

PATHOGENETICALLY BASED CONSERVATIVE THERAPY IN THE COMPLEX TREATMENT OF ACUTE ADHESIVE SMALL BOWEL OBSTRUCTION

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Abstract: Acute adhesive small bowel obstruction (ASBO) remains one of the most common causes of emergency abdominal surgery and is characterized by a high risk of complications and recurrence. Conservative treatment is effective only in some patients, and the lack of a pathogenetic approach limits its results. This study utilized a diagnostic algorithm using clinical, laboratory, and instrumental criteria. The use of a comprehensive conservative approach was associated with favorable clinical outcomes and improved motor-evacuation function, as measured by laboratory, radiographic, and ultrasound examinations. Post-treatment duplex ultrasound imaging revealed statistically significantly higher Vmax and Vmin values in patients with localized adhesions compared to those with widespread adhesions ($p < 0.001$). This pathogenetically substantiated comprehensive conservative therapy is an effective component of OSTKO treatment and can be used to increase the rate of successful non-surgical resolution of the disease and optimize the choice of subsequent treatment.

Keywords: acute adhesive small bowel obstruction, conservative therapy, serotonin adipate, oxidative stress, cytokines, microcirculation, ultrasound duplex scanning.

O‘TKIR CHANDIQLI INGICHKA ICHAK TUTILISHINI KOMPLEKS DAVOLASHDA PATOGENETIK ASOSLANGAN KONSERVATIV TERAPIYA

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Annotatsiya: O‘tkir chandiqli ingichka ichak tutilishi (O‘ChIIT) shoshilinch abdominal xirurgiyaning eng ko‘p uchraydigan sabablaridan biri bo‘lib qolmoqda hamda asoratlari va qaytalanish (retsiv) xavfining yuqoriligi bilan xarakterlanadi. Konservativ davolash faqat bemorlarning bir qismida samarali bo‘lib, patogenetik yondashuvning yetishmasligi uning natijalarini cheklaydi. Tadqiqot doirasida klinik, laborator va instrumental mezonlardan foydalangan holda diagnostik algoritmi qo‘llanildi. Kompleks konservativ uslubni qo‘llash ijobiy klinik natijalar va laborator, rentgenologik hamda ultratovush tekshiruvlari ma‘lumotlariga ko‘ra motor-evakuator funksiyasi ko‘rsatkichlarining yaxshilanishi bilan kechdi. Ultratovush dupleks skanerlash ma‘lumotlariga ko‘ra, davolashdan so‘ng chegaralangan chandiqlari bo‘lgan bemorlarda tarqalgan chandiqlari bo‘lgan bemorlarga nisbatan Vmax va Vmin ko‘rsatkichlari statistik jihatdan ishonchli darajada yuqori bo‘lganligi qayd etildi ($p < 0,001$). Ishlab chiqilgan patogenetik asoslangan kompleks konservativ terapiya O‘ChIITni davolashning samarali tarkibiy qismi hisoblanadi hamda kasallikni jarrohliksiz bartaraf etish muvaffaqiyatini oshirish va keyingi taktikani tanlashni maqbullashtirish uchun qo‘llanilishi mumkin.

Kalit so‘zlar: o‘tkir chandiqli ingichka ichak tutilishi, konservativ terapiya, serotonin adipinati, oksidativ stress, sitokinlar, mikrosirkulyatsiya, ultratovush dupleks skanerlash.

ПАТОГЕНЕТИЧЕСКИ ОБОСНОВАННАЯ КОНСЕРВАТИВНАЯ ТЕРАПИЯ В КОМПЛЕКСНОМ ЛЕЧЕНИИ ОСТРОЙ СПАЕЧНОЙ ТОНКОКИШЕЧНОЙ НЕПРОХОДИМОСТИ

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Аннотация: Острая спаечная тонкокишечная непроходимость (ОСТКН) остаётся одной из наиболее частых причин экстренной абдоминальной хирургии и характеризуется высоким риском осложнений и рецидивов. Консервативное лечение эффективно лишь у части пациентов, а отсутствие патогенетического подхода ограничивает его результаты. В рамках исследования применён диагностический алгоритм с использованием клинических, лабораторных и инструментальных критериев. Применение комплексной консервативной методики сопровождалось благоприятными клиническими исходами и улучшением показателей моторно-эвакуаторной функции по данным лабораторных, рентгенологических и ультразвуковых исследований. По данным УЗ-дуплексного сканирования после лечения у больных с ограниченными спайками отмечались статистически значимо более высокие значения V_{\max} и V_{\min} по сравнению с пациентами с распространёнными спайками ($p < 0,001$). Разработанная патогенетически обоснованная комплексная консервативная терапия является эффективным компонентом лечения ОСТКН и может применяться для повышения частоты успешного нехирургического разрешения заболевания и оптимизации выбора дальнейшей тактики.

Ключевые слова: острая спаечная тонкокишечная непроходимость, консервативная терапия, серотонина адипинат, оксидативный стресс, цитокины, микроциркуляция, ультразвуковое дуплексное сканирование.

INTRODUCTION

Acute adhesive small bowel obstruction is one of the most common types of mechanical intestinal obstruction and remains highly clinically significant due to the increasing number of abdominal surgeries. Postoperative adhesions develop in a significant proportion of patients and lead to repeat hospitalizations, complications, and the need for emergency surgical treatment.

A major problem with ASBO is the difficulty of early diagnosis, especially in the early stages of the disease, when ischemic changes in the intestinal wall can remain subclinical for a long time. This complicates the choice of treatment and leads to delayed surgical intervention, increasing the risk of intestinal necrosis and peritonitis.

Despite advances in surgical technology, a significant proportion of patients can be successfully treated conservatively with timely diagnosis and adequate pathogenetic correction of motility disorders, microcirculation, and the systemic inflammatory response. Therefore, the development and implementation of comprehensive, pathogenetically based conservative therapy is a relevant area of modern emergency surgery.

MATERIALS AND METHODS

A clinical study was conducted based on the analysis of treatment of patients with ASBO who underwent inpatient treatment in 2016–2024.

The study used data from 140 patients diagnosed with acute adhesive small bowel obstruction. Conservative therapy using the developed method was carried out in 65 patients, in whom, according to clinical and instrumental examination data, there were no absolute indications for immediate surgical intervention.

All patients underwent a comprehensive diagnostic algorithm, which included: collection of complaints and anamnesis, clinical examination; laboratory biochemical blood tests to determine MDA, DK, IL-6, TNF α , serotonin and indicators of endogenous intoxication; plain

abdominal radiography and ultrasound examination; if necessary - CT scan and diagnostic laparoscopy.

In plain radiography, characteristic signs of ASBO were detected in the majority of patients: the presence of Kloiber cups was recorded in 117 cases out of 140 (83.6%).

The developed complex method was based on the assumption that long-term intestinal paresis, intestinal insufficiency syndrome and the formation of adhesive disease are caused by a combination of pathogenetic mechanisms: activation of lipid peroxidation; cytokine status imbalance; serotonin deficiency; microcirculation disorders in the mesentery and wall of the small intestine.

Taking this into account, the treatment complex included: serotonin adipate for correction of intestinal insufficiency and stimulation of motility; antioxidant and antihypoxant drugs to reduce oxidative stress and regulate cytokine balance; low molecular weight heparin to improve microcirculation in the mesentery and wall of the small intestine; standard components of treatment for ASBO (decompression, infusion therapy, electrolyte correction, etc.).

The effectiveness of conservative therapy was assessed by: clinical signs of resolution of obstruction; dynamics of the motor-evacuation function; laboratory parameters; data from X-ray and ultrasound studies; results of ultrasound duplex scanning of the small intestinal wall.

Modern statistical packages were used for the analysis. Normality of distribution was assessed using the Kolmogorov–Smirnov and Shapiro–Wilk tests. Quantitative indicators were compared using the Mann–Whitney U test; differences were considered statistically significant at $p < 0.05$.

RESULTS

Conservative treatment using the developed method was performed on 65 patients. The results were favorable, and the positive effect was confirmed by improved motor-evacuation function indicators, as measured by laboratory blood tests, X-rays, and ultrasound examinations.

Thus, the use of pathogenetic therapy made it possible to stabilize the patients' condition, reduce the severity of intestinal paresis and create conditions for the restoration of the passage of intestinal contents.

Ultrasound duplex scanning after treatment. One of the objective methods for assessing the restoration of intestinal wall microcirculation and the functional state of the intestine was duplex ultrasound scanning. After treatment, patients were divided into two subgroups: TSCD with limited adhesions ($n=38$) and TSCD with widespread adhesions ($n=27$).

It was found that after treatment, the V_{max} and V_{min} values were statistically significantly higher in patients with limited adhesions, which reflects a more pronounced restoration of blood flow and functional activity of the intestinal wall.

Table 1. Indicators of ultrasound duplex scanning of the small intestinal wall after treatment (n=65)

Indicator	Limited adhesions (n=38)	Common adhesions (n=27)	p
V max (cm/sec.)	23.34±0.12	21.63±0.24	<0.001
V min (cm/sec.)	6.83±0.27	6.05±0.34	<0.001
RI	0.85±0.13	0.73±0.16	>0.05

Diagnostic criteria and the role of instrumental methods: An analysis of the diagnostic stage showed that plain radiography remains highly clinically significant as a primary diagnostic method for OST. Specifically, the presence of Kloiber cups was detected in 83.6% of those examined.

In this case, in case of questionable data from general radiography and ultrasound, the most accurate method for diagnosing and predicting the therapeutic effect is MSCT with contrast.

DISCUSSION

OSTKN is characterized by a multifactorial pathogenesis and is often accompanied by severe intestinal motility disorders, endotoxicosis, a systemic inflammatory response, and microcirculatory disturbances. The dissertation established that increased lipid peroxidation, changes in cytokine status, serotonin deficiency, and microcirculatory disorders play a significant role in the development of the disease.

The developed pathogenetic method of conservative treatment is aimed not only at symptomatic decompression and correction of fluid and electrolyte imbalances, but also at addressing the key mechanisms of intestinal paresis and intestinal failure syndrome. The use of serotonin adipate improves motor-evacuation function, antioxidants and antihypoxants reduce the severity of oxidative stress and the inflammatory response, and low-molecular-weight heparin improves microcirculation in the intestinal wall and mesentery.

An important result of the study is the confirmation of the method's effectiveness with objective instrumental data. According to the results of duplex ultrasound scanning after treatment, Vmax and Vmin values were significantly higher in patients with limited adhesions ($p < 0.001$). This reflects a more pronounced restoration of intestinal wall microcirculation and confirms the clinical feasibility of early, differentiated treatment decisions.

The diagnostic algorithm proposed in the dissertation deserves special attention. It includes laboratory markers (MDA, DK, IL-6, TNF α , serotonin) and a combination of imaging techniques (X-ray, ultrasound, CT, diagnostic laparoscopy). This approach allows for more accurate patient ranking and determination of indications for conservative therapy or surgical intervention.

Thus, pathogenetically justified conservative therapy for ASBO should be considered as a significant element of complex treatment, especially in patients without signs of intestinal necrosis and widespread peritonitis.

CONCLUSION

The developed pathogenetically substantiated comprehensive conservative therapy for acute adhesive small bowel obstruction demonstrates clinical efficacy and is accompanied by improvements in motor-evacuation function and small intestinal wall microcirculation. The use of a diagnostic algorithm with laboratory and instrumental criteria improves the validity of treatment decisions and facilitates treatment optimization.

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