

The role of *Oxalobacter formigenes* in the development of secondary oxalate nephropathy in children

Magina Artikova

Tashkent Pediatric Medical Institute, Uzbekistan

Abstract

Introduction: Hyperoxaluria is the main factor leading to the development of nephrolithiasis. Hyperoxaluria in children can be asymptomatic for a long time, leading to secondary oxalate nephropathy, to urolithiasis and chronic kidney disease. The vast majority of kidney stones are calcium oxalate.

Limiting the intake of products containing oxalic acid is not the main way to prevent calcium oxalate microlites. In this regard, scientists were interested in the bacterium *Oxalobacter formigenes*, which exhibits a symbiotic relationship with the human body by reducing the absorption of oxalates in the intestinal lumen with a further decrease in their concentration in plasma and urine. *Oxalobacter formigenes* is currently the most effective intestinal absorbent microbial oxalate.

Objective: To determine the species and quantitative composition of intestinal microflora and *Oxalobacter formigenes* in feces in children with secondary oxalate nephropathy, who had a history of antibiotic therapy.

Materials & Methods: 35 children with secondary oxalate nephropathy (hyperoxaluria) aged 6 months to 7 years with a glomerular filtration rate above 90 ml/min were observed. The median age of the patients was 3.48. Children were divided into two groups: The main and control. The control group consisted of 10 children with secondary oxalate nephropathy with no history of antibiotic therapy. The diagnosis of secondary oxalate nephropathy was made according to the classification developed by M. S. Ignatova et al. and N.V. Voronina: moderate hyperoxaluria, pronounced oxalate-calcium crystalluria, microhematuria and/or proteinuria, increased microalbumin in the urine (tubular dysfunction). All children underwent a general clinical examination: Oxalates in daily urine, microalbumin in urine, bacteriological examination of feces for quantitative and qualitative composition of microflora, PCR identification of *Oxalobacter formigenes* in feces were determined. The severity of dysbiotic changes in the intestines in the examined children was determined taking into account the Industry standard 91500.11.0004-2003 "Protocol for the management of patients intestinal dysbiosis".

Results: The results showed that all children in the main study group had higher levels of oxalate in daily urine of 1.2 mg/kg/day (at a rate of 0-0.5 mg/kg/day) than in the comparison group (0.5 mg/kg/day). Gross or microscopic hematuria is found in



65% to 90% of children who have urolithiasis. All children in the main group showed a violation of the quantitative and qualitative composition of the intestinal microbiota. In the comparison group, no signs of intestinal microbiota disturbance were noted. Grade 2 dysbiosis predominated in severity in 18 children, in 2 children dysbiosis of 3 degrees was detected, in 4 children dysbiosis of 1 degree was noted. In 6 children with secondary oxalate nephropathy, *Oxalobacter formigenes* was not detected. It was found that children in whom *Oxalobacter formigenes* was not determined received a history of antibiotics of the 3rd generation cephalosporins group, Co-trimaxazole, more than 6 times for 12 months. In 21 children, *Oxalobacter formigenes* has been identified.

Conclusion: In most cases, in children with secondary oxalate nephropathy, the use of antibiotics was detected and a violation of the intestinal microbiota was found. In 5 children, *Oxalobacter formigenes* was not identified in feces.

Biography:

Magina Artikova studied at school Number 6 in Bukhara. From 2001 to 2008 she studied at Tashkent Pediatric Medical Institute (TPMI), faculty of pediatrics. From 2011 till 2017 she worked TPMI, assistant department Hospital pediatria. From 2018 till the present she has been working for researcher PhD at TPMI. Her scientific work is devoted to secondary oxalate nephropathy in children and the definition of disease development factors.



Speaker Publications:

1. Mirkhamidovich, Sharipov & Akmalovna, Artikova & Akhmatalievna, Akhmatalieva. (2020). The Rate and Structure of Causes in Development of Secondary Metabolic

Nephropathy in Children. International Journal of Current Research and Review. 12. 73-76. 10.31782/IJCRR.2020.121415.

[29th World Neonatal, Pediatric and Family Medicine Conference](#); Dubai, UAE - March 18-19, 2020

Abstract Citation:

Magina Artikova, Secondary oxalate nephropathy in children with allergic pathology, Faneotrics 2020, 29th World Neonatal, Pediatric and Family Medicine Conference; Dubai, UAE - March 18-19, 2020
<https://neonatal.pediatricconferences.com/2020>