DIVERTICULAR DISEASE OF THE COLON

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Summary

Introduction. In the past decade, approaches to understanding epidemiology and treating diverticular disease have changed significantly. Many of the principles used earlier have lost their relevance at the moment. In the near future, we can expect an increase in cases of the disease, given the general population aging. Moreover, the number of surgical operations performed on diverticulosis increases annually. The number of complications are worsening the prognosis for a given disease increasing the risk of death results.

The aim of the study. A detailed scientific review is presented on the topic "Diverticular Colon Disease". The paper primarily uses the guidelines of World Journal of Emergency Surgery (2016), as well as Guidelines of the American Association of Gastroenterologists and Clinical guidelines for the diagnosis and treatment of adult patients with diverticular colon disease developed by the expert committee of the All-Russian Public Organization "Association of Coloproctologists of Russia". The work gives the definition of a diverticulum, diverticulosis, and diverticulitis of the colon. The issues of prevalence and frequency of occurrence of this pathology in various age and ethnic groups in developed and developing countries are reflected. The modern views on the etiology and pathogenesis of the disease are disclosed, taking into account the views of modern scholars and international guidelines. Finally, the work analyses case report on the complicated diverticular disease.

Material and Methods. The search for sources was performed in the PUBMED, PUBMED Central, Google Scholar and E-Library databases by keywords: colon diverticulosis, diverticulitis, as well as their Russian counterparts. The selection of sources was mainly limited to 2000–2020. Authors declare that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects. Informed consent was not received due to the nature of the study.

Results and Conclusion. In the past decade, approaches to understanding epidemiology and treating diverticular disease has changed. Many of the principles used earlier have lost their relevance at the moment. At the same time, a careful study of the etiological factors, pathophysiological mechanisms and cause–effect relationships in the development of this pathology is required. Improving diagnostic methods, early prevention and new approaches to treatment can reduce the risk of death in this disease.

Keywords: Diverticulum, diverticulosis, diverticulitis.

INTRODUCTION

The diverticulum is a hernial protrusion of the wall of the hollow organ.

Diverticular disease – a disease whose clinical, morphological and functional manifestations are determined by pathological changes in at least one of the diverticula (1).

Diverticulosis is the presence of multiple diverticula of a hollow organ. By origin, diverticula are divided into congenital and acquired, by structure – false and true, by morphofunctional features – pulsion and traction. True diverticula are those in which all layers of the hollow organ can be traced. False diverticula, in the wall of which there is no muscular and submucosal layer. By origin, diverticula are divided into congenital and acquired. True diverticula are mostly inborn, and falsely acquired. According to morphological and functional features, pulsion diverticula, resulting from the action of intraluminal pressure on the wall of a hollow organ, and traction diverticula, which are formed as a result of fixation of the organ and deformation of its wall, are distinguished.

Colon diverticulosis is a condition in which there is at least one diverticulum (NCR) in the colon.

Diverticular disease is a disease whose clinical, morphological and functional manifestations are determined by pathological changes in at least one of the diverticula (1).

The probability of diverticulosis going into a state of diverticular disease is 5–20% (1–27).

The first mention of diverticular disease dates back to the beginning of the 18th century. However, until the beginning of the 20th century, this disease, like its complications, was related to the field of casuistry. Diverticular disease was first mentioned in the English manual of diseases of the gastrointestinal tract in 1916. The frequency of occurrence of diverticula in 1930, in the countries of Western civilization, according to autopsies, ranged from 2–10%, and in 1969 it was already 35–50%. By the end of 1960s, in the United States, 130,000 people were hospitalized annually for diverticular disease (1). This number has since tripled and makes 71–126 hospitalizations per 100 thousand population per year and is the fifth or sixth place among

the diseases of the gastrointestinal tract in this country (review). In 2009, diverticular colon disease caused 2.6 million visits to US clinics (27). Diverticulosis is the eighth outpatient diagnosis in the USA, the total number of outpatient visits for diverticulosis in 2010 was 2,734,119 (18)). Diverticulitis without bleeding in 2010 was the cause of 333464 calls to the emergency room, with a total mortality rate of 0.3% (18). In 2012, the total number of hospitalizations for diverticulitis was 216,560 cases, the total cost was \$ 2.2 billion (18). Diverticular disease ranked 16th in total mortality among gastrointestinal diseases, liver and pancreas in 2012 with a total mortality rate of 0.9 per 100,000 (1). The cost of drug therapy for diverticular disease was \$ 100 million (6).

A similar picture is observed in the UK, Canada, Germany and Finland. In the USSR, the incidence of diverticulosis in 1970 was 2–3 cases per 100 thousand of the population, in 1979 – 17 cases per 100 thousand. According to the results of X-ray endoscopic studies performed in the State Research Center for Coloproctology, among coloproctology patients, the frequency of detection of colon diverticula doubled over 10 years and was 14.2% in 2002, and in 2012 already 28.8% (1). A somewhat different picture is taking shape in the countries of the East. In Nigeria, according to the irrigational data, 1.8% of the patients had the disease, and 1.2% in the Islamic Republic of Iran. This is much less than in Western countries (27). In the countries of Asia and Africa, the disease is rare, while among the descendants of immigrants from these countries the incidence of diverticular disease does not differ from that of the indigenous groups.

In older age groups, the disease is detected more often, if the incidence of diverticular disease in the age group up to 40 years ranges from 2% to 10%, then after 80 years it is already 60–80%. (1,27). According to 2,000 irrigoscopy data, diverticula are detected in 2/3 of adults over 85 (27). A review presented in the national clinical guidelines noted that before the age of 40, the disease was detected in less than 5% of the population, between the ages of 40–50 years – 5–10%, between the ages of 50–60 years – 14%, in people over 60 years – 30%; over 80 years old – 60–65%. However, in recent years there has been an increase in the incidence at a younger age (27). In Western countries, the age group under the age of 50 accounts for more than one fifth of cases of diverticular colon disease (27). At the same time, women suffer from this pathology more often than men (279), but according to Russian researchers, the prevalence of the disease among men and women is approximately the same (1).

The localization of the pathological process has its own characteristics based on ethnicity, in connection with which there are two types of diverticulosis – “western” and “eastern”. The “western” type of diverticulosis is characterized by a lesion of the left sections of the large intestine. In 95% of cases, diverticula are located in the sigmoid or sigmoid and descending colon. The greatest number of diverticula and high density of

their location is determined in the sigmoid colon and decrease in the proximal direction. In some cases the lesion may be segmental in nature. The diverticula are then defined in the sigmoid and transverse colon, and in other departments they are not. The geographical prevalence of “Western” type of diverticulosis – USA, Canada, Europe, Russia, Australia. In the countries of the Far East and Southeast Asia, an “eastern” type of diverticulosis is detected. Diverticula are localized in the cecum, the ascending gut, and this variant is found there tens and hundreds of times more often than the “western” one. According to Floch MH et al. (2006), Hupfeld L et al. (2014) from 60 to 95% of patients in Western countries have a lesion in the left half of the colon, and only 1.5% of cases involve only the right side (27). The inhabitants of Asia and Africa have a different ratio, so in Singapore the right half of the colon is compromised by this pathological process – in 70%, and the sigmoid colon in 23% of patients, and patients younger than 40 years old were investigated (27).

AIM OF THE STUDY

The aim of the study is to give a detailed review of modern literature on diverticular colon disease with relevant case report. The paper is based on three primary sources: the guidelines of World Journal of Emergency Surgery (2016); the Guidelines of the American Association of Gastroenterologists and Clinical guidelines for the diagnosis and treatment of adult patients with diverticular colon disease developed by the expert committee of the All-Russian Public Organization “Association of Coloproctologists of Russia”. It gives the definition of a diverticulum, diverticulosis, and diverticulitis of the colon. The issues of prevalence and frequency of occurrence of this pathology in various age and ethnic groups in developed and developing countries are reflected. The modern views on the etiology and pathogenesis of the disease are disclosed, taking into account the views of modern scholars and international guidelines. Finally, the work analyses specific case report on the related issue.

MATERIAL AND METHODS

The search for sources was performed in the PUBMED, PUBMED Central, Google Scholar and E-Library databases by keywords: colon diverticulosis, diverticulitis, as well as their Russian counterparts. The selection of sources was mainly limited to 2000–2020. Authors declare that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki “Ethical Principles for Medical Research Involving Human Subjects. Informed consent was not received due to the nature of the study.

RESULTS AND DISCUSSION

In 80% of cases, diverticular bowel disease is characterized by an asymptomatic course. The

probability of diverticulosis going into a state of diverticular disease is 5–20%, complications develop in 15% of cases. In the first place of the complications is diverticulitis. According to recent studies, the risk of developing acute diverticulitis of the left half of the large intestine is estimated at 4% of the total number of patients with diverticulosis (27). Diverticulitis is the most common complication of diverticular disease, and occurs in 10–25% of patients (20). The pathophysiological cause of diverticulitis is bag obstruction with fecal masses, which irritate the intestinal mucosa, causing inflammation, adhesion and further obstruction (4).

A number of authors believe that the incidence of this complication is up to 25% in people with diverticulosis (27), according to other researchers, acute diverticulitis as a complication of diverticular disease develops in 75% of patients, and in 25% all other complications. The perforation of the diverticulum is the 4th in frequency among the causes of emergency surgical intervention after acute appendicitis, perforated gastroduodenal ulcer and intestinal obstruction, and also the 3rd in frequency among the causes of the formation of intestinal stems. With diverticular disease, the incidence of intra-abdominal abscess or peritonitis is 3.5–4 cases per 100 thousand people per year (1,27). The second most common complication is colonic bleeding in 3–15% of patients. The proportion of diverticular disease among other causes of colonic bleeding ranges from 20 to 40% (27). The 30-day mortality rate for diverticular disease is 4.7%, 9.8% of patients die from complications within 1 year (1,27). The infection can spread to neighboring structures, such as the ovary, scrotum, bladder, or even the hip joint, through pilar phlebitis through the portal vein and, ultimately, the formation of liver abscesses.

From the 200 years of studying the disease, many theories of the origin and risk factors of the disease have been advanced. The pathogenesis of diverticular disease is multifactorial and completely unclear. However, a number of influencing factors has been studied, including the structure of the intestinal wall, intestinal passage, genetic factors, fiber intake, vitamin D, obesity, and physical activity (20).

A previously recognized and popular theory, based on the fact that African natives are less likely to suffer from diverticulitis of the left colon, pointed to a diet rich in fiber as contributing to faster transit of contents through the colon (20). However, in later studies, the association of a low fiber diet and an increased risk of developing diverticula was not confirmed (15,16). A study by Peery et al indicated that reducing bowel contractions and stiff stools reduce the risk of developing diverticulitis (16). Thus, studies of the motility of the colon and its effect on the risk of developing diverticulosis are characterized by contradictory results (20).

Despite the fact that the pathogenesis of the development of diverticular disease is mainly associated with the influence of external factors, such as diet,

recent epidemiological data indicate the contribution of genetic factors to the pathogenesis (20). Partly in favor of genetic factors is the more frequent localization of diverticula in the left half of the large intestine in Western countries, and vice versa, more frequent lesion of the right half in Asian countries (19). A study based on the Swedish twin register indicates that if a diverticular disease develops in one of the monozygous twins, the chance of development in another is 7.15, for a similar situation with twins, the chance of development is only 3.2 (13). The risk of developing diverticulosis in twins is 2.92 times higher than the general population (25). The contribution of genetic factors to the development of diverticular disease is 40–50% (9,25).

According to modern data, evidence of the role of a low-fiber diet in the development of diverticular disease is considered insufficiently consistent, but the benefits of a high-fiber diet in preventing complications of diverticular disease are recognized (20). In the Guidelines of the American Association of Gastroenterologists, a diet high in fiber is recommended for patients who have had Fr. diverticulitis (21).

The role of vitamin D: a statistically significant higher serum level of vitamin D (25-OH) was found in patients with uncomplicated diverticulitis compared with those hospitalized for diverticulitis (13). An association between low UV exposure and diverticulitis has been identified. Low levels of vitamin D may be one of the risk factors for the development of complicated diverticulitis, although the role of vitamin D in the pathogenesis has not yet been precisely elucidated (14).

In large prospective studies, a positive association has been found between body mass index, waist circumference, waist-to-hip ratio, and the risk of diverticulitis (10,22).

Data on the relationship of physical activity with the risk of developing diverticulosis are contradictory. In a study by Peery et al, which included 2104 patients, no association was found between physical activity and diverticulosis (16). Other studies indicate that physical activity is associated with a reduced risk of complications of diverticular disease (10,22).

NSAIDs and aspirin are associated with an increased risk of gastrointestinal bleeding, including diverticular bleeding (20). According to a large meta-analysis, 11 included studies confirmed the association of NSAIDs with diverticular perforations (odds ratio 3.4) and 12 studies confirmed the association of NSAIDs with diverticular bleeding (odds ratio 2.6) (11). Regular intake of aspirin (more than 2 times per week) is associated with a higher risk of developing diverticulitis (risk ratio 1.25) compared with not taking aspirin and a higher risk of diverticular bleeding (risk ratio 1.7) (23). The researchers noted that the composition of the food of patients with diverticular colon disease is poor in fiber, preference is given to meat food. In 2009, Melchior S, Cudovic D, Jones J, Thomas C, Gillitzer R, Thuroff J. published data from their studies on which diverticular

disease is less common in patients who abuse alcohol or coffee, but according to other authors aggravation – diverticulitis is caused by red wine (link). Among the risk factors for the development of this disease are indicated: dysbacteriosis, vitamin deficiency, impaired fat and metabolic exchanges (7). To date, a significant association has been identified with the following factors: a body mass index of more than 30 kg / m², hypodynamia (20). The content of plant fiber in food is less than 15 g / day, the presence of connective tissue diseases in patients (7). According to modern data, the share of heredity in the development of this pathology is at least 40%. Moreover, recent studies have found that the presence of certain genes can predict the development of complications of the disease. Thus, the TNFSF15 gene (a gene from the super family of tumor necrosis factor genes) associated with the development of inflammatory bowel diseases, such as refractory ulcerative colitis and aggressive forms of Crohn's disease, is also detected in patients undergoing surgical treatment for intestinal diverticulosis. Homozygosity for the GG allele of this gene is a predictor of the development of diverticulitis (3,26).

Classification

Over the past three decades, the classification of acute diverticulitis proposed by Hinchey was considered the most authoritative and widespread in international literature. Based on surgical data, Hinchey suggested distinguishing four stages of perforated disease.

Hinchey classification:

First stage – Pericolic abscess or phlegmon
 Second stage – Pelvic, intraabdominal or retroperitoneal abscess
 Third stage – Generalized purulent peritonitis
 Fourth stage – Generalized fecal peritonitis.
 Since then, the approaches of the assessment of diverticular disease have changed significantly due to the development of computed tomography (CT scan) and the emergence of the possibility of minimally invasive interventions. CT scan has become the main diagnostic tool in the assessment of diverticular disease (Fig. 1). Detailed and available information provided by CT scan led to the modification of Hinchey classification (28,29–35, 38). CT scan allows us not only diagnose diverticulitis, but also determine its severity and thereby the appropriate treatment plan (40).
 In 1989, Neff proposed a classification based on CT scan data. It included five stages, ranked on the basis of radiological diagnostics from uncomplicated acute diverticulitis (stage 0) to pneumoperitoneum with diffuse distribution of free fluid (stage 4).

Neff classification:

Stage 0. Uncomplicated diverticulitis. The presence of a diverticulum with a thickened wall and a seal of para-intestinal fiber
 Stage 1. Complicated with a local abscess
 Stage 2. Complicated with a pelvic abscess
 Stage 3. Complicated with a distant abscess

Stage 4. Other common complications

In 1997, Sher proposed a modification of the Hinchey classification. The classification divided abscesses into pericolic abscesses (stage I), distant abscesses amendable for percutaneous drainage (stage IIa), and complex abscesses associated with possible fistula (stage IIb). The classification provided the possibility of a new treatment tactic – CT-guided percutaneous drainage of abscesses.

In 2002, Ambrosetti proposed to distinguish between moderate and severe diverticulitis. In this classification, a CT scan determined the severity of diverticulitis, contributing to the development of appropriate treatment tactics. Thickness of the wall of more than 5 mm and the presence of signs of inflammation of the pericardial tissue were considered signs of moderate diverticulitis. In severe diverticulitis, a thickening of the wall was combined with signs of abscess formation, the presence of extraluminal gas, or contrast leakage.
 In 2005, Kaiser modified the Hinchey classification based on ST scan data:

Stage 0 – Diverticuli ± colonic wall thickening
 Stage 1a – Colonic wall thickening with pericolic soft tissue changes
 Stage 1b – 1a changes + pericolic or mesocolic abscess
 Stage 2 – 1a changes + distant abscess (generally deep in the pelvis or interloop regions)
 Stage 3 – Free gas associated with localized or generalized ascites and possible peritoneal wall thickening
 Stage 4 – Same findings as III

In 2013, Mora Lopez modified the previously proposed classification of Neff, dividing stage 1 into 1a (localized pneumoperitoneum in the form of gas bubbles) and 1c (abscess less than 4cm).

Not so long ago, Sallinen published an interesting retrospective study on the treatment of diverticulitis. The treatment depended on the stage of diverticulitis. The latter was determined on the basis of clinical, radiological and physiological parameters. The authors identified five stages:

Stage 1. Uncomplicated diverticulitis
 Stage 2. Complicated diverticulitis with a small abscess (less than 6 cm).
 Stage 3. Complicated diverticulitis with a large abscess (more than 6 cm) or the presence of non-localized intraperitoneal / retroperitoneal gas.
 Stage 4. Common peritonitis without organ dysfunction.

Stage 5. Common peritonitis with organ dysfunction.
 As we have seen, nowadays an uniform classification system for diverticular disease is lacking. This is probably due to the fact that diverticular disease is a disease characterized by clinical manifestations of varying severity due to the presence of a diverticulum or diverticulosis, including inflammation (diverticulitis) and its complications (peridiverticulitis, abscess, perforation, fistula, peritonitis) (39). As noted by Klarenbeek “a proper classification system can improve mutual communication between doctors of different specialties and support clinical decision making. This

seems indispensable for the management of the wide spectrum of manifestations and many treatment modalities embraced by the term "diverticular disease" (38). While the Hinchey Classification remains the most authoritative, it is still insufficient to determine the best treatment option for diverticular disease (36). In our view, nowadays this classification has only historical interest (37). Recently, changes have been made to the classification of symptomatic diverticular disease. Concepts such as chronic recurrent diverticulitis, segmental colitis associated with diverticulosis and symptomatic uncomplicated diverticular disease have been identified (17,24). Symptomatic uncomplicated diverticular disease is defined as chronic diverticulosis associated with chronic abdominal pain in the absence of symptoms of diverticulitis or overt colitis (24). This form has something in common with irritable bowel syndrome due to similar pathophysiological mechanisms, including visceral hypersensitivity (24). This is confirmed, in particular, in the study by Clemens et al., who found in these patients hyperalgesia in the sigmoid zone with diverticula (6), in the study by Bassotti et al, similar changes in intestinal motor function were revealed in irritable bowel syndrome and symptomatic uncomplicated diverticular disease (2,5). Segmental colitis associated with diverticulosis is characterized by segmental inflammation in the sigmoid colon with multiple diverticula (8). Its risk factors include male gender and age over 50 years (8). Initial manifestations include rectal bleeding, often associated with diarrhea and / or abdominal pain (8). This form of the disease is characterized by a favorable course with a tendency toward self-resolution (8).

Treatment tactics and principles

Tactics of treatment of diverticular disease is based on the severity of the inflammatory and infectious processes and the health status of the patient (41). Despite recent advances in the treatment of diverticular disease there are few decision-making guidelines in the treatment of diverticular disease (42).

In our view, the selection of appropriate treatment tactics for left-sided colonic diverticulitis are based on careful assessment of clinical data, laboratory markers of inflammation and radiological data. The diagnosis of left-sided colonic diverticulitis should not be based on clinical data alone. Pain in the left iliac region, the presence of local pain on an objective examination and an increase in the level of C-reactive protein above 50 mg/L indicate the presence of left-sided colonic diverticulitis. CT scan is indicated for all patients with suspected left-sided colonic diverticulitis. High sensitivity and specificity of CT makes it possible to assess the severity of diverticulitis and develop appropriate treatment tactics. Ultrasound may be an alternative to the initial examination of a patient with suspicion of acute diverticulitis.

Russian clinical guidelines for the diagnosis and treatment of diverticular colon disease in adults reflect the following on this topic:

- *Acute diverticulitis, primarily manifests itself in pains that are localized in the left iliac region. Along with this, depending on the anatomical location in the abdominal cavity of the inflamed segment, patients may complain of pain in the left lateral, right iliac and hypogastric regions. The pain can be paroxysmal or persistent, moderate, not requiring the appointment of analgesics, or severe. Pain in most cases is accompanied by fever and leukocytosis.*
- *Other symptoms, such as bloating, stool retention, loose stools, nausea, urination problems, and vomiting are less common.*
- *During palpation of the abdomen and / or bimanual (vaginal or rectal) examination, a painful, relatively mobile segment of the sigmoid colon of a taut or dense consistency is determined.*
- *The general condition of patients with acute diverticulitis is satisfactory.*
- *In addition to clinical examination, ultrasound examination of the abdominal cavity and computed tomography (UD – 2a–3a; CP – B) are of paramount importance (2). Transabdominal ultrasound examination in women should be supplemented with transvaginal examination. The informativeness of computed tomography is increased when using intravenous contrast. The diagnostic value of ultrasound, CT and MRI is the same. At the same time, ultrasound has an advantage as a method that excludes additional radiation exposure, therefore it is recommended for monitoring the effectiveness of treatment. Intraluminal contrasting with CT should be carried out carefully, since there is a high probability of perforation of an inflamed diverticulum. In addition, in the presence of a covered perforation, such a study may provoke its transformation into a perforation of the free abdominal cavity. For the same reasons, the use of colonoscopy is also limited, which is advisable to perform after the abatement of the phenomena of acute inflammation. Irrigoscopy using barium sulfate for acute complications should be limited. Preference for this research method should be given to water-soluble contrast agents. The informative value of irrigoscopy in acute complications is significantly lower than ultrasound and CT. Endoscopic studies are necessary only for solving the problems of differential diagnosis, primarily in relation to cancer and inflammatory bowel diseases. If it is not possible to exclude the tumor process, colonoscopy in the acute phase of inflammation is indicated if, according to CT data, there is no exit of air beyond the intestinal wall (1).*

Clinical Case

On October 14, 2018, a self-referred 73-years-old patient admitted the outpatient unit of the State Budgetary Healthcare Institution of the Arkhangelsk Oblast 'Severodvinsk Municipal Clinical Emergency Hospital No. 2' with complaints on pain in the iliac region on the right 3 days after the disease onset.

Upon examination, the patient's state was satisfactory with heart rate of 75 bpm and stable haemodynamics. Vesicular breathing, no rales, respiratory rate of 16 bpm. Clear, wet tongue. Abdomen not bloated, involved in breathing, soft, tender in the iliac region on the right with positive peritoneal signs (Mendel signs,

Voskresenskiy signs) with negative Blumberg's sign. The patient has a history of surgery, namely, bilateral herniotomy due to bilateral inguinal hernia. The blood test showed the following parameters: leukocytes – $10.1 \times 10^9/l$, C-reactive protein – 183 mg/l.

CT of the abdominal cavity and retroperitoneal space (Fig. 1). Sigmoid colon in the iliac region on the right had signs of marked inflammatory changes such as unevenly thickened wall up to 6 mm, multiple gas bubbles parietally, infiltrated surrounded subcutaneous tissue (gas bubbles in it cannot be excluded). **CONCLUSION:** At the time of the study, pathologies from the urinary system are not determined. Acute sigmoiditis, perforation is not excluded.

Diagnostic laparoscopy was carried out with the following findings: sigmoid colon elongated, located in the iliac region on the right, immobilised, fixed within this region with the area of necrosis on its wall. Conversion to midline laparotomy: sigmoid colon loop located in the iliac region on the right; a diverticulum branched from it entering the right inguinal canal through dilated internal inguinal ring along with the adjacent sigmoid colon wall with the signs of necrosis. Removing of diverticulum from the inguinal canal was not feasible. Conversion to the right inguinal region was carried out, the hernia sac was isolated from adhesions in the initial part of the inguinal canal and opened. In the sac, a top of the diverticulum was found

among adhesions fused with the inguinal sac walls. Adheolysis and herniotomy were carried out followed by plastic repair of the inguinal canal with local tissues. Then resection of the pathological part of sigmoid colon with diverticulum was performed through the abdominal cavity (Fig. 2).

CONCLUSION

Recently, diverticular disease of colon, especially of its left half, has become one of the most acute issues of abdominal urgent surgery. Increased proportion of the elderly population and progressing incidence of diverticulosis as well as its severe complications due to perforation and diverticular abscess formation encourages more focused attention to this problem. At present, a number of approaches to complicated diverticulitis diagnostics and treatment have become irrelevant and require reconsideration.

Today, the leading role in diagnostics of diverticulitis complications belongs to CT. The management is based on the imaging data and minimally invasive procedures, including laparoscopic and endoscopic surgeries are becoming increasingly popular. However, in special cases when the inflamed diverticulum location is anatomically atypical, the only method of complicated diverticulitis diagnostics and treatment is laparotomy with abdominoscopy and removal of the infection source as demonstrated by our finding.

Conflict of interest: None

Fig. 1. CT scan images: I Pericolic phlegmon with small associated abscess. II Large intraabdominal abscess. III Small amounts of free air and fluid. IV Massive pneumoperitoneum and free fluid

Fig. 2. Abdominal CT: sigmoid colon in the iliac region on the right

Fig. 3. Photo of the resected part of sigmoid colon with diverticulum

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