PATHOGENETIC THERAPY IN DIFFUSE PERITONITIS IN CHILDREN

Zavyalkin V.A., Barskaya M.A., Kuzmin A.I.,Varlamov A.V., Borodin R.V., Bykov D.V., Frolova J.V., Rodionov V.G., Osipov N.L., Sidorkina G.N., Shukhina M.I., Maznova A.V., Artiushkina A.A.

e-mail: zavv@rambler.ru

The treatment of children with severe purulent-septic complications of abdominal diseases remains one of the most important problem of modern medicine. Abdominal catastrophe leads to extensive disturbances in the organism. Aim of our study is optimization of pathogenetic therapy in the treatment of diffuse peritonitis, various genesis including the use of combined preparations: antihypoxant Reamberin and combined hepatoprotector Remaxol, adequate modern nutritional support and the use of venovenous hemodiafiltration. Investigated 224 children aged 1 to 15 years with diffuse purulent peritonitis. Exploring the statistical key figures of patients in the experimental group and the control group, we found that a faster decrease in the dynamics of intoxication, decrease symptoms of enteral insufficiency were in the group of children with diffuse purulent peritonitis who have received optimized treatment. We consider optimized pathogenetic therapy in the treatment of diffuse peritonitis of various origins is reasonable and very necessary.

Keywords: pathogenetic therapy, peritonitis, children

Despite the significant improvement in surgical methods of treatment in abdominal diseases, the development and introduction of modern antibacterial drugs to surgical practice, the treatment of children with severe purulent-septic complications of abdominal diseases remains one of the most important problem of modern medicine [1, 2, 3, 5, 11, 12, 13].

The mortality rate of diffuse peritonitis remains at 25–30%, and the development of multiple organ dysfunction syndrome is 80–90% [4, 9, 10, 12].

Endogenous intoxication caused by acute abdominal disease develops after intestinal insufficiency syndrome may complicate the postoperative period of up to 30–50% of patients. Abdominal catastrophe leads to the development of local inflammatory response, pain, stimulates hyperactivation of the sympathetic level of motor control intestine and release of cytokines, thereby disrupting the migrating electric complex of the intestine. All this leads to the development of enteroparesis followed by intestinal ischemia. Visceral disturbances caused by the development of diffuse peritonitis, leading to hypoxic enteral insufficiency, manifested by enteroparesis with disturbance of resorptive and barrier function of the small intestine. As a result we can see next wave of pathological mechanisms, with deep disturbances of protein metabolism and water and electrolyte balance, including not only interstitial, but also cell sector. This is followed by translocation of endotoxins from the lumen of the gastrointestinal tract into the abdominal cavity, the portal and systemic circulation. Gastrointestinal tract becomes a source of powerful endogenous bacterial and dismetabolic intoxication [2, 8, 10].

In addition to enteral insufficiency, activation of the processes of lipid peroxidation with increasing phospholipase A2 and the subsequent suppression of antioxidant defense is very important in the progression of endotoxemia after intra-abdominal catastrophes. All this leads to the destruction of cell membranes, which is manifested homeostasis and metabolic imbalances in the various organs and tissues, including in the liver and intestine. [2, 7]

Diffuse peritonitis is a severe purulent surgical pathology and its treatment consists of three pillars: adequate debridement of the source of infection, modern antibacterial therapy and the appropriate pathogenetic therapy or so-called "impact on the macro-organism" [7, 13].

Aim of our study is optimization of pathogenetic therapy in the treatment of diffuse peritonitis, various genesis including the use of combined preparations: antihypoxant Reamberin and combined hepatoprotector Remaxol, adequate modern nutritional support and the use of venovenous hemodiafiltration.

As a research material we use our experience in treating children with diffuse purulent peritonitis in departments of pediatric surgery.

Investigated 224 children aged 1 to 15 years with diffuse purulent peritonitis (appendicular, perforative, etc.) who were treated in these departments since 2001.

140 children in addition to the standard surgical tactics and modern antibacterial therapy received Reamberin in the pathogenetic therapy, 69 patients in addition to Reamberin received Remaxol. All patients have received nutritional support with specialized preparations from the 1st day after surgery, 32 patients received venovenous hemodiafiltration sessions.

The control group included 84 children with generalized purulent peritonitis, which received the standard pathogenetic therapy: infusion therapy included crystalloid and colloid

fluids (5 and 10% solution of glucose, 0,9% solution of sodium chloride, Voluven, 10% solution of albumin).

As a result of research we have identified a faster decline in the level of white blood cells $8,9 \cdot 10^9$ and $9,4 \cdot 10^9$ and leukocytal index of intoxication (up to 2 and 2.1) in the main group, than in the reference group – leukocytosis – $13,6 \cdot 10^9$ and LII – 3,2 ($p \leq 0,5$).

Analysis of changes ESR (erythrocyte sedimentation rate) and the temperature reaction showed a faster decrease in ESR, as well as a faster normalization of temperature in dynamics in the group of patients with diffuse peritonitis who were treated with Reamberin and Remaxol compared with children who have received the standard therapy (up to 11, 12 and 16 mm/h at 72 hours $p \leq 0,5$), which also indicates the efficacy of pathogenic optimized therapy.

In the statistical study in patients who used an optimized therapy noted faster resolution of symptoms in enteral insufficiency (intestinal paresis) by an average of 1,5 days compared with the control group.

We have identified a statistically significant ($p \leq 0,5$) faster recovery of the total concentration of albumin in children who have received Remaxol in infusion therapy compared with the control group.

Study of the dynamics of transaminases (AST and ALT) showed a statistically significant faster ($p \leq 0,5$) their decline in the application of optimized pathogenetic therapy, especially the use of Remaxol compared with the control group.

Exploring the statistical key figures of patients who received optimized pathogenetic therapy and the control group, we found that a faster decrease in the dynamics of intoxication – leukocytosis, LII, body temperature; much faster decrease symptoms of enteral insufficiency (intestinal paresis) were in the group of children with diffuse purulent peritonitis who have received optimized treatment. In addition revealed faster restoration of the protein-synthetic liver function, and decrease of cytolytic and mesenchymal-inflammatory syndromes, especially when Remaxol was applied.

Thus, we consider optimized pathogenetic therapy, including the use of combined preparations: antihypoxant Reamberin and combined hepatoprotector Remaxol, modern nutritional support, the use of veno-venous diafiltration in the treatment of diffuse peritonitis of various origins is reasonable and very necessary.

References

1. Bairov G.A. Urgent surgery of children: the management for doctors. – SPb.: Peter Press, 1997. – 167 p.

2. Lordly M.A., Zavyalkin V.A., Varlamov A.V., Bulls D.V., Kuzmin A.I., Improvement of pathogenetic therapy of widespread peritonitis at children's age // the Tolyatti medical consultation. – 2013. – № 3–4. – P. 11–17.

3. Thrones A.F. Endoskopicheskaya surgery at children: практ. hands – in / A.F. Dronov, I.V. Poddubny, V.I. Kotlobovsky; red. Yu.F. Isakov. – M.: GEOTAR-MED, 2002. – 440 p. – (High technologies in medicine).

4. Roshal L.M., Granikov O.D., Maksumov A.A., Pashaliyev S.M., Kapustin V.A., Karasyova O.V., etc. Treatment of peritonitis // In the book "Urgent Surgery of Children's Age" under L.M. Roshal's edition. – M.: Medicine. –1996. – P. 37–39.

5. The remote comparative results of treatment of peritonitis in children's surgery / V.U. Satayev, V.A. Paramonov, I.A. Mamleev [etc.] // Endoscopic surgery at children: mater. Всерос. симп. – Ufa, 2002. – P. 107–108.

6. Peritonitis практ. hands – in / under V.S. Savelyev, B.R. Gelfand, M. I. Filimonov's edition – M.: Litterra publishing house, 2006. – 208 p.

7. Savelyev V.S., Lubyansky V.G., Roosters of VA., Dismetobolichesky consequences of a syndrome of intestinal insufficiency in abdominal surgery // the Annals of surgery. – 2009. – T. 17, № 14. – P. 1–11.

8. Roosters of VA., Semenov Zh.S. Peritonit and endotelialny dysfunction: the management for doctors. – M.: Max Press, 2011. – 152 p.

9. Shurkalin B.K. Purulent peritonitis. – M., 2000. – 222 c.

10. Hotchkiss R.S., Karl I.E. The pathophysiology and treatment of sepsis // N Engl J Med. – 2003. – № 348. – P. 138–50.

11. Marshall J.C., Innes M. Intensive care unit management of intra-abdominal infection // Crit Care Med. – 2003. – № 31. – P. 2228–37.

12. Riché F.C., Dray X., Laisné M.J., Matéo J., Raskine L., Sanson-Le Pors M.J., Payen D., Valleur P., Cholley B.P. Factors associated with septic shock and mortality in generalized peritonitis: comparison between community-acquired and postoperative peritonitis. – Crit Care, 2009. – № 13. – P. 99.

13. Solomkin J.S., Mazuski J.E., Baron E.J., Sawyer R.G., Nathens A.B., DiPiro J.T., Buchman T., Dellinger E.P., Jernigan J., Gorbach S., Chow A.W., Bartlett J., Infectious Diseases Society of America. Guidelines for the selection of anti-infective agents for complicated intra-abdominal infections // Clin Infect Dis. – 2003. – № 37(8). – P. 997–1005.