

Colonic necrosis of vague aetiology presenting scarce clinical and radiological symptoms: a case report

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ABSTRACT

Spontaneous colonic necrosis is very uncommon in a patient without predisposed disorders such as end-stage renal failure in dialysed patients, serious cardiac failure, sepsis, post-traumatic shock, and vascular surgery within an abdominal aorta. This paper presents the case of an elderly patient in whom necrosis of almost the whole colon had occurred within 2 days. At presentation the patient had no clinical symptoms or signs suggesting

serious abdominal disease. There was also a lack of biochemical abnormalities and changes in angio-CT. Due to deterioration of the patient's general condition, he underwent surgery which revealed necrosis of almost the whole colon. The necrotic colon was resected, followed by a terminal ileostomy. Despite the operation, the patient died 2 days after.

Keywords: spontaneous colonic necrosis; non-occlusive ischaemic colitis; angio-CT.

INTRODUCTION

Occlusive colonic necrosis is ranked among the so-called "abdominal disasters", due to its frequently dramatic course and poor prognosis. This category also includes intestinal necrosis following superior mesenteric artery embolism, ruptured abdominal aortic aneurysm, and infected necrotising pancreatitis [1]. The clinical course of all of these diseases is tempestuous, with severe clinical symptoms and signs, both local and general, and require urgent surgical intervention (apart from pancreatic necrosis). An superior mesenteric artery embolism (or thrombosis) may cause necrosis of only part of the intestine, depending on the level of vascular occlusion; in such cases, the clinical course may be milder and difficult to interpret. Ischaemia of the large bowel occurs less frequently than in the small bowel, and the spectrum of possible causes is wider. Typically, the necrosis involves only a fragment of the colon (i.e. caecum or sigmoid), with predisposing diseases (risk-factors) such as end-stage renal failure in dialysed patients, serious cardiac failure, sepsis, post-traumatic shock or vascular surgery within an abdominal aorta [2, 3]. Spontaneous colonic necrosis is a very uncommon without predisposed disorders. An abdominal Computer Tomography angiography (angio-CT) is a basic diagnostic tool in vascular bowel disorders. It shows precisely the site of the occlusion of the artery and the area of bowel ischaemia.

This article presents the case of an elderly patient in whom necrosis of almost the whole colon occurred within 2 days, without serious clinical symptoms or signs, and with no changes in angio-CT.

CASE REPORT

In December 2018 an 87-year-old female patient was delivered by ambulance to the Emergency Department in the authors'

hospital in the evening hours complaining of abdominal pain, nausea and episodic vomiting. An interview revealed that the disease had begun one day earlier with mild pain in middle hypogastrium, which had exacerbated gradually. Additionally, the patient reported weakness and loss of appetite for the previous 5 days. Woman had several concomitant diseases: ischaemic heart disease, arterial hypertension, symptoms of systemic arteriosclerosis, but no atrial fibrillation. At presentation her general condition was moderate, she was fully conscious, respiratory and circulatory stable, RR was 140/90 mmHg with a regular pulse rate of 64 bpm. At examination, the abdomen was soft, slightly distended, mildly tender to palpation, but without peritoneal signs. Peristaltic was slow at auscultation and the patient declared her last defecation on the day of the admission. Biochemical tests showed a highly elevated leukocyte count at 28 G/L, slightly elevated D-dimers at 2.5 mg/L, and C-reactive protein (CRP) at 13 mg/L. Biochemical parameters of the liver and kidney function were normal. A plain abdominal X-ray showed only mild distension of the small bowel and colon without an excess of fluid, which was interpreted as incipient mechanical or paralytic obstruction of the large bowel. A ultrasonography showed no changes. At midnight, a consulting surgeon recommended a CT of the abdomen to verify the character of the obstruction suggested by the radiologist. An angio-CT was performed at 3 am did not confirm any mechanical obstruction, but showed a largely distended transverse colon (Fig. 1). Both mesenteric arteries and internal iliac arteries were patent (Fig. 2). Owing to deterioration of the patient's general condition during her 6-hour stay in the emergency department, the increasing abdominal distension and tenderness, and in spite of a clear pathology in CT scans, a decision to perform an emergency operation was made.

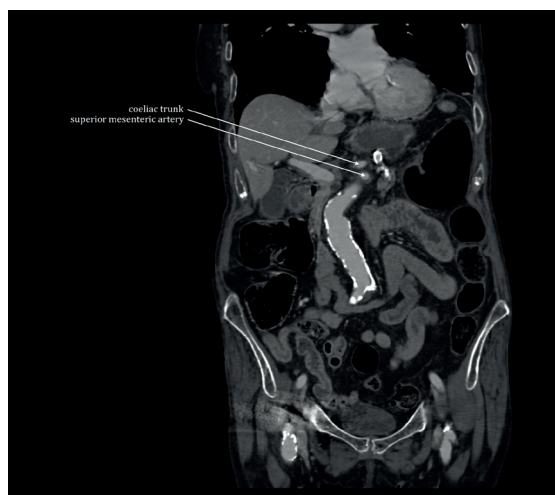


FIGURE 1. Angio-CT scan of the abdomen showing contrasted abdominal aorta, coeliac trunk and the superior mesenteric artery

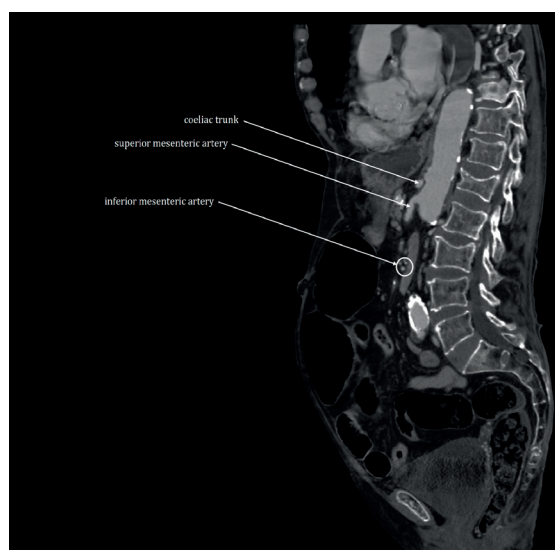


FIGURE 2. Angio-CT scan of the abdomen showing distended transverse colon, contrasted abdominal aorta, coeliac trunk, the superior and inferior mesenteric artery

INTRAOPERATIVE FINDINGS

The abdominal cavity was opened via a midline incision across the middle and lower abdomen. A mild volume of blood-stained fluid was found in the peritoneal cavity. After the elevation of the small bowel, an extensive necrosis of almost the entire colon was found, spreading from the caecum to the sigmoid colon (Fig. 3). The appearance of the necrosis over the affected colon was not homogenous: the majority of the bowel was black coloured (fully necrotic), but there were portions in pale grey colour, suggesting ischaemia but not necrosis (Fig. 3); the borderline between ischaemic and normal bowel was in the middle of the sigmoid colon. The small intestine looked normal and pulsation in the superior mesentery artery was easy palpable. Examination of the other abdominal organs did not show any additional pathologies. Considering the clinical and intraoperative situation, a colectomy (Fig. 4) was performed, followed



FIGURE 3. Intraoperative view: the colon with necrotic (black coloured) and ischaemic (grey coloured) segments

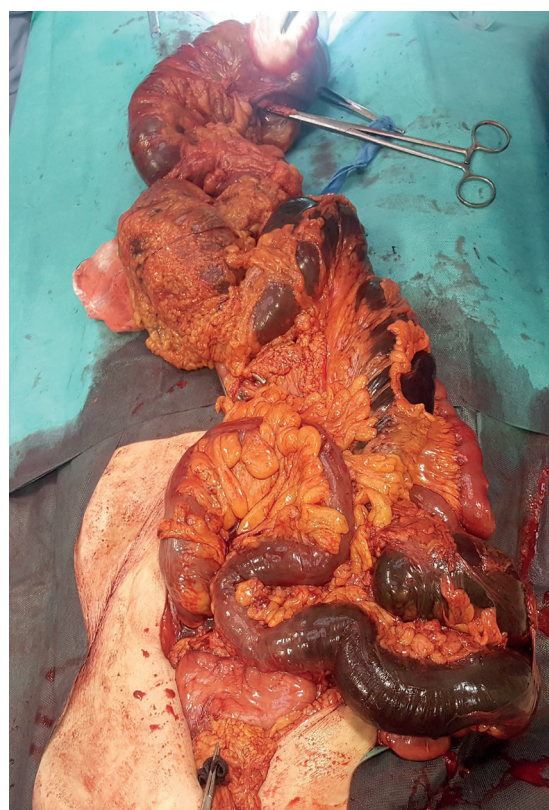


FIGURE 4. View of the resected colon

by the closure of the distal stump of the sigmoid colon and advancement of the end-ileostomy.

After the operation, in spite of her serious condition, the patient was awakened and transferred to the surgical ward. Antibiotic therapy and fluid replacement were continued and, due to hypotension, adrenaline and a dopamine infusion was commenced. This therapy was ineffective, and in the following 2 days the patient died showing symptoms and signs of multiple organ failure. Histopathological examination of the resected bowel revealed the presence of full-thickness necrosis of the bowel in the majority of the sample, but in some parts the necrosis involved only the mucosal layer. There was no occlusion (thrombosis or embolism) of the mesentery vessels.

DISCUSSION

The presented case is interesting for several reasons:

- development of the necrosis to almost the whole colon in a person without predisposing diseases (risk factors), although burdened with arteriosclerosis and being of older age;
- impetuosity of the extensive necrosis of the colon: occurring within 2 days of the appearance of the 1st abdominal symptoms;
- poor symptomatic clinical course of the disease and negative angio-CT scanning, in spite of the apparent ischaemia and necrosis of the whole colon.

Angio-CT is a first-line imaging approach in the diagnostic of vascular diseases of the bowel, having an almost 100% diagnostic accuracy. The patient did not suffer from atrial fibrillation, which is the most common source of arterial embolism. Another interesting finding is that the ischaemia involved only the colon (up to half of the sigmoid) and had a “mosaic” pattern, with segments being necrotic (black coloured) and ischaemic (pale grey coloured) – Figure 3. This pattern suggests that the ischaemia had no anatomical distribution – in other words, it was not related to the blood supply by the superior and inferior mesenteric arteries which were found patent in the angio-CT (Fig. 2).

Spontaneous colonic necrosis without evident occlusion of the artery caused by embolism or thrombosis is very uncommon and is considered a “non-occlusive ischaemic colitis” [3, 4]. Two variants of this pathology are distinguished:

- type I, without apparent cause of reduction of perfusion in colonic vessels;
- type II, in which perfusion is compromised by an episode of reduced blood pressure in the course of serious disease, i.e. end-stage renal failure, acute circulatory failure, sepsis or multitrauma injury.

Type I, although having no clear cause, may occur in patients suffering from chronic circulatory failure, diabetes, arterial hypertension, and following certain drugs such as thiopentone, steroids, cytostatic (wincristin) and cocaine. Almost all reported cases have occurred in elderly patients, burdened with various concomitant diseases [2, 3]. Colonic necrosis may also happen as a complication of classic vascular surgery within abdominal aorta; in these cases the direct cause of bowel ischaemia is of vascular origin: damage (ligation, coagulation) of the inferior mesenteric artery, or a dramatic fall in blood pressure due to massive blood loss [1]. Nowadays these situations are rarely seen due to common use of endovascular techniques.

Schuler and Hudlin reported 5 cases of necrosis involving the proximal portion of the colon: the caecum and the ascending colon in elderly (71–91-years-old) patients, having no apparent risk factors. True diagnosis was not made preoperatively as the patients were operated on because of suspicion of acute appendicitis, caecal cancer or colon perforation. Eventually, the

disease was recognised during a laparotomy, and the surgery included right hemicolectomy, followed by anastomosis of the ileum with the transverse colon in 4 patients. In one case, due to the patient's serious general condition, a Hartmann operation was performed followed by end-ileostomy. The postoperative course was uneventful in 4 patients, but 1 patient died. The authors believe that colonic necrosis in their series was caused by “unspecific ischaemic colitis”, which was confirmed by histopathological examination of the resected samples [3].

Hunter et al. reported the case of a 74-year-old woman who underwent laparoscopy due to severe pain in middle abdomen that had occurred a few hours before admission to the hospital. The patient had no risk factors, apart from stable arterial hypertension. She had reported that for about 7 days she had felt unwell and had no appetite. At examination the abdomen was tender at palpation in the right lower quadrant with a positive rebound tenderness. Biochemical blood tests revealed a slightly elevated leukocyte count at 12 G/L and CRP at 127 mg/L. Both USG of the abdomen and plain abdominal X-ray were inconclusive. Based on these clinical and biochemical data, a diagnosis of acute appendicitis was made and the patient was given surgery. During laparoscopy, an unchanged appendix was found, but inspection of the caecum revealed necrosis of its lateral wall. A conversion to laparotomy was made; after inspection of all of the remaining bowel (unchanged), the necrotic part of the caecum was resected in one block with the appendix using a linear stapler. The postoperative course was uneventful, and histopathological examination showed full-thickness necrosis of the resected caecal fragment, with accompanying inflammatory infiltration and haemorrhagic foci [4].

The presented case is a confirmation of an old surgical truth that in the diagnosis of abdominal diseases none of biochemical tests or imaging is accurate enough to make a confident diagnosis which would confirm or exclude even serious life-threatening diseases. Proper interpretation of clinical symptoms and signs, clinical experience and common sense are constantly important in decision making about the observation of the patient, particularly at an older age. Spontaneous necrosis (or ischaemia) of the colon should be considered in cases of unclear abdominal pain occurring in elderly women, particularly in the presence of the aforementioned risk factors.

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