KIDNEY FAILURE IN CHILDREN IN CRITICAL CONDITIONS AND THEIR DIAGNOSTICS

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THE RELEVANCE OF THE STUDY

Timely diagnosis of kidney disease in children, the purpose of rational therapy, conducting rehabilitation measures can prevent the development of serious complications, including acute renal failure [1, 2].

Currently widely used highly informative methods for laboratory, ultrasound, x-ray, radioisotope and immunological methods [4, 5]. However, in practice it is very important for a child holding only studies that are necessary for the diagnosis and differential diagnosis with other diseases [3, 6].

We use modern methods for diagnosis, differential diagnosis and proper selection of treatment depending on the condition of children with ARF.

THE PURPOSE OF THE STUDY

Optimization methods of diagnosis in children with acute renal failure in critical conditions based on the proper selection of optimal therapy.

MATERIALS AND METHODS

We have analyzed the results of diagnosis and treatment of 144 children with acute renal failure admitted to the Department of Anesthesiology, Intensive Care National Medical Center of the Republic of Tajikistan, and the city hospital pediatric surgery.

The main groups of patients studied were boys 60.4%. The patients received standard clinical , laboratory and instrumental methods of examination. In the analysis of laboratory data on admission of patients to the hospital, before and after the operation of extracorporeal detoxification. The condition of patients at admission was evaluated on a scale of severity APACHE 2. With the development of systemic hypotension with SBP less than 70 mm Hg. patients received the study and quantitative chemical composition of urine (urea, creatinine, sodium, potassium, β2-microglobulin).

Multicomponent noninvasive monitoring of the patient included the dynamic monitoring of central hemodynamics, the balance of the water sector. To assess the state of central hemodynamics and water sectors to use the hardware-software complex «Diamond-R», which was used to bioimpedance spectroscopy (by Tishchenko M.I.) done before treatment, and daily during the whole duration of renal replacement therapy.

Acid-base status and blood gases were determined apparatus ABL-300 (Radiometer, Denmark). Indicators of oxygen delivery and consumption were calculated by the formula (Zolotokrylina ES, 1997):

DO_2 (ml/min · m^2) = CI (ml/min · m^2) · CaO_2 (g/l)/1000 (normal 550–680 ml/min · m^2).

Oxygen consumption (VO_2, ml/min.) is given by:

VO_2 (ml/min · m^2) = AVR CO_2 (g/L) · SR (ml/min · m^2)/1000 (norm. 115–165 ml/min.)

AVR where CO_2 — arteriovenous oxygen content difference.

Oxygen extraction coefficient (CEC %) considered by the formula:

CEC (%) = AVR CO_2 (g/l) / CaO_2 (g/L) · 100 (normal 26–34%)

In order to control the thermal balance during hemodialysis using an additional module TMV apparatus «artificial kidney» Fresenius 4008 H, which allows us to estimate the temperature of the blood leaving and entering highway vehicle «artificial kidney», and the total energy loss during hemodialysis (in kJ). The same unit was used to estimate the proportion of recycling in the extracorporeal circuit thermodilution method.

RESULTS AND DISCUSSION

According to the study, we identified the following options for acute renal failure.

Prerenal mechanism (septic shock, cardiogenic shock, hypovolemia) is set at 79 (55%) patients. Of these, against septic shock, peritonitis — 25 patients, cardiogenic shock — 7 patients and hypovolemia — 23 and neuroinfection — 24 patients. In patients with severe condition effects of endogenous intoxication III degree, and severe disorders of the peripheral microcirculation. From the laboratory data severe anemia in 28 patients (50.9%), hemoglobin — 7.8 g/l, erythrocytes — $2,6 \cdot 10^{12}$/L, creatinine — 1.8–2.2 mg/dl, urea — 8.1 mmol/L, from blood biochemical parameters: bilirubin — 22,1 mmol/L, ALT —1.4 units, AST — 1.9 units.

In patients with severe hemodynamic (31) breathing ventilator was held from 1 to 5 days.

Against the background of a complex of intensive treatment (detoxification, enterosorption, metabolic care, timely surgical procedures) with prerenal acute renal failure, mortality was reduced to 24% (79 patients died 19).

Renal failure (an allergic reaction to medication drugs damaged parenchyma infection, renal bloc uretero-and nephrolithiasis, causing inside the tubular obstruction). When renal ARF, which consisted of 36 patients, 16 — heavy medication poisoning, 11 — intestinal infections and in 9 patients during nephrolithiasis and complications of acute renal failure.

Satisfactory results have been obtained as a result of complex intensive therapy, detoxification methods, under the supervision of laboratory parameters were observed in the majority of patients, 6 deaths (16.7%) from 36.

In cases of post renal damage, acute renal failure was observed in 29 patients. On the background of the urolithiasis and its complications, conducted and infusion-transfusion therapy in order to perform preoperative and surgical intervention. When a terminal state in 5 cases puncture nephrostomy performed in order to decompress the kidneys. In this group of patients during the timely diagnosis and surgical treatment reduced death by 10.3% (from 29 patients died 3).

Frequently encountered cause of prerenal acute renal failure in 55% of cases was a violation of systemic microcirculation of vital organs.

Renal (parenchymal), acute renal failure was observed in 23% of patients.

Postrenal acute renal failure was observed in 20% of patients, the cause of which was the bilateral obstruction concrements, ureteral compression of patients from outside, carried retroperitoneal tumor tissue (fibroma).

OUTPUT

Thus, the timely implementation of comprehensive clinical, laboratory and imaging studies using modern technology are informative for the early diagnosis of acute renal failure. This increases the effectiveness of the therapy, survival, reduced mortality in the pre-renal acute renal failure to 19 with renal, postrenal to 6 and to 3 respectively.

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