CAUSES OF CHRONIC RENAL FAILURE IN RUSSIAN CHILDREN: 5-YEAR SINGLE-CENTER STUDY

Larisa Prikhodina, Olga Turpitko, Vladimir Dlin

Research Institute of Pediatrics & Children Surgery, Department of Pediatric Nephrology, Moscow, Russia

OBJECTIVE

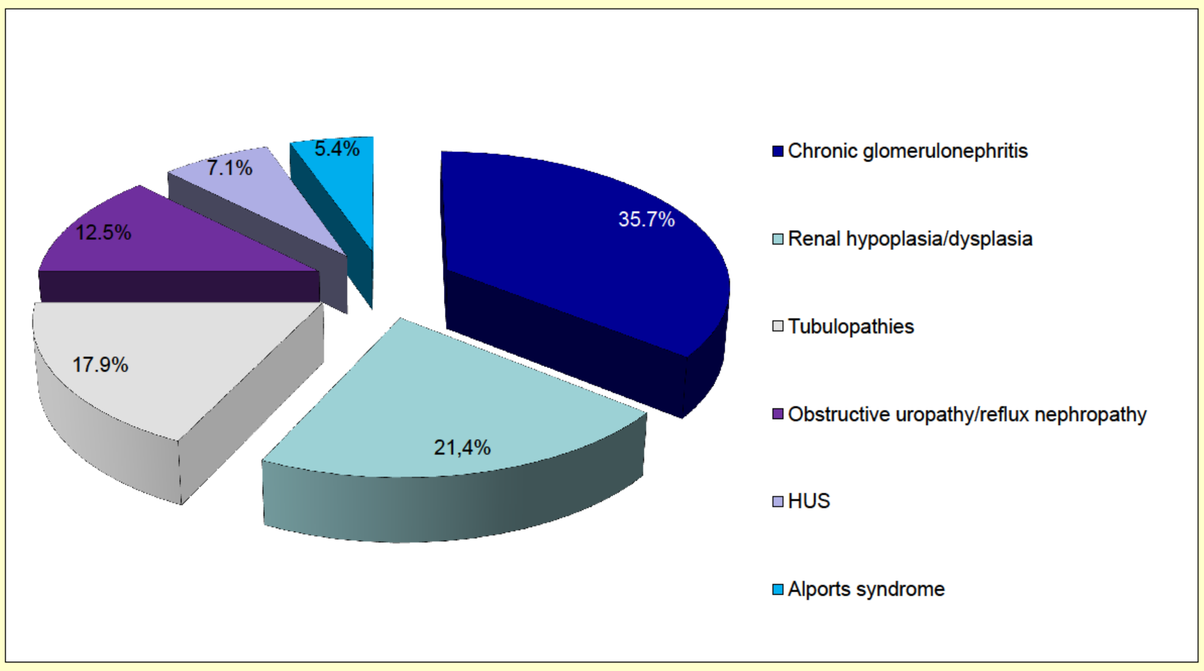
Chronic renal failure (CRF) in children is the result of heterogeneous group of kidney diseases and urinary tract disorders.
It is important to recognize that underlying causes for chronic kidney diseases are significantly different in children than those seen in adults.
The aim of the study was to describe the patient demographics, primary renal diseases and outcome in Russian children with CRF.

PATIENTS and METHODS

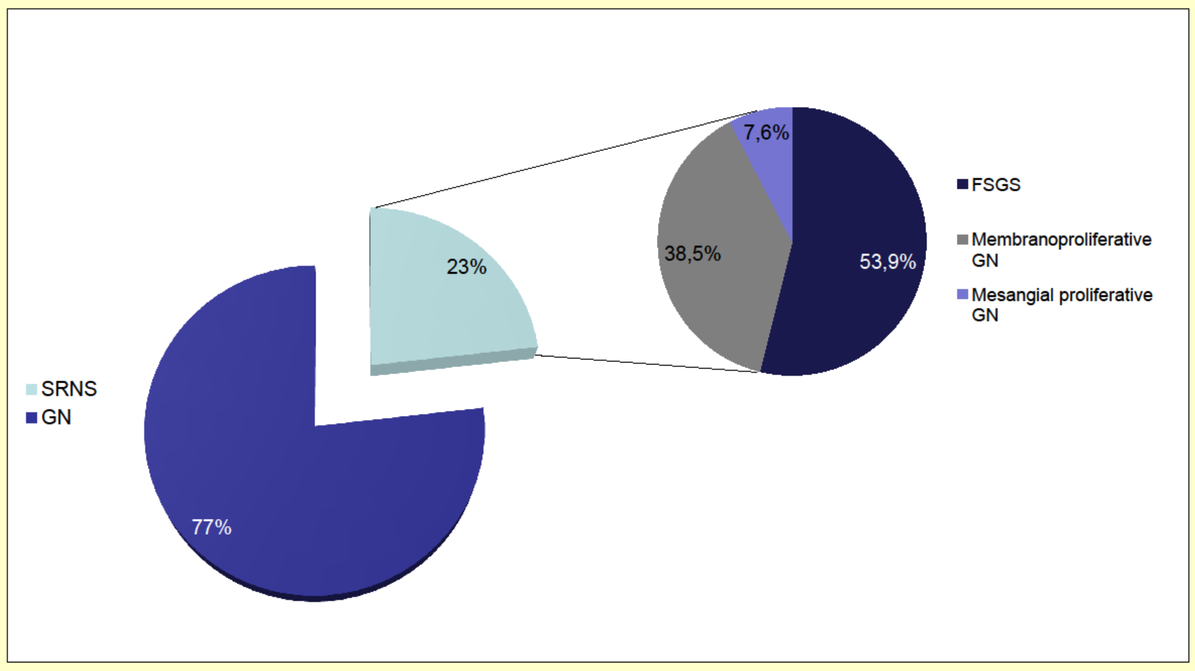
2653 children aged 1.0-17.0 years with various inherited and acquired chronic kidney diseases admitted to the tertiary pediatric nephrology centre over 5 years between 2007 and 2012 were retrospectively studied. Among all patients 56 children (2.1%) progressed to CRF during period of follow up.
CRF was defined as stable increasing serum creatinine level more than 100 μmol/L and estimated glomerular filtration rate below 60 ml/min/1.73 m^2.

RESULTS

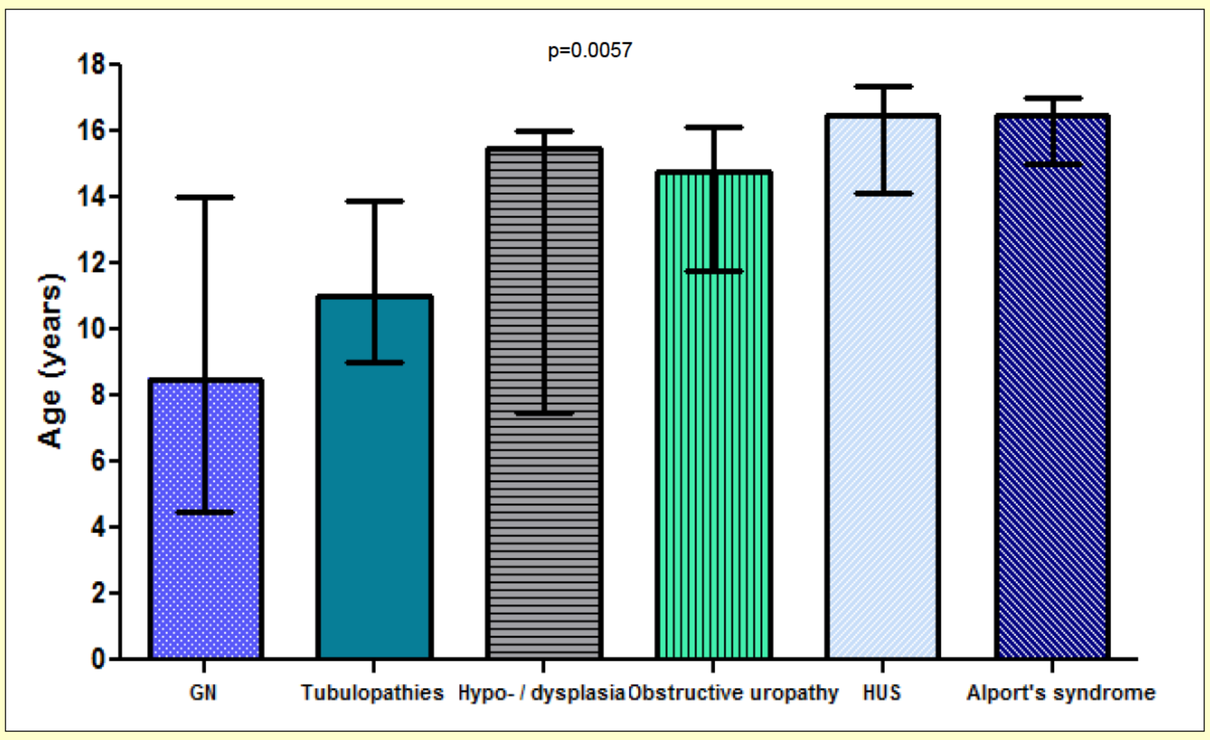
Primary causes of chronic renal failure in Russian children (n=56)



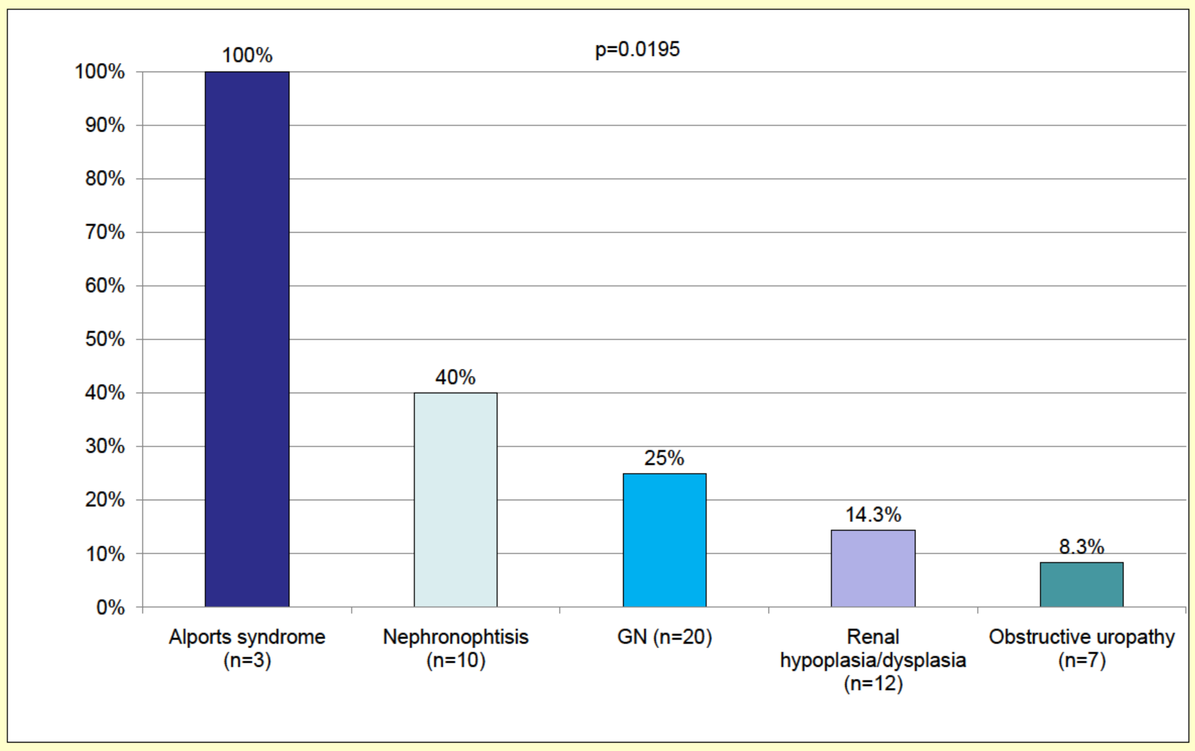
Histological diagnosis in children with SRNS progressed to CRF



Median age of children progressed to chronic renal failure (n=56)



Patient distribution by kidney diseases lead to end-stage renal disease



Causes of childhood CRF included: chronic glomerulonephritis (GN) in 20 (35.7%), renal hypoplasia/dysplasia in 12 (21.4%), tubular diseases in 10 (17.9%), obstructive uropathy/reflux nephropathy in 7 (12.5%), hemolytic uremic syndrome (HUS) in 4 (7.1%), Alport's syndrome in 3 (5.4%). Among children with GN there were 13 (23.2%) patients with initial non-familial steroid-resistant nephrotic syndrome, including FSGS in 7 (53.9%), membranoproliferative GN in 5 (38.5%) and mesangial proliferative GN in 1 (7.6%). The median age of patients progressed to CRF was 13.3 (IQR: 8.0; 16.0) years. Children with GN developed CRF at the age of 8.5 (3.5; 14.5), tubular diseases - in 9.5 (9.0; 12.0), hypoplasia/dysplasia - in 15.0 (8.0; 16.0), obstructive uropathy/reflux nephropathy - in 15.0 (13.0; 16.0), HUS - in 16.5 (14.8; 17.3) and Alports syndrome - in 16.5 (15.0; 17.0) years (p=0.0057). There were 12 (21.4%) patients with congenital syndromes and kidney involvement progressed to CRF: Alport's syndrome (n=3), Bardet-Biedl syndrome (n=2), Senior-Loken syndrome (n=2), Frasier syndrome (n=1), Denys Drash syndrome (n=1), Cockayne syndrome (n=1), tuberous sclerosis (n=1), autosomal recessive polycystic kidney disease (n=1). 14 (25%) children with CRF reached end-stage renal disease (ESRD) during period of follow up, including Alport's syndrome in 3/3 (100%), nephronophtisis in 4/10 (40%), glomerulopathies in 5/20 (25%), renal hypoplasia/dysplasia in 1/12 (14.3%) and obstructive uropathy in 1/7 (8.3%). Among patients with ESRD 11 children (78.6%) have undergone living-donor kidney transplantation and other 3 patients (21.4%) are receiving peritoneal dialysis (n=2) and hemodialysis (n=1).

CONCLUSION

Our data indicate that the incidence rate of CRF in children with CKD was 2.1%. Chronic glomerulonephritis is the major cause of CRF, accounting for 35.7% of patients. Steroid-resistant nephrotic syndrome with FSGS is the most prevalent type of glomerulopathies progressed to CRF in children. There is a high proportion of patients (21.4%) with congenital syndromes and kidney involvement developed CRF during the childhood.