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TRAUMA OF THE ABDOMINAL ORGANS. INJURY OF THE LIVER AND SPLEEN IN CHILDREN

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Resume,

The practical application of the developed surgical intervention makes it possible to eliminate the syndrome of postsplenectomy immunosuppression and significantly reduce the number of postoperative complications.

The paper demonstrates the significant advantages of a new method of surgical treatment of combined liver and spleen injuries in children, which makes it applicable in any urgent surgical department. The technique is technically simple, does not require additional equipment and medical support.

Keywords: liver, spleen, injuries, trauma, surgical treatment.

ТРАВМА ОРГАНОВ БРЮШНОЙ ПОЛОСТИ. ТРАВМА ПЕЧЕНИ И СЕЛЕЗЕНКИ У ДЕТЕЙ

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Резюме,

Практическое применение разработанного оперативного вмешательства позволяет ликвидировать синдром постспленэктомической иммунодепрессии и значительно сократить количество послеоперационных осложнений.

В работе продемонстрированы значительные преимущества нового способа оперативного лечения комбинированных повреждений печени и селезенки у детей, что делает его применимым в условиях любого ургентного хирургического отделения. Методика технически проста, не требует дополнительного оборудования и медикаментозного обеспечения.

Ключевые слова: печень, селезенка, повреждения, травма, хирургическая лечения.

Relevance. Injuries to the abdominal organs in children vary from 10 to 15% of the total childhood trauma, while every third child with abdominal trauma has damage to the spleen, and every sixth has liver damage [3].

The emergence and active development of laparoscopy changed the technology of surgical intervention, but did not change the therapeutic tactics[4]. As for the scope of surgical interventions, splenectomy was usually performed for spleen injuries, and occasionally pole resection or suturing of the damaged organ[1].

Organ-preserving interventions were more often performed by pediatric surgeons, since the removal of such an important organ as the spleen posed a danger to the child's future life. In case of liver injuries with bleeding into the abdominal cavity, stopping bleeding was also the main goal of emergency surgery, but liver injury carried, as surgeons believed at the time, the risk of developing biliary peritonitis[2]. This forced the patient to operate even with a slight accumulation of blood in the abdominal cavity.

The development and improvement of modern diagnostic technologies, primarily radiation (ultrasound, CT, MRI), have significantly expanded the visualization of topographic and anatomical changes in internal organs in diseases and injuries. With regard to the problem under discussion, specialists have the opportunity to determine not only the damaged organ, but also to specify the area of damage and the size of the wound in several projections. The presence of fluid

in the abdominal cavity, its quantity and density began to be determined more accurately. Conducting such a dynamic study allows us to judge with greater accuracy about ongoing or stopped bleeding [2]. Such detailed information about the condition of the injured organ, combined with constant monitoring of hemodynamics and laboratory parameters, makes it easier for the medical team on duty to choose therapeutic tactics: to carry out conservative therapy or to intervene surgically.

The analysis of numerous publications in periodicals and manuals devoted to the problem of damage to solid abdominal organs over the past 30 years indicates the obvious advantages of conservative treatment over surgical [6]. An important detail should be emphasized: almost all publications on this topic were related only to the pediatric group of patients. In some countries (USA, for example) since 2006, conservative treatment of spleen and liver injuries in children with stable hemodynamic parameters has been recognized as the standard of therapeutic tactics [5].

The purpose of the study. The aim of the work is to improve the results of treatment of patients with liver and spleen damage by creating a new method of radical hemostasis of liver wounds and the most effective method of prevention of postoperative hyposplenism in this cohort of patients.

Materials and methods of research. From 2020 to 2021, 57 patients with simultaneous damage to the liver and spleen aged from 3 to 18 years were under our supervision, operated according to the standard procedure with splenectomy with suturing of the liver wound without autotransplantation of splenic tissue. It should be noted that only 4 patients (7%) had local damage to the liver and spleen, in other patients, damage to these organs was combined with traumatic brain injury - 44 patients (77%), damage to the musculoskeletal system - 49 patients (86%).

The results of the study. Analysis of the clinical material allowed us to conclude that the main method of diagnosing intra-abdominal bleeding is ultrasound of the abdominal organs, which in 84% objectively allowed to identify pathognomonic symptoms of damage.

The use of this method of research allowed us to almost completely abandon laparocentesis with the method of a fumbling catheter, laparoscopy for diagnostic purposes. In all cases, deep ruptures of the spleen, partial or complete separation of the organ from the vascular pedicle were observed, which caused a justified splenectomy.

In all cases of simultaneous damage to the liver and spleen, surgical tactics were identical at the initial stage: median laparotomy, preventive tamponing of the liver wound, splenectomy were performed.

Suturing a liver wound always presents significant difficulties. U-shaped seams always have a clear tendency to eruption. For thorough hemostasis, we used the laying of the wound surface with a hemostatic sponge in 42 patients (73.7%), tachocomb was used in 8 patients (14%) and tissucol in 4 patients (7%). In parallel with this, diathermocoagulation was used. At the same time, in all observations, complete hemostasis with deep liver wounds could not be fully achieved. This, in turn, was a reasonable indication for drainage of the subhepatic space according to Redon.

In the postoperative period, reinfection through drainage of the subhepatic space was the cause of complications in 4 patients (7%), suppuration of the laparotomy wound - 4 patients (7%), suppuration in the drainage area - in 15 patients (26.3%), early adhesive intestinal obstruction — in 2 patients (3.5%), hypostatic pneumonia - in 5 patients (8.7%).

The study of catamnesis in 55 patients previously operated on general surgical principles (using splenectomy without autotransplantation of splenic tissue), convincingly testified that 50 patients (91%) had obvious clinical symptoms of hyposplenism in the postoperative period. The clinical manifestation of this syndrome consisted primarily in an increase in the incidence of infectious processes.

The study of the main factors of immunity in dynamics indicated a significant decrease in anti-inflammatory cytokines and cellular immunity, which entailed a significant decrease in humoral immunity factors.

Taking into account the massive nature of damage to two vital organs - the liver and spleen, massive intra-abdominal bleeding, we considered it expedient to perform simultaneous autotransplantation of splenic tissue into the liver wound.

The pathogenetic justification of this approach to surgical tactics in this contingent of patients is primarily due to the direct hemostatic properties of splenic tissue, significantly better conditions for graft vascularization and the direct physiological proximity of splenic cells producing taftsin with liver cells.

1. Treatment of patients with combined liver and spleen injuries using splenectomy leads to a decrease in anti-inflammatory cytokinins and cellular immunity, which entails a decrease in humoral immunity factors and is the main link in the pathogenesis of post-splenectomy syndrome.

2. Intraoperative use of fibrin adhesives and diathermocoagulation does not provide reliable hemostasis of the liver wound and, in combination with reasonable drainage of the abdominal cavity, increases the number of postoperative complications.

3. The method of autotransplantation of splenic tissue into a liver wound developed in the experiment makes it possible to achieve a complete stop of bleeding and further preserve a viable and fully functioning autotransplant of splenic tissue.

The developed method of autotransplantation of splenic tissue into a liver wound is technically simple, applicable in any urgent surgical department, allows to stop bleeding from a liver wound without additional local hemostatic agents and completely abandon drainage of the subhepatic space.

Autotransplantation of splenic tissue into a liver wound is an effective way to prevent postoperative hyposplenism in this contingent of patients and can significantly improve the results of treatment of patients with liver and spleen injuries.

Conclusion. Thus, the proposed treatment complex has significant advantages over existing ones and allows to significantly improve the results of treatment of patients with combined and combined liver and spleen injuries.

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