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Chronic Peritoneal Dialysis (CPD) in children of the lowest age groups

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Chronic Peritoneal Dialysis (CPD) is the most common dialysis treatment modality used to treat pediatric patients with End-Stage Renal Disease (ESRD), particularly in children less than five years of age. Advantages of CPD include a less restricted diet, treatment at home, no need for vascular access. Contraindications to CPD include specific conditions that affect the integrity of the abdominal cavity and peritoneum. Total number of patients on CPD in our center is 43 in the last 6 years (11 of them are currently active - 5 patients under 1 years of age, 8 patients under 5 years of age). The causes of kidney failure in our center include con-genital kidney anomalies 41.9%, glomerulopathies 32.6%, ischemia 7.0%, pyelonephritis/ interstitial nephritis 2.3%, other 14.3%, unknown 2.3%. CPD modalities are divided into manual and automated options. Continuous ambulatory PD (CAPD) is the manual form of CPD that provides continuous solute and fluid removal throughout the day and night. CAPD is usually used especially in small infants before reaching of sufficient volume for the function of cycler (fill volume >120-130 ml). Automated PD (APD) uses a cycler that performs mul-tiple exchanges at night. APD is used in all child patients at home (20 % with dry day - NIPD, 80 % with wet day - CCPD). The regime of CPD should be individualized to the pa-tient needs for solute transfer and removal of fluid. Main parameters of prescription are osmo-lality of the dialysis solution, fill volume, and number of exchanges. Peritoneal equilibration test (PET) should be performed in all children undergoing CPD to determine the solute trans-fer characteristics of the peritoneal membrane. Fill volume in our center is 792±220 ml/m^2 (920±434 ml/m^2 in control group - data from 204 centers from International Pediatric Dialysis Network database), total dialysate turnover 8832±4384 ml/m^2/day (9299±4703 ml/m^2/day in control group), average PD fluid glucose concentration is 1.9±0.4% (1.8±0.5% in control group). Urine output is <100 ml/m^2/day in 20 % and 100-500 ml/m^2/day in 40% of patients. Infectious complications of CPD include peritonitis and catheter exit site/ tunnel infections. We use a two-cuffed Tenckhoff catheter to reduce the risk of peritonitis and we recommend daily care of the exit site. The incidence of peritonitis was 1 episode of peritonitis every 91.7 months of therapy in our group of patients (34.9 months in the control group). Noninfectious complications are divided into several categories - mechanical complications due to increased intra-peritoneal pressure (hernia, fluid leak, hydrothorax), ultrafiltration failure due to rapid solute transfer/ increased lymphatic flow/ aquaporin deficiency, catheter-related complications (dialysate leakage, catheter dislocation, catheter occlusion), and nutritional and metabolic problems - protein loss, hyponatremia due to sodium loss and subsequent hypovolemia, renal osteopathy. Body mass index (BMI) at CPD initiation was -0.42±1.25 SD and -0.20 ±1.67 SD at last visit. 20% of our patients have percutaneous endoscopic gastrostomy (PEG). CPD is safe and effective method for treatment of ESRD in children of the lowest age groups. Our results are fully comparable with the data from foreign centers for PD. The most severe risk factors for mortality are pulmonary and cardiovascular diseases, infections and severe oliguria/ anuria.

Biography

Kveta Blahova is an Associate Professor in the Department of Pediatrics at Charles University and University Hospital Motol in Prague. She received many awards. She has membership in prestigious European societies. She has published numerous papers in reputed journals.

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