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Etiology and outcomes of end-stage chronic kidney disease in children in Dalmatia, Croatia

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Aim: *End-stage renal disease (ESRD) in children is rare but carries significant morbidity and mortality. This study analyses the etiologies, treatment modalities, and outcomes of pediatric ESRD cases treated at the University Hospital of Split, Croatia, over 15 years.*

Methods: *A retrospective, observational cohort study was conducted, including children aged <18 years, who had registered residence in Split-Dalmatia County, with ESRD from 2009 to 2023. Patient demographics, chronic kidney disease (CKD) etiology, dialysis details, complications, and transplantation outcomes were analyzed.*

Results: *Of 22 patients (68.1% male), the leading cause of ESRD was congenital anomalies of the kidney and urinary tract (CAKUT, 50.0%), primarily posterior urethral valves (PUV) and associated hypoplastic-dysplastic kidneys. Peritoneal dialysis (PD) was used in 63.6%, with an average duration of 2.5 (1.4-6.0) years. Complications included catheter malfunction (78.6%) and peritonitis (50.0%), with Staphylococcus aureus as the most common pathogen, according to the number of patients. Transplantation was performed in 77.3% of cases; 17.6% were preemptive. Graft rejection occurred in 11.8% of cases.*

Conclusion: *CAKUT remains the dominant cause of pediatric ESRD in this region. PD and kidney transplantation yielded acceptable outcomes. Emphasis should be placed on early diagnosis of CKD and expanding access to preemptive transplantation.*

Keywords: NEPHROLOGY; PEDIATRICS; RENAL INSUFFICIENCY, CHRONIC; PERITONEAL DIALYSIS; KIDNEY TRANSPLANTATION; KIDNEY FAILURE, CHRONIC; CONGENITAL ABNORMALITIES; CROATIA

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INTRODUCTION

Chronic kidney disease (CKD) is defined as a decrease in glomerular filtration rate (GFR) below 60 mL/min/1.73 m², according to Kidney Disease Improving Global Outcomes (KDIGO) guidelines, lasting for more than three months, or the persistence of abnormalities in urine analysis, histological changes in the kidneys, or abnormalities on ultrasound or other imaging studies that also persist for more than three months, despite normal glomerular filtration. Moderate CKD corresponds to stage G3, which is divided into stage G3a (GFR 45-59 mL/min/1.73 m²) and stage G3b (GFR 30-44 mL/min/1.73 m²), while severe CKD corresponds to stage G4 (GFR 15-29 mL/min/1.73 m²) (1). The reported number of children with pediatric CKD is likely underestimated, as the early stages of the disease are typically asymptomatic and go undiagnosed. Additionally, comparing the prevalence of childhood CKD across different parts of the world is challenging due to variability in available healthcare resources for diagnosing and monitoring the condition (2). According to data from a 2008 review, the estimated median annual incidence of moderate to severe pediatric CKD cases per million children in age-related populations in Europe was 11.9 (2). In the same review, based on 2008 data, the annual incidence of pediatric kidney failure requiring kidney replacement therapy (KRT) also varied significantly, but in Western Europe, it was 9.5% (2). Pediatric CKD is more common in boys than in girls (3,4). In the North American Pediatric Renal Trials and Collaborative Studies chronic renal insufficiency database, which includes over 7,000 CKD patients, the most common age group consists of children between 6 and 13 years old (5). The most common causes of pediatric CKD include: congenital anomalies of the kidney and urinary tract (CAKUT) and glomerular diseases, followed by genetic disorders, interstitial nephritis, and unidentified primary etiology (6). Key predictors of CKD progression include the estimated glomerular filtration rate (eGFR) and proteinuria (6). The clinical presentation of CKD can vary depending on whether the underlying cause is glomerular or non-glomerular, as well as the severity of kidney impairment (7). The management of children with CKD is tailored to the stage of the disease. At each stage, the primary goals are to prevent further kidney damage and treat complications, especially proteinuria and hypertension (8). The ESCAPE (Effect of Strict Pressure Control and ACE Inhibition on the Progression of Chronic Renal Failure in Pediatric Patients) trial emphasized maintaining average blood pressure below the 50th percentile for age, sex, and height via 24-hour ambulatory monitoring. ACE inhibitors control blood pressure and proteinuria but require caution in advanced CKD, with monitoring of kidney function and serum potassium (9). ESRD is characterized by irreversible kidney failure with an eGFR below 15 ml/min/1.73 m², corresponding to stage G5 of CKD and typically requires kidney replacement therapy (KRT) in the form of dialysis or kidney transplantation. Preparation for KRT typically begins when eGFR falls below 30 mL/min/1.73 m², which is stage G4 according to KDIGO, but there is no strict consensus on when to start dialysis. The exact timing of dialysis in children is individualized, based on kidney function and clinical symptoms (10). At this stage, it is crucial to provide families with detailed information about the available KRT options, including preemptive kidney transplantation (before the need for dialysis), peritoneal dialysis (PD), or hemodialysis (HD).

The selection of KRT for children is influenced not only by the child's age but also by the available resources in different countries. Studies have shown that for children aged 9 years and younger, PD is typically the preferred initial treatment, while HD is more commonly used for those aged 10 years and older (11-14). Over the years, kidney transplantation has increasingly been recognized as the most favorable form of KRT for children of all ages, owing to its many advantages over dialysis (11, 15, 16). Kidney transplantation is preferred primarily because it offers a significantly lower mortality rate, improved quality of life, and a reduced risk of other associated health complications compared to dialysis (17). For instance, a study conducted by the Australian and New Zealand Dialysis and Transplant Registry revealed a mortality rate of 4.8 per 100 patient-years for children undergoing HD, 5.9 for those on PD, and just 1.1 for transplanted children (18). Similarly, data from the United States Renal Data System (USRDS) reported five-year survival rates of 81%, 86%, and 96% for patients on HD, PD, and those

who underwent a transplant, respectively (11). Limited data from the United Kingdom Transplant Registry suggest that five-year allograft survival is higher in children who receive preemptive kidney transplantation as their initial form of KRT, compared with those who begin with dialysis (19). Furthermore, some studies have linked dialysis to an increased risk of cardiovascular disease and vascular calcifications (20). Unfortunately, children with stage G5 CKD face significantly elevated risks of morbidity and mortality, which often persist into adulthood (21). When preemptive transplantation is not feasible, the decision must be made between HD and PD. Globally, there remains no definitive evidence favoring one modality over the other in pediatric patients with CKD (22). The choice of dialysis modality is influenced by multiple factors, including the patient's age, underlying comorbidities, the feasibility of maintaining vascular or peritoneal access, and, importantly, the preferences of both the patient and their parents. Technical considerations, social context, and the likelihood of treatment adherence also play a crucial role (23). PD is generally preferred in infants and younger children, in school-aged children receiving home dialysis via automated cycling devices, and in cases where anticoagulation is contraindicated or cardiovascular status is compromised (24, 25). For children requiring HD, vascular access is necessary, typically via an arteriovenous (AV) fistula or a tunneled central venous catheter. The AV fistula is the preferred method due to its lower complication rate (26, 27). In contrast to HD, PD necessitates the surgical placement of a peritoneal dialysis catheter. Absolute contraindications to PD include anatomical abnormalities such as abdominal wall defects, bladder exstrophy, diaphragmatic hernia, obliterated peritoneal cavity, or peritoneal membrane failure (23). However, we know that PD is more suitable for children due to the lower incidence of disequilibrium syndrome, while HD may carry a higher risk, especially in younger patients. HD may be contraindicated in the presence of inability to establish a functional vascular access, severe hemodynamic instability, or significant coagulopathy. Additional considerations include patient noncompliance or lack of a reliable caregiver, which may limit the safe and effective delivery of hemodialysis (28). Despite this, HD continues to be widely used worldwide as the technology evolves and becomes more refined for pediatric care. However, at the Pediatric Department of the University Hospital in Split, Croatia, chronic HD was not available due to the lack of appropriate equipment. Consequently, in our study, all patients were treated exclusively with chronic PD. This study aimed to explore the underlying causes and clinical outcomes of ESRD in pediatric patients treated at the University Hospital's Pediatric Department in Split, Croatia, over a 15-year period.

PATIENTS AND METHODS

Participants

This retrospective, longitudinal observational study was conducted at the Department of Pediatrics of the University Hospital of Split, Croatia. The subjects were children (<18 years at the time of diagnosis) who had a registered residence in Split-Dalmatia County, with ESRD (including preemptive transplants), treated between 1 January 2009 and 31 December 2023. The study defined ESRD as an eGFR below 15 mL/min/1.73 m^2 and/or on kidney replacement therapy (KRT), in accordance with KDIGO guidelines. Also, the patients who were in the pre-dialysis stage were included in the study according to the stated eGFR. Exclusion criteria were patients with acute renal failure without evidence of CKD and patients with incomplete or unavailable medical documentation relevant to the analyzed variables. Ethical approval was granted by the Ethics Committee of the University Hospital of Split (No. 2181-147/0106/LJ.Z.-24-02, 12 July 2024).

Data collection

Using data from the medical history, outpatient findings and discharge letters, all of which were consistently available for all patients, the analyzed parameters were the following: the number of children, sex, age of entry into the ESRD, etiology of CKD, the number of patients treated conservatively, with dialysis and transplanted, duration of dialysis treatment and the most common complications, the number and type of transplants, information about the center where the transplant was performed and the number of rejected kidney grafts.

Study outcomes

The primary outcomes of the study were the etiology of ESRD, the modality of KRT, and the outcome of ESRD treatment, defined as functional kidney transplantation or continued PD treatment. Secondary outcomes included age at development of ESRD, duration and complications of PD, microbiological causative pathogens of peritonitis, and transplantation outcomes.

Statistical analysis

The collected data were entered into electronic spreadsheets using Microsoft Office Excel software (Microsoft Corp, Redmond, WA, USA) and analyzed using Jeffreys's Amazing Statistics Program (JASP, version 0.16.3, JASP team, Amsterdam, The Netherlands). Qualitative data were presented in whole numbers and percentages. The distribution of data was tested using the Shapiro–Wilk test, and due to the small sample size, continuous data were presented as mean and interquartile range (IQR). Figures 1 and 2 were generated using Microsoft Office Excel software.

RESULTS

A total of 22 patients were treated for ESRD during the analyzed period. Of these, 15 (68.1%) were male, and seven (31.8%) were female. The leading cause of CKD was posterior urethral valves (PUV) associated with hypoplastic-dysplastic kidneys, identified in six patients (27.3%). Hypoplastic-dysplastic kidneys without PUV were found in four patients (18.2%), including one with agenesis of the contralateral kidney. Additionally, focal segmental glomerulosclerosis (FSGS), nephrotic syndrome (NS) accounted for four cases (18.2%), while congenital nephrotic syndrome was the underlying cause in three patients (13.6%). The patients entered CKD stage G5 at varying ages, with the youngest being 1.1 years old and the oldest 17.9 years old. The average age at the onset of stage G5 was 8.8 (4.9-15.8) years. An overview of patient characteristics, including sex, underlying etiology, and age at the time of progression to ESRD, is presented in Table 1.

Information regarding the 14 patients treated with peritoneal dialysis, including sex, CKD etiology, and length of dialysis therapy, is shown in Table 2. The shortest duration of dialysis treatment was 0.1 years, while the longest duration of dialysis treatment was 9.1 years. The average duration of dialysis treatment was 2.5 (1.4-6.0) years.

Table 1. Patient characteristics: sex, etiology of CKD, and age when ESRD developed

Patient ID	Sex	Etiology of CKD	Age (years)
1	F	Congenital nephrotic syndrome	1.1
2	M	IgA nephropathy	16.3
3	M	Tubulointerstitial nephritis	9.9
4	F	FSGS[a], NS[b]	15.8
5	M	PUV[c], hypoplastic dysplastic kidneys	2.2
6	M	PUV[c], hypoplastic dysplastic kidneys	12.3
7	M	FSGS[a], NS[b]	7.0
8	M	Hypoplastic dysplastic kidneys	8.9
9	M	FSGS[a], NS[b]	8.8
10	M	FSGS[a], NS[b]	5.9
11	F	Diffuse mesangial sclerosis, NS[b]	7.5
12	F	Hypoplastic dysplastic kidneys	10.1
13	M	PUV[c], hypoplastic dysplastic kidneys	17.3
14	M	PUV[c], hypoplastic dysplastic kidneys	16.2
15	M	Hypoplastic dysplastic kidneys	13.3
16	F	Rapid progressive ANCA[d] (+) glomerulonephritis	17.8
17	M	Congenital nephrotic syndrome	1.1
18	M	Congenital nephrotic syndrome	1.8
19	F	Agenesis of the right kidney, hypoplastic dysplastic left kidney	7.5
20	M	PUV[c], hypoplastic dysplastic kidneys	17.9
21	F	Autosomal dominant polycystic kidney disease	4.9
22	M	PUV[c], hypoplastic dysplastic kidneys	3.9

[a] focal segmental glomerulosclerosis, [b] nephrotic syndrome, [c] posterior urethral valves, [d] antineutrophil cytoplasmic antibody

The most frequently observed complication was the need for dialysis catheter replacement, due to mechanical or infectious causes, which was required in 11 patients (78.6%). Acute peritonitis was the second most common complication, affecting seven patients (50.0%). Tunnel infections involving the subcutaneous tract of the peritoneal dialysis catheter were documented in six patients (27.3%). The least common complication

Table 2. Sex, etiology of CKD, and duration of dialysis treatment in patients with ESRD

Patient ID	Sex	Etiology of CKD	Duration of dialysis (years)
1	F	Congenital nephrotic syndrome	3.3
2	M	IgA nephropathy	1.3
3	M	Tubulointerstitial nephritis	1.8
4	F	FSGS[a], NS[b]	3.3
5	M	PUV[c], hypoplastic dysplastic kidneys	5.1
7	M	FSGS[a], NS[b]	0.1
8	M	Hypoplastic dysplastic kidneys	1.1
9	M	FSGS[a], NS[b]	9.1
10	M	FSGS[a], NS[b]	7.3
11	F	Diffuse mesangial sclerosis, NS[b]	1.8
12	F	Hypoplastic dysplastic kidneys	1.5
15	M	Hypoplastic dysplastic kidneys	1.2
17	M	Congenital nephrotic syndrome	6.3
18	M	Congenital nephrotic syndrome	8.5

[a] focal segmental glomerulosclerosis, [b] nephrotic syndrome, [c] posterior urethral valves

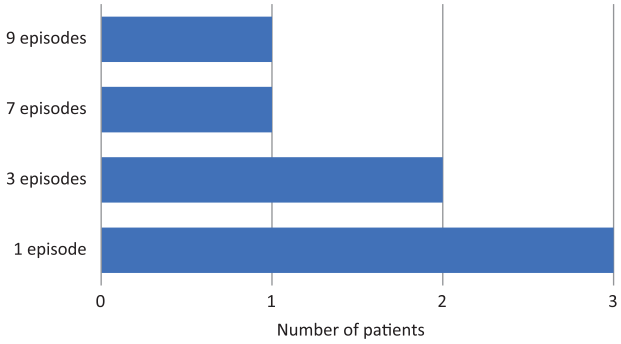

Figure 1. Presentation of the number of peritonitis episodes per patient

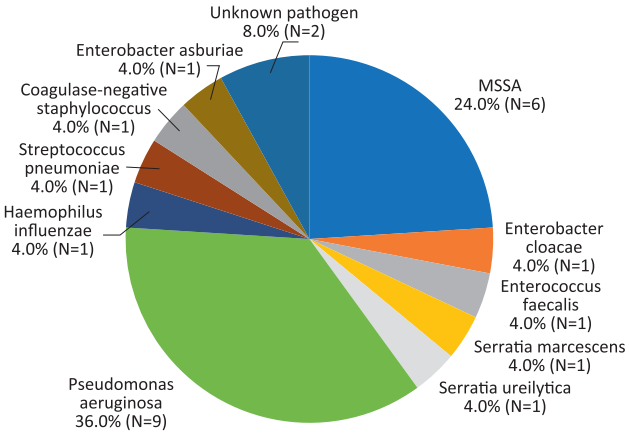

Figure 2. Presentation of the causative agents of peritonitis episodes per patient. N - absolute number of peritonitis episodes for each isolated pathogen.

was subtotal parathyroidectomy, performed in only one patient (7.1%). In the analysis of peritonitis frequency, three patients (42.9%) experienced only one episode of the infection. Two patients (28.6%) had 3 episodes each. One patient (14.3%) experienced a total of seven episodes, while another patient (14.3%) went through as many as nine episodes of peritonitis (Figure 1).

In five patients (71.4%), the causative agent of peritonitis was successfully identified, while in two patients (28.6%), it remained unknown. Among the total of 25 episodes of peritonitis in 7 patients, the most commonly identified pathogen per episode was *Pseudomonas aeruginosa*, which caused nine episodes (36.0%), but it was restricted to a single patient with repeated infections due to catheter mishandling. However, the most common pathogen by patient count was Methicillin-susceptible *Staphylococcus aureus* (MSSA), which caused peritonitis in six episodes (24.0%) affecting four patients (Figure 2). Other pathogens accounted for 8 episodes (each 4.0%), and two episodes were culture-negative (8.0%).

Of the 22 patients diagnosed with ESRD, 14 (63.6%) were initially treated with peritoneal dialysis, followed by kidney transplantation. An additional three patients underwent preemptive kidney transplantation, thereby completely avoiding the need for dialysis. The remaining five patients were in the pre-dialysis stage and received conservative management. Of these, four were transferred to the adult nephrology department for ongoing care, while one has been placed on the kidney transplant waiting list and is currently awaiting a cadaveric donor organ.

Out of the 17 transplant recipients, 11 were male (64.7%) and 6 were female (35.3%). The cadaveric kidney was received by the largest number of patients, 10 of them (58.8%), while the remaining seven transplants were from a living donor, out of which four were from the father (23.5%) and three from the mother (17.6%).

Of the 17 patients who initially received kidney transplants, 15 (88.2%) successfully accepted the graft. In the remaining two cases (11.8%), graft failure occurred—one due to a recurrence of FSGS, and the other due to a cytomegalovirus (CMV) infection that necessitated graft removal. Both patients were subsequently returned to peritoneal dialysis.

Most of the transplants were performed at the referral center in Zagreb, Croatia, where 13 patients (76.5%) underwent surgery. Four patients (23.5%) were transplanted abroad; one in Lyon, France (5.9%) and three in Padua, Italy (17.7%).

DISCUSSION

The purpose of this study was to examine the causes, treatment approaches, and outcomes for pediatric patients with ESRD treated at the Department of Pediatrics, University Hospital of Split, Croatia, over a 15-year period. The results were then compared with data from existing literature.

The average age of patients with ESRD in this study was 8.8 (4.9-15.8) years, 68.1% were male, and 31.8% were female. Among those who underwent kidney transplantation at stage G5 CKD, 65% were male, a distribution that aligns with the findings of *Balinsky et al.*, who reported that 59% of 3,673 pediatric kidney transplant recipients were male (29).

Harada et al. and *Grotta et al.* both highlighted CAKUT as the predominant cause of CKD in the pediatric population, with a particularly high prevalence among younger children (30, 31). Also, in the most recent United States Renal Data System (USRDS) report, CAKUT accounted for 86% of all pediatric CKD, but this estimate was based on a limited claims-based dataset in only 17 states, which likely accounts for the discrepancy (32). In our study, CAKUT were the cause of the ESRD in 50% of patients, with an average occurrence at 8.8 years. The highest prevalence was in males, in 81.8% of cases. That high incidence of CAKUT as a cause of ESRD in males is in accordance with the data from the literature (29-31). Previous studies have also shown that glomerulonephritis is the leading cause of CKD in adolescents. Similarly, in the Dalmatian region over the past 15 years, glomerulonephritis was responsible for 45.5% of end-stage CKD cases, with 30% of those patients being over the age of 13 (30, 31). In Balinsky's review of 3,673 pediatric kidney transplant recipients in the United States, the most common underlying diagnosis was obstructive uropathy (16.5%), followed closely by hypoplastic/dysplastic kidneys (16.4%) and FSGS (11.6%) (29). In contrast, our cohort showed a higher prevalence of these conditions. Specifically, 27.3% of our patients had posterior urethral valves associated with hypoplastic-dysplastic kidneys, while an additional 18.2% had hypoplastic-dysplastic kidneys without evidence of obstruction. Furthermore, 18.2% of our patients were diagnosed with FSGS. In this limited cohort of 22 children, posterior urethral valves accounted for a relatively high rate of CKD etiologies, which is most likely explained by the small sample size and random statistical variation rather than by the true incidence of the condition. In our study, 78.6% of children undergoing peritoneal dialysis required catheter replacement due to mechanical or infectious causes, while peritonitis was the second most common complication, occurring in 50.0% of cases. Optimal catheter placement technique and comprehensive caregiver education are essential to reducing the risk of catheter malfunction and peritoneal dialysis-associated infections. According to the International Society for Peritoneal Dialysis (ISPD) criteria used in this study, acute peritonitis is diagnosed when at least two of the following are present: clinical symptoms consistent with peritonitis (i.e. abdominal pain and/or cloudy dialysis effluent) and white cell count >100/mL in dialysis effluent, with >50% polymorphonuclear and/or positive dialysis effluent culture (33). *Warady et al.* reported Gram-positive organisms in 62% of pediatric peritonitis cases with identified pathogens, whereas in our cohort, this proportion was slightly lower at 55.6% (34). In their study, the most frequently isolated organisms were coagulase-negative *Staphylococci* (22%) and *Staphylococcus aureus* (21%), which is also confirmed by the previously mentioned ISPD guidelines (33, 34). In contrast, the predominant pathogen by our patient count was methicillin-sensitive *Staphylococcus aureus* (MSSA), which caused peritonitis in six episodes (24.0%) affecting four patients, which closely correlates with

the mentioned studies. However, the most commonly identified pathogen per episode was *Pseudomonas aeruginosa,* which caused nine episodes (36.0%), but all infections occurred in a single patient due to repeated catheter mishandling. The above, as well as the relatively small number of patients in our study, represents a limitation and may affect the interpretation and generalizability of these microbiological findings. We also considered data from the International Pediatric Peritoneal Dialysis Network (IPPN), which includes prospectively collected information from 137 pediatric dialysis centers in 44 countries between April 2007 and January 2022 (35). During this period, 2,107 peritonitis episodes and 170 relapses were recorded in 1,179 of 4,289 patients, over a total of 5,498 patient-years of follow-up (35). Peritonitis rates varied significantly by region, with the lowest rate in Asia (0.23 episodes per patient-year) and the highest in Australia/New Zealand (0.81) and Eastern Europe (0.50) (35). The most commonly identified pathogens were *Staphylococcus aureus* and *Staphylococcus epidermidis*, while culture-negative peritonitis was most frequently reported in Turkey and Latin America (35).

Balinsky reports that out of 3,673 pediatric kidney transplant recipients, 24.4% received preemptive transplants, which aligns with the findings of *Harada et al.*, who estimate that approximately 25% of kidney transplants in Europe are preemptive (29). Preemptive transplantation is widely regarded as the optimal treatment for patients with end-stage renal disease. In contrast, our study found that 17.65% of pediatric kidney transplant recipients in Dalmatia underwent preemptive transplantation. While this percentage is slightly lower than those reported by Balinsky and Harada et al., it still indicates a substantial proportion of patients benefiting from the most effective treatment available.

The low proportion of preemptive transplants in our cohort, apart from the small number of patients, may also be associated with the specificities of pediatric clinical practice, including the limited availability of living donors and organizational factors of the health system. Overall, while our study provides valuable insights, the relatively small sample size limits our ability to draw definitive conclusions.

CONCLUSIONS

This study provides a comprehensive 15-year overview of pediatric patients with ESRD treated in the Dalmatian region, highlighting several key findings:

Demographic Profile: The majority of patients were male (68.1%). Half of the CKD cases were attributed to CAKUT, with PUV and associated hypoplastic-dysplastic kidneys observed in 54.5% of these patients. Glomerular disease was the next most frequent cause, accounting for 45.5% of cases.

Age at ESRD Onset: The average age at ESRD onset was 8.8 (4.9-15.8) years, indicating a wide range and significant variability in disease progression.

Kidney Replacement Therapy: PD was the initial treatment in 63.6% of patients, but was associated with a high rate of complications. The most common were catheter-related problems (78.6%) and acute peritonitis (50.0%), most frequently caused by Methicillin-susceptible *Staphylococcus aureus* (24.0%). The average duration of dialysis was 2.5 (1.4-6.0) years.

Kidney Transplantation: Kidney transplantation was performed in 77.3% of patients, with 58.8% receiving cadaveric grafts and 41.2% receiving kidneys from living donors. Preemptive transplantation was carried out in 17.6% of cases, nearing the European standard of 25% and representing a promising trend. Graft rejection occurred in 11.8% of transplant recipients.

This study emphasizes the considerable variability in CKD progression among children and underscores the importance of early diagnosis and timely therapeutic interventions to delay the onset of ESRD. The rate of preemptive kidney transplantation reflects encouraging progress in clinical practice. Prioritizing transplantation as a first-line treatment strategy is essential to improving long-term outcomes in pediatric ESRD patients. Furthermore, these findings point to the importance of systematic regional data collection and long-term monitoring of children with ESRD, which could contribute to improved disease surveillance, optimized treatment strategies, and the development of coordinated national care programs.

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SAŽETAK

Etiologija i ishodi završnog stadija kronične bubrežne bolesti kod djece u Dalmaciji, Hrvatska

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Cilj: *Završni stadij kronične bubrežne bolesti (engl. end-stage renal disease, ESRD) u dječjoj populaciji je rijedak, ali je povezan s visokim morbiditetom i mortalitetom. Cilj ove retrospektivne studije je prikazati etiologiju, načine liječenja te ishode djece s ESRD-om koja su bila pod skrbi Klinike za dječje bolesti KBC-a Split u razdoblju od 2009. do 2023. godine.*

Metode: *U istraživanju je retrospektivno analizirana kohorta djece mlađe od 18 godina, s prijavljenim prebivalištem na području Splitsko-dalmatinske županije, s dijagnozom ESRD-a, a liječene u navedenom periodu. Prikupili smo i proučili demografske podatke, uzroke kronične bubrežne bolesti (engl. chronic kidney disease, CKD), komplikacije peritonejske dijalize (PD) i ishode transplantacije bubrega.*

Rezultati: *U skupini od 22 djece, od kojih je 68,1 % bilo muške djece, najčešći uzrok ESRD-a bile su kongenitalne anomalije mokraćnog sustava (engl. congenital anomalies of the kidney and urinary tract, CAKUT), zastupljene u polovici slučajeva. Među njima su prevladavala djeca s valvulom stražnje uretre (engl. posterior urethral valves, PUV) udruženom s hipoplastično-displastičnim bubrezima. PD primijenjena je u 63,6 % bolesnika s prosječnim trajanjem od 2,5 (1,4-6,0) godina. Najznačajnije komplikacije uključivale su malfunkciju peritonejskog katetera (78.6 %) i akutni peritonitis (50.0 %), pri čemu je meticilin osjetljiv Staphylococcus aureus, prema broju pacijenata, bio najčešće izoliran patogen. Transplantacija bubrega provedena je u 77,3 % djece, a preventivno je transplantirano njih 17,6 %. Odbacivanje transplantata zabilježeno je u 11,8 % slučajeva.*

Zaključak: *CAKUT predstavljaju glavni uzrok ESRD-a u djece s područja Dalmacije. Primjena PD i bubrežne transplantacije donijela je zadovoljavajuće rezultate liječenja. Posebnu važnost treba pridati ranoj dijagnostici CKD te unaprjeđenju dostupnosti preventivne transplantacije čime bi se dodatno poboljšali ishodi i kvaliteta života ovih bolesnika.*

Ključne riječi: NEFROLOGIJA; PEDIJATRIJA; KRONIČNA BUBREŽNA INSUFICIJENCIJA; PERITONEALNA DIJALIZA; TRANSPLANTACIJA BUBREGA; KRONIČNO ZATAJENJE BUBREGA; KONGENITALNE ABNORMALNOSTI; HRVATSKA