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**Science progress in European countries:
new concepts and modern solutions**

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EXPERIENCE OF TIEN APPLICATION IN NEONATAL REANIMATOLOGY

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Treatment of purulent-septic diseases in newborns is an actual problem of pediatrics in general and neonatal, in particular, since purulent-septic processes in newborns remain the leading cause of death in this cohort of patients. In addition, in neonatology, as nowhere else, there is the problem of hospital infection and the real fight against it [2]. Currently, the most commonly used drugs are the cephalosporins group, aminoglycosides, as well as their various combinations, but even this scheme sometimes cannot cover the entire spectrum of nosocomial pathogens, and the need for long-term use of antimicrobial agents changes the resistance of the released flora during treatment, increasing the risk of a lethal the outcome [1].

Considering the fact that, according to the spectrum of antibacterial activity, the drug Tienam is a combined preparation consisting of imipenem and cilastatin sodium. Imipenem is a broad-spectrum beta-lactam antibiotic with a bactericidal (bacteria-killing) effect. Sodium cilastatin is a specific enzyme inhibitor (a drug that inhibits enzyme activity), metabolizes (decomposes in the body) imipenem in the kidneys and as a result significantly increases the concentration of unchanged

imipenem in the urinary tract and is highly active against *Pseudomonas aeruginosa* and some other hospital strains non-fermenting bacteria, its use in neonatal resuscitation seems to be appropriate. [3]

In the intensive care unit and intensive care of newborns of the Communal Health Institutions (CHI) Regional Clinical Hospital No. 1 of Kharkov, there has been accumulated experience in the clinical use of Tienam in treating newborns with various pathologies complicated by an infectious process in the main group of patients from 23 term infants, receiving Tienam, aspiration pneumonia due to massive aspiration with meconium was diagnosed in six infants, three have intrauterine pneumonia, two have umbilical sepsis, six babies have necrotic enterocolitis in newborns with intestinal perforation, in six newborns - a different congenital pathology of the gastrointestinal tract (gastroschisis, esophagus atresia, diaphragmatic hernia, Ladd's syndrome, an acute form of Hirschsprung's disease), complicated by nosocomial infection. The control group consisted of 30 newborns with similar pathology and the severity of the condition who received standardized antibiotic therapy. The extreme severity of the condition of all infants was due to the syndrome of endogenous intoxication due to massive microbial invasion against the background of perinatal encephalopathy. When conducting bacteriological monitoring of various biological samples obtained from newborns, the main causative agents of the infectious process were *Pseudomonas aeruginosa* and *Candida* fungi.

The main indication for prescribing Tienam was the lack of positive clinical dynamics against the background of the use of two courses of standardized antibiotic therapy in patients on prolonged mechanical ventilation, i.e. Tienam was appointed no earlier than 11-12 days and no later than 21 days of unsuccessful use of other antibacterial agents. And only in one patient with sepsis, the drug was prescribed on the 5th day from the start of antibiotic therapy. Tienam was administered intravenously bolus at the rate of 15 mg / kg body weight (single dose) 4 times a day. The average duration of treatment was 10 days.

Efficiency control was ensured by monitoring laboratory and clinical indicators of children at the stages of treatment. When analyzing the hemogram data in dynamic

control, reliable ($P < 0.05$) were noted: a decrease in leukocyte intoxication index earlier in comparison with the control group, a decrease in the absolute number of leukocytes, stab and segmented neutrophils, a decrease in erythrocyte sedimentation rate. Monitoring of biochemical blood parameters, characterizing the severity of endogenous intoxication syndrome, indicates a more rapid regression of the level of "medium" molecules, blood osmolarity and C-reactive protein level, which was accompanied by earlier normalization of clinical symptoms, early recovery of spontaneous breathing, reduction in terms of newborns in the department resuscitation. In addition, out of 23 infants receiving Tienam, only one died.

A direct correlation was found between the degree and duration of kidney damage and the degree of infectious toxicosis, which made it possible not to abandon the use of antibacterial drugs, but to apply them taking into account creatinine and creatinine clearance.

No evidence was found indicating nephrotoxicity of Tienam in preterm infants. The urea concentration in newborns with sepsis during treatment decreased on average from 8.17 to 5.64 mmol / l, whereas in children treated with vancomycin, the decrease in urea was 2.5 times less pronounced. The concentration of creatinine in the plasma in the treatment process also decreased by almost 2 times from 119 to 65.9 $\mu\text{mol} / \text{l}$. Creatinine clearance in monotherapy increased by 24% and reached the age norm. When using Tienam in combination with other antibiotics, it increased by 17%, but remained subnormal. When using vancomycin, its values were significantly lower than the age norm. Studies have shown that in the presence of severe infectious diseases and seeding of hospital flora with polyvalent drug resistance of choice (in terms of lack of nephrotoxicity) is Tienam.

Our experience of using Tienam in newborns with renal insufficiency showed that at a dose of 15 mg / kg after 8 hours, the drug has a bactericidal effect without an increase in renal impairment. The use of a combination of Tienam with amikacin allows to achieve a fast bactericidal effect with a significant decrease in the degree of infectious toxicosis; after reduction of infectious toxicosis, renal function was improved.

The powerful antibacterial effect of Tienam required the simultaneous administration of complex antifungal therapy against the background of monitoring the effectiveness of the latter. The refusal to administer antifungal drugs, their inconsistent use with the ineffectiveness of fungicidal agents, caused massive candida dissemination with local manifestations in the form of candida stomatitis, vulvovaginitis, endotracheitis and presvilischy ileitis or colitis with subclinical manifestations of candida sepsis. At the same time, patients with a surgical profile with superimposed artificial fistulas even in the long-term periods after the appointment of Tienam, using Diflucan or Nizoral in combination with multienzyme therapy and eubiotics, made it possible to quickly stop the symptoms of enterocolitis, which deplete these patients.

An analysis of our research indicates the promise of using Tienam in newborns with massive microbial invasion, especially with a nosocomial infection, and allows us to review the categorical judgments about the timing of its appointment: it is obvious that the use of Tienam should be started at earlier stages of treatment of resuscitation infants.

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