Ox (mmol/mol cr), Cit (mmol/mol cr), GAGs (mg/mmol cr), Ca/Cit (mol/mmol), Ox/GAGs (mmol/g), Ox/Cit (mmol/mmol), Ox/(Cit×GAGs) (mol Ox × mol cr) / (mol Cit × g GAGs), and Cit/GAGs (mmol/g) were analyzed. Data analysis was performed by using Statistica for Windows version 8 and GraphPad Prism version 5. Additionally, J48 classifier was used to construct classification model for discrimination between subgroups.

**Results:** Calcium (mmol/mmol creatinine) and the calcium/citrate ratio (mol/mmol) are the only variables that differentiate children before puberty from healthy children (ROC analysis confirmed only calcium/citrate as a significant variable with cut-off value > 0.84). Pubertal/postpubertal children are distinguished from age- and gender-matched healthy children by the following variables: citrate (mmol / mol creatinine), calcium / citrate (mol / mmol), oxalate / glycosaminoglycans (mmol / g), oxalate / citrate ratios ( mmol / mmol) and oxalate / (citrate × glycosaminoglycans) (mol oxalate × mol creatinine) / (mol citrate × g glycosaminoglycans), all were confirmed by ROC analysis with cut-off values ≤ 327.87, > 1.02, > 11.24, > 0.12, > 0.03, respectively.

**Conclusions:** These results indicate a different risk of urinary stones development before puberty vs. pubertal/postpubertal children and increasing importance (deficiency) of citrate and glycosaminoglycans in such children. J48 classifier confirmed the importance of the oxalate/(citrate × glycosaminoglycans) and the calcium/citrate ratios with the practically applicable classification tree for distinguishing between pubertal/postpubertal children with urolithiasis with age- and gender-matched healthy children.

## EP-265 DIGESTIVE MANIFESTATIONS OF PRIMARY HYPEROXALURIA TYPE1(PH1) IN CHILDREN

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**Introduction:** PH1 is a group of rare inherited diseases, linked to autosomal recessive transmission. It's characterized by excessive production of oxalate leads to excessive urinary oxalate excretion. The clinical presentation ranges from asymptomatic through to isolated or recurrent renal stones, nephrocalcinosis and renal impairment.

Insoluble oxalate is progressively stored by all organs, gastrointestinal involvement remains rare, this work has to illustrate the characteristics of digestive impairment during HP1