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DIAGNOSTIC AND TREATMENT APPROACHES FOR ACUTE INTESTINAL OBSTRUCTION IN THE EARLY POSTPARTUM PERIOD

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Acute intestinal obstruction is one of the most serious acute surgical diseases of the abdominal organs in the early postpartum period. 31 women in labor with acute intestinal obstruction were treated. The Algorithm of therapeutic and diagnostic tactics in parturient women with acute intestinal obstruction was developed and proposed for use. The indication for surgery was the lack of effect of conservative therapy within 2–3 hours. Surgical treatment was performed in all cases of acute mechanical obstruction. Conservative measures had a positive effect in all women in labor of the dynamic intestinal obstruction. No fatalities were registered. Treatment of women in labor with acute intestinal obstruction should be carried out by surgeons with the involvement of obstetrician–gynecologists in accordance with the proposed algorithm of treatment and diagnostic tactics in women in labor with acute intestinal obstruction.

Key words: postpartum period, acute intestinal obstruction, diagnosis, treatment algorithm.

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ДІАГНОСТИЧНІ ТА ЛІКУВАЛЬНІ ПІДХОДИ ДО ГОСТРОЇ КИШКОВОЇ НЕПРОХІДНОСТІ У РАННЬОМУ ПІСЛЯПОЛОГОВОМУ ПЕРІОДІ

Гостра кишкова непрохідність – одне з найважчих гострих хірургічних захворювань органів черевної порожнини в ранньому післяпологовому періоді. Проліковано 31 породіллю з гострою кишковою непрохідністю. Розроблено та запропоновано до використання Алгоритм лікувально–діагностичної тактики у породіль з гострою кишковою непрохідністю. Показанням до операції була відсутність ефекту від консервативної терапії протягом 2–3 годин. У всіх випадках гострої механічної непрохідності проведено оперативне лікування. Консервативні заходи дали позитивний ефект у всіх породіль з динамічною кишковою непрохідністю. Смертельних випадків не зареєстровано. Лікування породіль з гострою кишковою непрохідністю повинні проводити хірурги із залученням акушерів–гінекологів відповідно до запропонованого алгоритму лікувально–діагностичної тактики у породіль з гострою кишковою непрохідністю.

Ключові слова: післяпологовий період, гостра кишкова непрохідність, діагностика, алгоритм лікування.

The study is a fragment of the research project "Development and implementation of new methods of minimally invasive and endovascular interventions in metabolic syndrome, endocrine pathology, diseases of the lungs, esophagus, liver and extrahepatic ducts, stomach, pancreas, colon and rectum, blood vessels", state registration No. 0119U003573.

The problem of mother and child health care is one of the priority areas of modern medicine. The problem of mother and child health care is one of the priority areas of modern health care. Currently, there is a trend toward an increase in extragenital pathology during pregnancy, including surgical pathology, which negatively affects not only the course and outcome of the gestational process, but also the dynamics of maternal and perinatal mortality [1, 3, 12].

The most dangerous acute surgical diseases of the abdominal organs in the early postpartum period include acute intestinal obstruction (AIO) [2, 4, 13].

Acute intestinal obstruction is a pathological syndrome that unites various diseases that lead to a violation of the passage through the intestine due to a mechanical barrier or insufficient motor function of the intestine [3, 5, 14].

The frequency of intestinal obstruction in pregnant women is 1:40,000–1:50,000 births, the mortality rate is 35–50 %, and the stillbirth rate is 60–75 % [4, 7, 9].

In 70 % of women, this pathology is registered in the II-III trimester of pregnancy, less often – in the I trimester (15.5 %), much less often – during childbirth and the postpartum period [6, 10, 11].

As the pregnancy period increases, the intra-abdominal pressure increases, the displacement of the small and large intestines upwards, conditions are created for the compression of the intestinal loops, the formation of knots, and the development of constipation [2, 7, 8].

A sharp decrease in intra-abdominal pressure after childbirth leads to the displacement of loops of the small intestine, which can cause the development of strangulation intestinal obstruction [2, 4, 8].

A woman in labor develops intestinal hypodynamia of both spastic and paralytic nature, which is based on the one hand, the action of prostaglandins, which increase the tone of smooth muscles, and on the other hand, an increase in the concentration entry of progesterone and its metabolites, which act on the

inhibitory gastrointestinal hormone, which causes relaxation of the smooth muscles of the intestine in the early postpartum period [2, 7, 9].

An increase of frequency AIO in parturient women is associated with increasing operative activity in the anamnesis, in the diagnosis and treatment of surgical diseases, as well as the development of adhesion disease [4, 8, 10].

Diseases of the abdominal cavity and pelvic organs in the anamnesis, especially those in the treatment of which surgical methods of treatment were used, may be the cause of the occurrence of mechanical AIO in the early postpartum period: internal pinching of the intestinal loops in the mesenteric pockets; turn; nodulation; obturation of the intestine from the outside with an inflammatory infiltrate, fecal or bile calculus, bezoar; intussusception; adhesion obstruction. Three stages are distinguished according to the development of the pathological process with AIO in parturient women: acute disturbance of the intestinal passage; disorder of intramural intestinal hemocirculation; peritonitis [1, 2, 11].

The problems of diagnosis and treatment approaches for urgent surgical diseases of the abdominal organs in the early postpartum period are complex and responsible, since the prognosis for the woman in labor ultimately depends on the accuracy of the diagnosis and the selected treatment tactics.

The purpose of the study was to develop the algorithm of diagnostic and therapeutic tactics for acute intestinal obstruction in the early postpartum period.

Materials and methods. 31 women in labor with a diagnosis of acute intestinal obstruction, which developed in the postpartum period, were treated in the departments of general surgery, minimally invasive interventions and the regional perinatal center of the Odesa Regional Clinical Hospital. 20 women in labor were in the perinatal center, 11 were urgently hospitalized when they arrived from the regions of the region. Patients in the perinatal center were examined by a surgeon and transferred to the surgical department. Patients brought from the regions of the region are examined in the reception department of the hospital by a regular team of surgeons and obstetricians-gynecologists. Treatment of women with AIO in the stage of subcompensation and decompensation was carried out in the intensive care unit.

Two groups were distinguished taking into account the type of AIO. The 1st group consisted of women in labor with mechanical intestinal obstruction (n=16), the 2nd group (n=15) had dynamic intestinal obstruction.

The diagnosis of AIO was based on generally accepted symptoms of intestinal obstruction. Examination of patients included a thorough collection of anamnestic data, examination results, laboratory and additional diagnostic methods.

A complex ultrasound examination (US) of the special research methods was performed on the parturient woman on an Acuson XP 128 ultrasound scanner with a transducer with an operating frequency of 3.5 MHz. The use of X-ray examination of the organs of the abdominal cavity is a mandatory method of diagnosis of AIO in parturient women. Monitoring laparoscopy (for strict indications) was performed according to the standard technique using the OTV–SC Olympus endosurgical complex. Analgesia – endotracheal anesthesia with carbon dioxide pressure in the abdominal cavity of 10–12 mm Hg. Art.

Conservative detoxification, antispasmodic therapy against the background of paranephric blockade and nasogastric intubation was prescribed to all women in labor upon admission

Semisynthetic penicillins, cephalosporins of the III–IV generations, and metronidazole in standard doses were prescribed for the prevention or treatment of infectious complications of AIO.

Correction of the water-electrolyte balance and compensation of plasma loss consisted in the use of at least 40 ml of infusion agents per 1 kg of body weight with the ratio of colloidal and crystalloid solutions – 1:4. Correction of microcirculation disorders was carried out with 200 ml of reopoliglyukin. With conservative management of patients, myotropic antispasmodics (drotaverine, papaverine hydrochloride) or prokinetics, lytic, glucose-novocaine mixture, parenteral antihistamines were used.

500 ml of 5 % human albumin was administered parenterally under the control of electrolyte balance and central venous pressure in case of dynamic acute intestinal obstruction. An epidural catheter was installed at the level of Th 7–10 with the introduction of carbostezin 0.25 %, 5–10 mg/h for the prevention and treatment of intestinal obstruction.

Clexan was used in a dose of 4000 anti–Xa IU (0.4 ml) 2 times a day subcutaneously for 5 days in the complex treatment of AIO for the prevention of consumption coagulopathy. We believe that the appointment of clexan in the above-mentioned doses for AIO in the propartum, especially in those who have undergone surgery, is mandatory. For AIO, dexamethasone 0.4 v/m was prescribed for 5 days in the postoperative period.

Conservative treatment measures are carried out simultaneously with diagnostic procedures. Lack of effect from conservative therapy within 2 hours is an indication for surgical intervention. The main goal of surgical intervention is to eliminate the causes of intestinal obstruction and restore intestinal function.

The scope of surgical intervention is to eliminate the causes of intestinal obstruction and restore intestinal function. The scope of surgical intervention is determined in each case in a specific case, it is individual and depends on the type of AIO and the age of the disease.

Statistical processing of the research results was carried out using MS Excel XP, Statistica 6.0 application program package with derivation of M±m, percentages using the Student's parametric criterion. At the same time, statistically significant differences were considered at $p<0.05$.

Results of the study and their discussion. Mechanical acute intestinal obstruction was diagnosed in 16 (51.6 %) cases: strangulation – in 7 (43.7 %) parturients, obstruction – in 1 (6.3 %), and mixed form – in 8 (50.0 %) female patients. Dynamic acute intestinal obstruction was found in 15 cases (48.4 %), spastic AIO was found in 3 women (20.0 %), paralytic – in 12(80.0 %). The general characteristics of patients with AIO are presented in Table 1.

Table 1

General characteristics of patients, n=31

Characteristics	1st group (n=16)		2nd group (n=15)	
Average age, years	31.9±4.7		30.3±4.9	
	Abs	%	Abs	%
Obstetric and gynecological history				
History of childbirth	3	18.8	2	13.3
Abortions	7	43.8	3	20.0
Miscarriage	11	68.8	13	86.7
Ectopic pregnancy	6	37.5	3	20.0
Infertility	10	62.5	12	80,0
Disorders of menstrual function	7	43.8	10	66.7
Background diseases of the cervix	10	62.5	4	26.7*
Chronic salpingo-oophoritis	14	87.5	11	73.3
Endometriosis	6	37.5	7	46.7
Uterine myoma	2	1.3	2	13.3
Ovarian tumors	2	12.5	1	6.7
Extragenital pathology				
Diseases of the cardiovascular system	8	50.0	9	15.0*
Diseases of the gastrointestinal tract	16	100	15	100
Diseases of the hepatopancreatobiliary system	13	81.3	4	26.7*
Diseases of the urinary system	9	56.3	4	26.7
Obesity	7	43.8	3	20.0
Diseases of the thyroid gland	3	18.8	9	60.0*
Operative interventions				
Appendectomy	13	81.3	5	33.3*
Cholecystectomy	3	18.8	4	26.7
Herniotomy	5	31.3	3	20.0
Cesarean section	6	37.5	2	13.3
Conservative myomectomy	2	12.5	1	6.7
Tubectomy	6	37.5	3	20.0
Ovarian resection	8	50.0	1	6.7*
Removal of uterine appendages	2	12.5	2	13.3
Therapeutic and diagnostic laparoscopy for various reasons	7	43.8	7	46.7

Note: * – $p<0.05$ compared to group 1

A detailed analysis of the anamnestic data showed that the age of the women in labor at the time of the development of AIO ranged from 25 to 37 years and was on average 31.1±4.8 years. 13(81.3 %) women of the 1st group and 13(86.7 %) of the 2nd group had in the anamnesis their first birth. 18.7 % of women in labor had mechanical obstruction of the intestine and 13.3 % – with dynamic obstruction.

Obstetric anamnesis in the 1st and 2nd groups was burdened by abortions in 43.8 % and 20.0 % of patients, spontaneous miscarriages in 68.8 % and 86.9 %, ectopic pregnancy in 37.5 % and 20.0 %, respectively.

Chronic inflammatory processes of the pelvic organs from gynecological diseases in the anamnesis in parturient women with mechanical AIO occurred in 87.5 % of observations, with dynamic – in 73.3 %, menstrual cycle disorders in 43.8 % and 66.7 %, erosion of the cervix – in 62.5 % and 26.7 % ($p<0.05$), genital endometriosis – in 37.5 % and 46.7 %, ovarian tumors – in 12.5 % and 6.7 % ($p<0$ .05), uterine myoma – in 1.3 % and 13.3 %. Treatment for secondary infertility was received by 10 patients of the 1st group (62.5 %) and 12 patients of the 2nd group (80.0 %).

Two women with mechanical and three with dynamic intestinal obstruction became pregnant as a result of in vitro fertilization. Hormonal drugs (duphaston, utrogestan, progesterone) from the early stages

of pregnancy were received by 9 pregnant women of the 1st group (56.3 %) and 14 of the 2nd group (93.3 %) ($p<0.05$) – the difference is significant.

Diseases of the gastrointestinal tract prevailed among somatic pathologies – the frequency of diseases was 100.0 %. It was found in a more detailed analysis that the percentage of chronic gastritis, pancreatitis, cholecystitis, enterocolitis, and appendicitis is significantly higher in parturient women with AIO in the anamnesis. The frequency of the listed nosologies was 1.3-5 times higher in patients with mechanical intestinal obstruction than in patients with dynamic AIO. Dyskinesia of the large intestine occurred in 11(73.3 %) of patients of the 2nd group and in 100.0 % of patients of the 1st group. The specific gravity of intestinal dysbacteriosis in parturients with acute dynamic obstruction was 3 times higher than the similar indicator of the 1st group. Other extragenital diseases were represented by vegetative-vascular dystonia: in the 1st group – 8 (50.0 %), in the 2nd group – 9(60.0 %); enlargement of the thyroid gland: respectively – 3(18.8 %) and 9(60.0 %); chronic pyelonephritis – 9 (56.3 %) and 4(26.7 %); chronic bronchitis – 7(43.8 %) and 2(13.3 %). Obesity of the first degree was ascertained in 7(43.8 %) parturient women with mechanical AIO and in 3(20.0 %) patients with dynamic AIO.

It is necessary to note the high frequency of various surgical interventions in the anamnesis of women in labor with AIO.

Appendectomy was performed by 81.3 % of women with mechanical AIO and 33.3 % with dynamic; both open and laparoscopic cholecystectomy – 18.8 % and 26.7 %, respectively; various types of herniotomy – 31.3 % and 20.0 %. Medical-diagnostic laparoscopy for various reasons in history was used in 43.8 % of group 1 and 46.7 % in group 2. 37.5 % of women with a mechanical AIO and 13.3 % with a dynamic one had a history of cesarean section.

12.5 %, 37.5 %, 50.0 %, 12.5 % of women giving birth with a mechanical AIO and 6.7 %, 20.0 %, 6.7 % 3.3 % with dynamic AIO had conservative myomectomy, tubectomy, ovarian resection, removal of uterine appendagea in history of respectively. At the same time, 9 (56.3 %) patients of the 1st group had 2 and > operations. Clinical manifestations of AIO in parturient women are presented in Table 2.

Table 2

Clinical manifestations of AIO in parturient women

Characteristics	1st group (n=16)		2nd group (n=15)	
	Abs	%	Abs	%
Hypotension	8	50.0	7	46.7
Tachycardia	12	75.0	12	80.0
Intensification of bowel sounds	8	50.0	3	20.0
Stool and gas retention	11	68.8	14	93.3
Flatulence	12	75.0	10	66.7
Abdominal pain is not constant	7	43.8	10	66.7
Cramp-like abdominal pain	9	56.3	5	33.3
Vomiting	15	93.8	9	60.0

Clinical manifestations of the disease in the postpartum period depend on the variant and level of intestinal obstruction and the duration of the disease. Pain, as a rule, is a harbinger of the onset of the disease. The pain is severe.

AIO has a limited character at the initial stage of development, then it becomes diffuse, spreads throughout the abdomen, and can also have an attack-like character. Over time, pain attacks (intestinal motility) stop, which indicates the development of intestinal paralysis and is an unfavorable prognostic sign. Vomiting occurs almost simultaneously with the pain syndrome, first gastric contents with bile impurities, and later with intestinal contents – “fecal” vomiting, which is an unfavorable prognostic sign. Vomiting can be continuous with high intestinal obstruction and have a one-time, liquid character with low intestinal obstruction, accompanied by hiccups and belching. Pathognomonic symptoms, such as the cessation of gas and fecal masses, the development of flatulence, are not absolute in intestinal obstruction in the postpartum period.

Defecation with the release of gases from the lower parts of the intestines is possible, but it does not bring a feeling of bowel emptying and relief with high small intestinal obstruction. Gas retention is accompanied by flatulence and cessation of peristalsis.

Specific symptoms of AIO are detected during examination of the abdomen, palpation, percussion and auscultation of the intestines.

The abdomen with AIO in the early postpartum period is enlarged, asymmetric, distended, soft, painful on palpation.

The bottom of the uterus is palpated 2–3 transverse fingers below the navel. Percussion is determined by tympanitis with a metallic shade (Kivul's symptom), increased peristalsis, sound of a falling drop (Spasokukotsky-Vilms' symptom), “splash noise” (Sklyarov's symptom) is determined by auscultation. “Noises" are not detected in the case of intestinal paralysis.

Ultrasound criteria of AIO are the presence of a symptom of intraluminal deposition of liquid with anechoic inclusions, an increase in the diameter of the intestine >2–3 cm, visualization of folds and a rough relief of the mucosa, thickening of the wall of the small intestine >4 mm, the pendulum-like nature of peristaltic movements or the absence of peristalsis of the intestine, the presence of free fluid in abdominal cavity.

Variability and vagueness of clinical manifestations of AIO in parturient women created certain difficulties in establishing the correct diagnosis.

Vomiting (93.8 %) prevailed among the clinical symptoms during the development of mechanical AIO. Pain in the epigastric region or spread throughout the abdomen in 56.3 % of women had a cramp-like character, in other cases there were non-constant pain sensations.

Abdominal bloating, delayed stools and gases were found in 11(68.8 %) and 12 (75.5 %) parturients of the 1st group, increased intestinal noises – in 8(50.0 %).

The following came to the fore: delayed bowel movements and gases in 14(93.3 %) patients, the non-constant nature of pain and abdominal distension in 10(66.7 %) with dynamic AIO. Vomiting and increased bowel sounds were observed in 9(60.0 %) and 3(20.0 %) parturients, respectively.

Tachycardia and mild hypotension occurred in 8(50.0 %); 12(75.0 %) patients of the 1st group and 7(46.7 %); 12(80.0 %) – 2nd group, respectively.

Additional research methods provide significant help in the differential diagnosis of urgent diseases of the abdominal organs in women in labor. Conducting a complex ultrasound revealed indirect signs of AIO (the presence of a symptom of intraluminal fluid deposition with anechoic inclusions, an increase in the diameter of the intestine by more than 3 cm, a rough relief of the mucous membrane and thickening of the intestinal wall) in 14(87.5 %) women of the 1st group. The presence of effusion in the abdominal cavity was ascertained in 6(37.5 %) cases.

According to sonography data, expanded intestinal loops were visualized, with the absence of peristaltic movements in 8 (53.3 %) patients in the 2nd group.

X-ray examination was always performed when acute intestinal obstruction was suspected.

Kloiber bowls were found in 11(68.8 %) patients of group 1. Monitoring laparoscopy was used in 2(12.5 %) parturients from 1 group.

The diagnosis of AIO in 100 % of observations was made within 1 day of inpatient treatment despite the complexity of differential diagnosis.

The indication for surgery was the lack of effect of conservative therapy within 2-3 hours. Surgical treatment of AIO in the 1st group was performed in all cases.

The volume was surgical intervention consisted in resection of the intestine, dissection of interloop adhesions, ileoascendoanastamosis, intestinal intubation, drainage of the abdominal cavity in 5(31.3 %) women who gave birth.

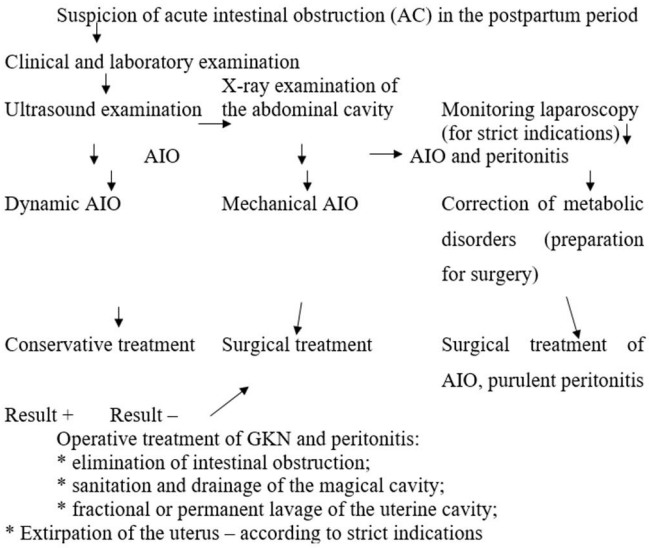

Fig. 1. Algorithm of medical and diagnostic tactics in parturient women with acute intestinal obstruction

The scope of the operation at the same time was extended to the amputation of the uterus in connection with the phenomena of peritonitis in 3(18.8 %) women.

Surgical treatment was limited to dissection of interloop adhesions in 11(68.8 %) patients. Conservative measures had a positive effect in all parturients with dynamic intestinal obstruction (group 2). No fatalities were registered.

We have developed and proposed for use the Algorithm of therapeutic and diagnostic tactics for women in labor with acute intestinal obstruction (see Fig. 1).

AIO in parturient women more often develops in the form of mechanical obstruction as a result of the adhesion process [1, 4, 7]. A high frequency of diseases of the gastrointestinal tract and surgical interventions in women in labor was revealed in anamnesis [5]. A burdened obstetric and gynecological history and long-term use of large doses of progestogens during pregnancy affect the development of AIO in parturient women [4, 8, 10]. Dyskinesia of the large intestine and constipation were noted in all parturients with mechanical obstruction and in 73.3 % with dynamic AIO. Diagnosis of AIO in parturient women is difficult. The absence of classic clinical symptoms of the disease is due to changes in the mother's body due to the previous pregnancy [2, 11, 14].

The informativeness of X-ray examination in case of mechanical acute intestinal obstruction in parturient women was 68.8 %. The use of ultrasound enables the detection of indirect signs of AIO in 87.1 % of women in labor. In case of complications of differential diagnosis in parturient women, monitoring laparoscopy may be used under strict indications.

Treatment of women in labor with AIO should be carried out by surgeons with the involvement of obstetricians-gynecologists in accordance with the proposed algorithm of treatment and diagnostic tactics in women in labor with acute intestinal obstruction.

Conservative measures should not last more than two hours in the case of mechanical intestinal obstruction, because profound changes may occur in the intestinal wall, up to intestinal necrosis and the development of peritonitis, which will inevitably lead to a complication of the clinical situation.

The difficulties of diagnosis, the variability and blurring of clinical symptoms of AIO in parturient women, late seeking medical help contribute to the progression of the disease, lead to decompensation of important vital functions, metabolic disorders, the development of dehydration and endotoxicosis. The prognosis in this situation becomes extremely unfavorable.

Conclusions

1. Acute intestinal obstruction is a formidable complication in the early postpartum period.

2. The reason for the development of mechanical acute intestinal obstruction in parturient women is the adhesion process in the abdominal cavity as a result of surgical interventions in the anamnesis.

3. The development of dynamic acute intestinal obstruction in most cases is associated with taking hormonal drugs (duphaston, utrogestan, progesterone) from the early stages of pregnancy.

4. The indication for operative treatment of acute intestinal obstruction in parturient women was the lack of effect from conservative therapy within 2–3 hours.

5. Treatment of women in labor with acute intestinal obstruction should be carried out by surgeons with the involvement of obstetricians-gynecologists and following the proposed algorithm of treatment and diagnostic tactics for women in labor with acute intestinal obstruction.

Prospects for further research are aimed at studying the peculiarities of treatment and diagnostic approaches for intestinal obstruction in pregnant women.

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