

CASE STUDY

Diagnosis and treatment of Crohn's disease with strong activity and rapid progression in the general surgery department

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ABSTRACT

Female patient was urgently admitted to the surgical department. The patient underwent a general clinical examination, abdominal and chest radiography, endoscopy, CT of the abdominal organs, consultations with related specialists. To establish a definitive diagnosis and determine the course of treatment, a laparotomy was performed, involving debridement and drainage of the abdominal cavity. As the condition continued to progress, a subtotal colectomy with colostomy was performed.

X-ray of the chest, abdominal organs, and fibrogastroduodenoscopy revealed no pathology. CT scan revealed signs of bilateral pneumonia and ascites. During fibrocolonoscopy, a diagnosis was made: Crohn's disease of the sigmoid colon. Due to the development of peritonitis, laparotomy, sanitation and drainage of the abdominal cavity were performed. The condition was worsening. Relaparotomy, subtotal colectomy, and colostomy were performed. On the third day after relaparotomy, the condition sharply worsened and death occurred.

The case we studied emphasizes that when assessing the nature of acute surgical pathology of the abdominal cavity, it is necessary to remember Crohn's disease, especially when combined with damage to other systems. When diagnosing this disease, it is necessary to use all possibilities, but the determining factor for making a diagnosis is histological examination. Surgical treatment of Crohn's disease should include all drugs in accordance with clinical protocols, with the use of surgical treatment if complications develop.

KEY WORDS: Crohn's disease, rapid progression, diagnostics, treatment

Wiad Lek. 2026;79(8):1989-1996. doi: 10.36740/WLek/235894 DOI

INTRODUCTION

Crohn's disease (CD) is a chronic relapsing disease with granulomatous inflammation and segmental lesions of the gastrointestinal tract [1, 2]. This disease is more common in developed countries, especially North America and Western Europe. Thus, in the United States, the incidence of CD is up to 20 cases per year per 100 thousand population [3, 4]. A third of patients with CD have various complications already at diagnosis, and more than 10% of people with CD become disabled [4, 5]. About 20% of patients with CD are hospitalized each year, and the risk of surgery after 10 years of disease is more than 40%. Approximately half of all patients develop intestinal complications such as fistulas, cellulitis, strictures and abscesses within 20 years of diagnosis [6, 7].

As a rule, the disease develops gradually. Initially, patients with CD exhibit nonspecific symptoms, then gastrointestinal manifestations are more common, and damage to other organs may occur. Common

symptoms are diarrhea, abdominal pain, nausea or vomiting. Weight loss and fever are systemic manifestations of this disease [1, 6]. CD can affect any part of the digestive tract and manifests itself in the ileum or colon in a third of cases [2, 8]. Such a wide range of clinical manifestations leads to diagnostic difficulties and delays in treatment of this disease.

The diagnosis of CD is based on a combination of clinical presentation and endoscopic, radiological, histological and pathological findings, which demonstrate granulomatous inflammation of the gastrointestinal tract [8, 9]. Laboratory testing is optional, and there is no laboratory test that can definitively diagnose CD [2, 10].

Knowledge of the clinical course of CD, potential complications, and medications for its treatment is critical to optimizing medical care for patients with CD. Many issues in the treatment of CD remain controversial even in specialized clinics, especially with regard to severe and atypical forms of the disease [11, 12].

In recent years, the development of CD treatments has focused on patients with early stages of the disease [2, 10, 12], rather than on its complications, when medical care may be delayed, especially in active forms of CD with rapid progression. The choice of indications and volume of surgical intervention in these patients is also difficult [10, 11]. In addition, often such patients are treated not in specialized clinics, but in a general surgical hospital, where the possibilities for their examination and treatment are limited, which complicates the situation.

Thus, despite the development of science, the issues of timely diagnosis and treatment of CD remain relevant. Considering the high incidence of morbidity and mortality in such patients [3, 4, 5], the problem of rational treatment of CD is of great social and medical importance.

FRAMEWORK

The paper is written within the research study entitled "Development of modern scientifically based principles of stratification, monitoring and forecasting of the course of surgical diseases and injuries" (State Registration No. 0120U101176).

CASE REPORT

This case report discusses an atypical presentation of CD in a seventy-seven-year-old woman. Female patient S., born in 1947, was urgently admitted to the surgical department of the Third City Clinical Hospital of Poltava, Ukraine, in 2025. The patient underwent a general clinical examination, plain abdominal radiography, chest radiography, fibrogastroduodenoscopy, colonoscopy, and ultrasound of the abdominal organs, CT of the abdominal organs, consultation with an infectious disease specialist, therapist, and endocrinologist. To establish a final diagnosis and treatment, laparotomy with sanitation and drainage of the abdominal cavity was performed, and in case of disease progression – subtotal colectomy with colostomy. This case report serves as a reminder to clinicians to consider CD in patients presenting with acute surgical pathology, even if they have no previous history of the disease and no family history.

Upon admission to the surgical department, the patient complained of pain in the upper abdomen, dry mouth, and diarrhea for 5 days. She suffers from type 2 diabetes mellitus, insulin-dependent, diabetic nephropathy, chronic pyelonephritis. The family history is not burdened; there were no previous chronic diseases of the gastrointestinal tract. She was examined by an in-

fectious disease specialist, and the conclusion was that there was no evidence of acute infectious pathology.

Upon admission to the hospital, the general condition was of moderate severity. Consciousness is clear. The skin and mucous membranes are of normal color. Blood pressure was 120/80 mmHg, pulse – 76 beats per minute. The abdomen is swollen, symmetrical, increased in size due to subcutaneous tissue, and is involved in breathing. The abdomen is soft, painful in the epigastrium and right hypochondrium. There are no symptoms of peritoneal irritation. Peristalsis is active. The tone of the rectal sphincter was preserved; no additional formations were identified. The stool is loose, daily, and of normal color. Diagnosis has been made: chronic pancreatitis in the acute stage.

The patient was examined. General blood test: leukocytes – $16.7 \times 10^9/l$, Hb – 124 g/l, erythrocytes – $3.64 \times 10^{12}/l$, ESR – 10 mm/h, band neutrophils – 15%, segmented cells – 71%, lymphocytes – 10%. Biochemistry: total protein – 71.5 g/l, bilirubin – 8.47 $\mu\text{mol/l}$, creatinine – 74.9 $\mu\text{mol/l}$, amylase 34.6 U/l, glucose – 6.3 mmol/l. Chest X-ray is within normal limits. Fibrogastroduodenoscopy revealed no pathology. Plain abdominal X-ray: no free gas and liquid are noted. Kloiber's cup has not been identified, there is no hyperpneumatosis.

The patient was consulted by a therapist. A diagnosis was made: chronic pancreatitis, acute stage, coronary heart disease, supraventricular extrasystole. Treatment was carried out: ezozol, drotaverine, anapirone, infusion, detoxification therapy.

The next day the patient's condition worsened. There were complaints of pain in the lower abdomen, diarrhea, fever up to 39 °C, weakness, dry mouth. A consultation of doctors was held. A CT scan, an ultrasound scan of the abdominal cavity, and a plain radiography of the abdominal cavity were prescribed. Plain abdominal X-ray: no free gas and liquid were detected. Kloiber's bowls have not been identified, there is no hyperpneumatosis. Ultrasound and CT scan of the abdominal cavity revealed: signs of a left kidney cyst, hepatosteatosis, pancreatic lipomatosis.

When examining the patient, the skin is pale. The abdomen is uniformly swollen, has limited participation in breathing, and is painful in the lower sections. Blumberg's symptom is positive. Peristalsis is single. Conclusion: the patient has peritonitis. Surgical intervention is indicated, consent for surgery has been obtained. An operation was performed: laparotomy, sanitation and drainage of the abdominal cavity. Diagnosis after surgery: CD with damage to the sigmoid colon, serous-fibrinous pelvic peritonitis.

Further treatment of the patient was carried out in the intensive care unit. The following drugs were



Fig. 1. Subtotal damage to the colon. The wall of the colon is sharply swollen, infiltrated, the mesentery is swollen, the cecum is enlarged in size, and there are signs of intestinal obstruction.

Picture taken by the authors

prescribed: esazol, dexamethasone, magnesia, anapirone, analgesics, metronidazole, cefotrin, heparin, insulin therapy, and detoxification, infusion therapy. The general condition is serious, complaints of pain in the area of postoperative wounds. Consciousness is clear. The skin is pale. Body temperature was 37.3° C, pulse – 82 per minute, blood pressure – 137/80 mmHg. The abdomen is soft, painful in the area of postoperative wounds. Bloomberg's symptom is negative. Peristalsis is sluggish. Urine is removed by a catheter. There was up to 450 ml of serous-hemorrhagic contents per day through drainage from the abdominal cavity. An increase in temperature to 38.4 °C was observed during the first to third days after surgery. Biochemical blood test revealed hypoproteinemia, hyperglycemia. General urine analysis: picture of toxic kidney syndrome.

On the third day after surgery, the patient was again consulted by an infectious disease specialist. Diagnosis: chronic pancreatitis, acute stage, chronic calculous cholecystitis, enterocolitis, nonspecific ulcerative colitis, CD? A coprogram and stool culture for pathogenic flora was recommended. The patient was consulted by an endocrinologist. Diagnosis has been made: diabetes mellitus type 2, insulin dependent, moderate severity. Insulin therapy was adjusted.

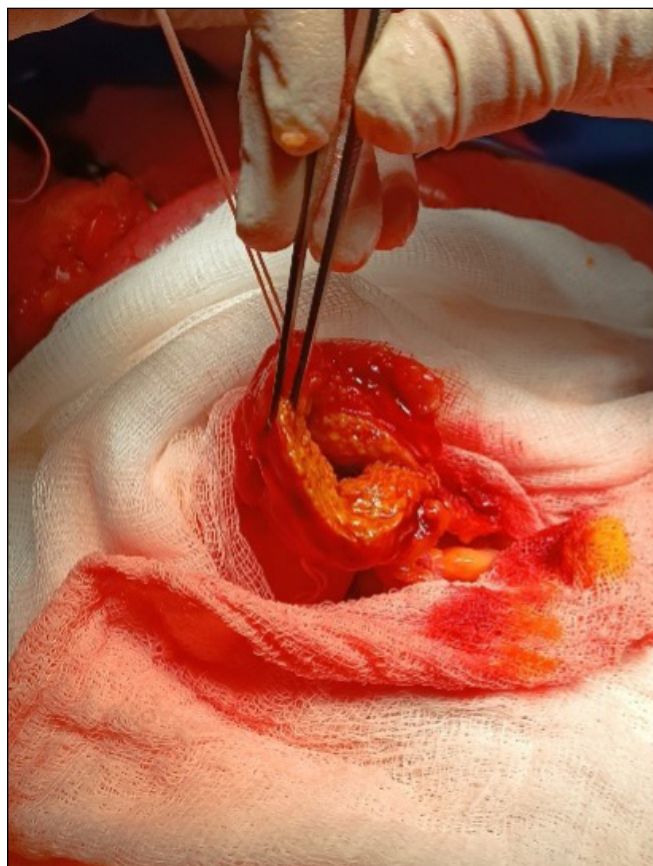


Fig. 2. Subtotal colectomy. Colostomy

Picture taken by the authors

The following treatment was administered: omeprazole, corticosteroids, diuretics, anapirone, analgesics, metronidazole, cefotrine, nifuroxazide, salofalk, metoclopramide, fluconazole, haloperidol, chlorpromazine, heparin, insulin therapy, detoxification, infusion therapy.

A general blood test revealed: leukocytes – $37.3 \times 10^9/l$, Hb – 140 g/l, erythrocytes – $4.1 \times 10^{12}/l$, ESR – 32 mm/h, band neutrophils – 60%, lymphocytes – 1%. Examination of the fluid from the abdominal cavity revealed: protein – 31.3 g/l, Rivalta test positive, leukocytes 3-6 in the field of view, red blood cells in the entire field of view, unchanged, and amylase – 45.2 U/l.

On the fourth day after surgery, the patient's general condition was serious; the level of consciousness is stupor. She had pale skin, swelling of the extremities. The patient is oxygen dependent; oxygen saturation is 96% with oxygen inhalation. Pulse 75 beats per minute, blood pressure 120/70 mmHg. The abdomen is soft, painful more in the area of surgical wounds. Bloomberg's symptom is negative. Peristalsis is sluggish, gases escape with the release of liquid. Urine is excreted by catheter, 500.0 ml per day. Laboratory examination revealed: leukocytes – $41.0 \times 10^9/l$, Hb – 147 g/l, erythrocytes – $4.21 \times 10^{12}/l$, ESR – 33 mm/h, band neutrophils – 44%, lymphocytes – 2%. In the biochemical blood test: total protein – 47.0 g/l,



Fig. 3. A removed section of the colon with inflammatory infiltration of the mucous membrane, mucosal necrosis and fibrinous-purulent coating
Picture taken by the authors



Fig. 4. A removed section of the colon with infiltration of the mucous membrane, necrosis of the mucosa and submucosal layer and fibrinous-purulent coating
Picture taken by the authors

bilirubin – 3.07 $\mu\text{mol/l}$, creatinine – 249.7 $\mu\text{mol/l}$, glucose – 16.7 mmol/l, calcium – 1.13 mmol/l.

A fibrocolonoscopy was performed: CD of the rectum and sigmoid colon. Repeated CT examination revealed signs of bilateral pneumonia, slight bilateral hydrothorax, hepatosteatorosis, ascites, and pancreatic lipomatosis, a small amount of fluid in the abdominal cavity.

A medical consultation was held. Due to increasing intoxication and the development of multiple organ failure, a decision was made to perform relaparotomy. The operation was performed (Fig. 1).

A medical consultation was also held in the operating room. A diagnosis was made: acute necrotizing colitis, CD, peritonitis. Name of operation: laparotomy, subtotal colectomy, colostomy, sanitation and drainage of the abdominal cavity (Fig. 2).

An intraoperative pathohistological examination was performed (Fig. 3 - 5). Conclusion: Intestinal walls with

edema, diffuse lympho-leukocyte infiltration, areas of necrosis of the mucosa and submucosal layer. Signs of reactive hyperemia were revealed in the lymph nodes of the mesentery. Final diagnosis: CD.

The day after relaparotomy, the general condition was serious, level of consciousness – stupor-stupor. Oxygen saturation was 94%, oxygen dependence. Pulse – 107 beats per minute, blood pressure was 135/75 mmHg. There was swelling of the trunk and limbs. The abdomen is not swollen, participates in breathing, is soft, and responds to palpation in the area of surgical wounds. Peristalsis is sluggish. The stoma is functioning and viable. Urine is excreted by catheter, 100.0 ml. Wounds were without signs of inflammation. Conservative therapy was continued in the intensive care unit. The blood test revealed pronounced leukocytosis, a shift in the leukocyte formula to the left, hypoproteinemia, azotemia, and hyperglycemia.



Fig. 5. Swelling of the intestinal wall, infiltration, areas of necrosis of the mucosa and submucosal layer
Picture taken by the authors

The patient was subsequently treated in the intensive care unit. The condition progressively worsened, extremely serious, consciousness is stupor. On a ventilator. There were swellings of the upper and lower extremities, phenomena of multiple organ failure, oliguria. There is no peristalsis. An increase in temperature to 38.0 °C was observed.

The patient had increasing signs of intoxication and multiple organ failure: anuria, signs of cardiovascular, pulmonary and liver failure, protein metabolism disorders.

On the third day after relaparotomy, the patient's condition sharply worsened. Level of consciousness is coma II, blood pressure 70/30 mmHg. Blood pressure is maintained by administering vasopressors. Despite the therapy, the patient's condition worsened, agony and clinical death occurred, resuscitation measures were carried out, and biological death was diagnosed.

A diagnosis was made: CD. Diffuse serous peritonitis. Intoxication. Multiple organ failure. Ischemic heart disease. Diffuse cardiosclerosis. Heart failure II. Diabetes mellitus type II, moderate severity, stage of decompensation with multiple complications. Hypertension II degree. Obesity III degree.

DISCUSSION

With all the polymorphism of CD, there are certain patterns of development and clinical picture of this disease. On average, the disease begins at the age of about 30 years [1, 2, 3]. The clinical course with gradual progression has two peaks of activation, first from 20 to 30 years, and then the peak is observed at the age of about 50 years [1, 3, 4]. Features of the clinical course for each patient are difficult to predict, but the constant progression of the disease ultimately leads to the development of complications. About 75% of patients with CD undergo surgery due to complications of the disease [4, 5].

In the case we examined in the patient, CD appeared suddenly and actively at the age of 77 years; before that, the patient and her relatives had no signs of the disease.

The clinical picture of CD is usually characterized by an alternation of lesions over a large area and unchanged areas between them [1, 2]. Most often, CD involves damage to the terminal ileum [1, 2, 3]. When the disease is localized in the colon, in contrast to the upper gastrointestinal tract, an aggressive course of the disease, the development of complications and the need for surgical intervention are much less likely to be observed [2, 6].

In the case we studied, there was subtotal damage to the colon with massive damage to the mucosa and submucosal layer without unchanged areas. Here, apparently, toxic colitis took place – a rare complication of CD, which occurs in less than 10% of patients with a severe, fulminant course of the inflammatory process [1, 2, 10]. Unlike ulcerative colitis, which affects only the mucous membrane, CD affects all layers of the intestinal wall. At the same time, the colon expands, intestinal obstruction occurs and peritonitis develops [2, 10].

Ileocolonoscopy with targeted biopsy and CT examination for CD are the procedure of choice [2, 8]. The accuracy of CT for CD is more than 90% [8, 9]. Macroscopically, in CD, confluent deep linear ulcers and fissures, segmental disease, nodular compaction of the mucous membrane and thickening of the intestinal wall are observed. Upper endoscopy is performed only in patients with signs of damage to the upper gastrointestinal tract. [1, 2, 13].

In addition to different types of CD, there are also different patterns of disease progression [13, 14, 15]. Thus, with the luminal form of CD, changes in the intestinal mucosa due to inflammation are observed. Fibrostenotic CD involves the presence of intestinal strictures. The penetrating form of CD leads to the formation of fistulas between the inflamed intestine and other parts

of the body. In the clinical case we reviewed, there was a luminal form of CD.

In clinical trials and when choosing treatment, the CD Activity Index (CDAI) is used [2, 10, 16]. This takes into account: age, gender, body mass index, hematocrit, the presence of a mass in the abdominal cavity, as well as symptoms over the last 7 days and general well-being. A score of less than 150 points indicates clinical remission, 150-220 points – low disease activity, 220-450 – moderate activity, and more than 450 points means high activity [1, 2]. According to this scale, this patient had a score of more than 450 points, that is, she had CD of strong activity and rapid progression.

Selecting optimal drug therapy for moderate to severe CD is challenging, with limited applicable recommendations on the effectiveness and safety of various treatments, leading to significant variability in practice [11, 17, 18].

Optimal management of patients with severe luminal CD often requires the use of glucocorticosteroids, immunomodulators (thiopurines, methotrexate) or tumor necrosis factor- α (TNF- α) inhibitors [2, 10, 12]. Oral mesalazine has not been shown to be effective in inducing remission in patients with active CD. Patients with severe CD are advised to avoid the use of 5-aminosalicylates to induce remission [2, 10, 14]. For the treatment of severe or fulminant CD, the use of intravenous corticosteroids is recommended, as was the case in this clinical case. At the same time, preoperative use of steroids leads to an increased risk of postoperative complications (anastomotic leakage, intra-abdominal abscess) [10, 19, 20]. Azathioprine and 6-mercaptopurine are not recommended for patients with severe forms. In such patients, it is proposed to use methotrexate monotherapy [10, 11, 19]. TNF- α inhibitors should be used to treat CD that is resistant to corticosteroid treatment, as well as in the case of severe active and fulminant forms [10, 17, 18].

The patient underwent all examinations available in a general surgical hospital, as provided for by modern clinical practice guidelines for the treatment of moderate and severe CD [2, 10]. The patient also received conservative therapy in accordance with the approved current clinical protocols and recommendations for the

treatment of CD [14, 15, 18]. Anti-TNF drugs were not used in treatment due to the fulminant course of the disease. The severe manifestation of the disease in the patient, the presence of SIRS, and multiple organ failure required combined empirical de-escalation antibacterial therapy with drugs with a broad spectrum of action.

According to leading experts [2, 10, 21], terminal ileitis and inflammatory changes in the colon in CD, discovered incidentally during laparotomy, should not be subject to mandatory resection. Surgery is indicated for the development of complications (acute toxic dilatation of the colon, wall perforation, pericolic abscess, peritonitis) [21, 22]. Moreover, resection of the affected area of the intestine is the most common operation for CD, which is used in patients even in critical condition [2, 21, 22]. This is exactly the volume of surgical interventions performed on this patient.

Unfortunately, the patient sought medical help with a long delay – five days after the onset of the disease, which led to progression of the disease, multiple organ failure and significant difficulties in diagnosing the disease. The outcome of the patient's treatment was also, of course, influenced by the presence of immunosuppression against the background of long-standing diabetes mellitus, chronic pyelonephritis and nephropathy, as well as other concomitant pathologies.

CONCLUSIONS

The case we studied emphasizes that when assessing the nature of acute surgical pathology of the abdominal cavity, it is necessary to remember CD, especially when combined with damage to other organs and systems, even in the absence of a family history and previous manifestations in the patient.

When diagnosing this disease in a general surgical department, it is necessary to use all available possibilities, but the determining factor for making a diagnosis is histological examination.]

Surgical treatment of CD with severe activity and rapid progression should include all drugs in accordance with clinical protocols, with the use of surgical treatment if complications develop.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest

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RECEIVED: 11.03.2026
ACCEPTED: 29.07.2026

