Acute intestinal obstruction of nonneoplastic origin (AIONNO) has been remaining for many years one of the hot problems of the abdominal emergency surgery. Despite the adoption of modern diagnostic techniques and surgical interventions, the results of treatment of such kinds of patients do not satisfy clinicians. Post-operative mortality reaches 12–20% according to different authors [1–5]. The most unfavorable outcomes of AIONNO surgical treatment are observed in elderly patients (over 60 years) [6–10].

The main pathogenetic cause, leading to the development of polyorganic insufficiency and death of the elderly patients in the early post-operative period, is bowel insufficiency syndrome (BIS) with a heavy accompanying pathology which is present in patients over 60 years of age with AIONNO [9–12]. BIS occurrence is due to the changes of the secretion, absorption and barrier function of the bowel. Two phases are distinguished in the course of BIS. The first is the phase of endotoxin aggression. It is characterized by translocation of toxins and microorganisms into the abdominal cavity and systemic circulation, which is accompanied by a marked intoxication (up to a toxic shock), resulting in severe functional disorders of vital organs [13–15]. The second is the phase of progressing endotoxosis. In this phase further elevation of endotoxin concentration in the blood and in the content of the large intestine takes place, dysbiosis develops, the disturbance of the liver function with the depression of its reticuloendothelial system occurs, portal and mesenterial hemodynamics is affected, which contributes to the formation of endothelial dysfunction and lipid distress syndrome [16–17].

The second pathogenetic factor, determining the severity of the condition of patients with AIONNO, is considered to be abdominal compartment syndrome [12, 18–20, 21]. The increase of intra-abdominal pressure in the early postsurgical period is observed in 30% of patients with AIONNO. The excessive pressure in the abdominal cavity results in the dislocation of the diaphragm and compression of the lung parenchyma, venous congestion and higher risk of thromboembolic complications, as well as liver insufficiency [12, 19–21].

The above-mentioned pathological processes are especially heavy in elderly patients with AIONNO, having a number of concurrent diseases accompanied by cardiovascular, respiratory and metabolic disturbances. Changes in the structure of etiological factors is an important feature of AIONNO nowadays. Node formation, volvulus, invagination occur much rarer [23–25]. At the same time, the incidence of adhesion obstruction increased. It is this type of obstruction that causes the bulk of postoperative complications and fatal outcomes [7, 26]. A quick progressing of the intestinal wall ischemia, caused by the vessel compression of its mesentery, leads to the development of irreversible changes demanding extension of the operation volume [27]. Hemodynamic disorders are especially severe in elderly people [8]. Concurrent somatic pathology (atherosclerosis, hypertension, diabetes mellitus) in this cohort of patients contributes to the irreversible sequela of bowel ischemia [8, 28, 29].

High mortality rate in AIONNO is also determined by the fact that in 30–40% of patients the operation is performed a day later the onset of the disease [30]. It is so not only because patients do not seek medical aid in time, but also...
by the delayed selection of the adequate management tactics \[28, 30–32\]. Until now there are no definite criteria, which allow surgeons to use the correct type of treatment: conservative or urgent surgery \[3, 16, 33, 34\].

The principle question, defining the surgical tactics in connection with patients with AIONNO, is to find the causes of obstruction. B.T. Fevang et al. consider all variants of strangulation BIS (incarceration, volvulus, node forming) to be absolute indications for emergency intervention after a short preoperative preparation \[33\]. However, if symptoms of obstruction occur when a patient has suffered from a prolonged adhesive disease, especially in patients operated previously several times on this condition, as well as in patients with a heavy concurrent pathology, tactics of actively wait-and-see is quite justified \[7, 33, 34\]. It includes a number of conservative procedures to eliminate the obstruction (continuous decompression of the upper parts of the digestive tract through a nasogastric probe, intensive infusion therapy with introduction of spasmylytic preparations, enemas), in combination with diagnostic actions to make a final diagnosis \[4, 35, 36\].

Many authors in Russia and abroad, solving the tactical questions of managing patients with AIONNO, especially aged people, point the necessity of formulating a clear program of diagnostic procedures, oriented not only towards making a basic diagnosis, but towards revealing the character and degree of function impairment of vital organs and systems \[8, 9, 14, 30, 31, 37\]. A detailed analysis of the main and additional complaints of the patient, the history of disease development, objective clinical symptoms enables the surgeon to suggest a diagnosis and to outline an optimal amount of laboratory, functional and instrumental methods of investigation \[2, 37\].

X-ray examination remains a routine and the most commonly used method of diagnosing AIONNO in the emergency surgery up till now. Unfortunately, such classical signs of obstruction as “Kloiber’s cup” (a dome-like accumulation of gas over the liquid level) and arches with transverse lines, are visualized mainly at the late stages of the disease development. Using contrast water solution of barium sulfate makes it sometimes possible to define the level of obstruction, but this procedure takes much time, and is not justified in case of strangulation nature of the disease \[26, 38\].

But even if there are no characteristic radiological signs, the diagnosis of AIONNO cannot be excluded completely, especially in case of a “high” localization of obstruction \[28, 38\].

Currently, ultrasound diagnosis is successfully used for early revealing of AIONNO, detecting the signs of the “isolated” bowel loop, pendulum-like peristalsis of the expanded bowel area and a narrow liquid strip around the expanded loop, which increases quickly when the pathological process progresses \[23, 39\].

Foreign literature of the last years began to publish the reports, devoted to the diagnostic feasibilities of magneto-resonance tomography in patients with suspected AIONNO, but in Russia this technique has not received much attention as yet \[40\].

In diagnosing AIONNO, especially its mild forms, monitoring of intra-abdominal pressure (IAP) may be of a significant help. This investigation is carried on by an indirect way, measuring the pressure in the bladder in the course of preparation for the operation or conservative procedures. If IAP values exceed 25.6±6.8 cm H₂O, it is recommended to use active surgical tactics, while conservative therapy is preferred when these values are 12.8±3.3 cm H₂O or less \[41\].

The authors \[42–44\], possessing sufficient clinical experience in endovideosurgical interventions (laparoscopy), are convinced, that this technique allows clinicians to find out timely the cause of obstruction and, in some cases, to eliminate it. Contraindications to laparoscopy are peritonitis, massive adhesion process or marked paresis of the bowel.

Making a diagnostic exploration in elderly people, special attention should be given not only to clarifying the character and level of obstruction, but to the examination of the functional state of the respiratory and cardio-vascular systems as well. The data obtained may be of crucial significance in planning treatment tactics in this cohort \[8, 45\].

A number of authors agrees that a variety and complexity of pathogenic factors of AIONNO together with the accompanying pathology in elderly people dictate the necessity of formulating multidisciplinary concept, which would imply participation of a team of specialists (a surgeon, therapist, sometimes, a cardiologist and pulmanologist, a specialist in functional diagnostics, and anesthesiologist-resuscitator as well) in the treatment process. Such approach can help to outline an adequate volume of preoperative preparation, drug therapy, to determine the type of anesthesia, and to plan specific individual approaches to the patient’s management in the post-operative period, taking into account metabolic and somatic disorders \[8, 9, 31, 45, 46\].

The majority of Russian and foreign surgeons agrees unanimously that the most rational access, permitting to find and eliminate the cause of AIONNO is median laparotomy \[1, 3, 4, 6, 7, 11, 31, 46\]. Some authors \[7, 26\] draw attention to the necessity of thorough adhesiolysis — dissection of the available fusions between the intestinal loops and other organs of the abdominal cavity. This manipulation requires deliberation and concentration from the surgeon. Damage to the overdistended bowel wall may result in fatal outcome \[31\].

A great amount of current publications is still devoted to such an important question as the assessment of vitality of the gut area with blood supply disturbance, and if there are some necrotic changes of the intestine wall — to determination of the bowel resection volume \[11, 28, 47–50\]. Interpretation of visual signs (color, bowel wall edema, subserous hemorrhages, peristalsis, pulsation and blood volume of parietal vessels), together with the dynamics of these signs after introduction into the mesentery a warm solution of local anesthetic — is rather subjective. Methods offered in the recent years for assessing the degree of the bowel wall ischemia (angiotosmetry, transillumination, laser Doppler flowmetry, and Dopplerography) are not always available in the common clinical practice \[47–49\]. Such situation defines the surgeon’s tactics: the slightest
Acute intestinal obstruction of nonneoplastic origin...
u бол’ных острым кишечным непроходимостью [у старшего возраста] [Correction of intraabdominal hypertension and microcirculation in patients with acute intestinal obstruction in the elderly].


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