

Extraperitoneal Manifestation of Perforated Diverticulitis

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We observed five cases of unusual extraperitoneal presentation of diverticulitis during an 11 year period. During that time, a total of 263 patients were operated for diverticulitis. Patients 1-4 presented with an inflammatory spread of diverticulitis through the abdominal wall; in patient 5 multiple abscesses were present in the left thigh. Inadequate resection and previous radiotherapy in patient 4 might have contributed to the complicated course. In patient 5, poor condition initially allowed only local drainage of the thigh abscesses. Despite laparotomy and sigmoid resection a few days after drainage, the fatal outcome could not be prevented. A more extensive resection and a protecting colostomy might have prevented the fistulous complication in patient 4. A primary resection and abscess drainage might have averted the fatal outcome in patient 5.

KEY WORDS: colon; diverticulitis; abscess; fistula; complication; surgery.

Soft tissue abscesses of the groin, thigh, hip, and buttock may be extraabdominal manifestations of perforated diverticulitis in patients without abdominal symptoms. These manifestations seem to occur more often in elderly patients (1). The possibility of colonic perforation has to be considered if bacterial growth of enteric origin is found in a thigh abscess, since all cultures reported in the literature revealed enteric bacteria (1, 2).

MATERIALS AND METHODS

From January 1980 to December 1990, 263 consecutive patients (134 male, 129 female; median age 64 years) underwent surgery for diverticular disease at our department. Five patients (1.9%) presented with an extraperitoneal manifestation of complicated diverticular disease on admission (Table 1).

The median age of these patients (all female) was 81.4 years (78-87), and the duration of symptoms was 3.8

weeks (2-8). Three of five patients were not previously known to have diverticular disease and were not observing a high-fiber diet. None of these patients had immunosuppressive treatment. On admission, median axillary body temperature was 36.6°C (range 36.3-37.1°C); leukocytosis > 11000 cells/mm³ was present in four of five cases.

Preoperative investigation using abdominal ultrasonography was done in two cases and showed large fluid collections in the abdominal wall with possible communication with intraperitoneal structures. Water-soluble contrast enema revealed a colonic perforation in each patient examined. In patient 5, computerized axial tomography showed multiple abscesses, which included air pockets in the groin, hip, and soft tissues of the left thigh (Figures 1 and 2).

RESULTS

All five patients underwent emergency surgery. In four patients primary excision of the diseased bowel segment was performed initially. Patient 5 had neither an abdominal history nor any abdominal clinical sign of diverticulitis. Nevertheless, diverticulitis was considered as a differential diagnosis in this 87-year-old woman. However, her poor condition due to sepsis allowed only local drainage of the

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TABLE 1. CLINICAL CHARACTERISTICS, OPERATIVE FINDINGS, AND PROCEDURES IN 5 FEMALE PATIENTS WITH EXTRAPERITONEAL MANIFESTATION OF PERFORATED DIVERTICULITIS.

	Patient				
	1	2	3	4	5
Age	81	78	79	82	87
History*	8	4	2	3	2
Symptoms	abdominal pain	abdominal pain	abdominal pain	abdominal pain and constipation	painful hip
Axillary body temp†	37.1	36.3	36.8	36.4	36.3
Leukocyte count‡	8600	16200	11500	23700	12500
Diagnostic abscess localization	enema§ left groin	sono¶ right lower abdominal	plain rx left groin quadrant	sono left lower abdomen	CT,** enema left thigh groin
Bacteriology	<i>E. coli</i> <i>Enterobact.</i>	<i>E. coli</i> <i>Aerobic b.</i> <i>Enterococci</i>	<i>Proteus M.</i> <i>morgagni</i> <i>Enterococci</i>	<i>Enterobact.</i> <i>M.</i> <i>morgagni</i> <i>Aerobic b.</i> sigmoid	<i>E. coli</i> <i>Enterococci</i>
Localization††	sigmoid	ascending colon	sigmoid	sigmoid	sigmoid
Surgical intervention	anterior resection and local drainage, protective colostomy	right hemicolectomy and local drainage	sigmoid resection and local drainage	1. sigmoid resection, primary anastomosis 2. anastomosis resection, small bowel resection 3. colostomy closure	1. local drainage 2. sigmoid resection and local drainage
Outcome	recovery	recovery	recovery	recovery	died 8 days after reintervention

*Duration of history in weeks.

†At admission (Celsius).

‡In counts per mm³.

§Water-soluble enema.

¶Abdominal ultrasonography.

**Computerized tomography.

††Localization of histologic proved diverticulitis.

abscesses as an initial procedure. Five days later, excision of the inflamed sigmoid could be performed. Nevertheless, this patient died eight days after colonic resection due to continuing sepsis. At autopsy, heart failure due to sepsis was assumed to be the cause of death.

Regarding morbidity, colojejunal and colovaginal fistula developed postoperatively in patient 4 after sigmoid resection. A previous operation had included a radical hysterectomy for stage II adenocarcinoma of the uterus followed by curative radiotherapy four years ago. The curative radiotherapy might have contributed to this complicated course. At relaparotomy, a fistulous communication with a *de novo* inflamed diverticulum was found. In absence of intraabdominal sepsis, a decision was made for a primary anastomosis. After segmental

colonic and small bowel resection with a transverse loop colostomy, the patient recovered at last. Two months later the protecting colostomy was closed without complication.

DISCUSSION

Perforated diverticulitis is known to appear as generalized peritonitis after free perforation into the peritoneal cavity in 5% and as localized abscess in 39% of patients undergoing surgery for diverticular disease (3). Paracolic abscess formation can resolve by draining spontaneously back into the colon or into surrounding viscera.

Internal fistulae were observed in 11–20% of patients surgically treated for diverticular disease (4). Spontaneous colocutaneous fistulae are mainly the

PERFORATED DIVERTICULITIS

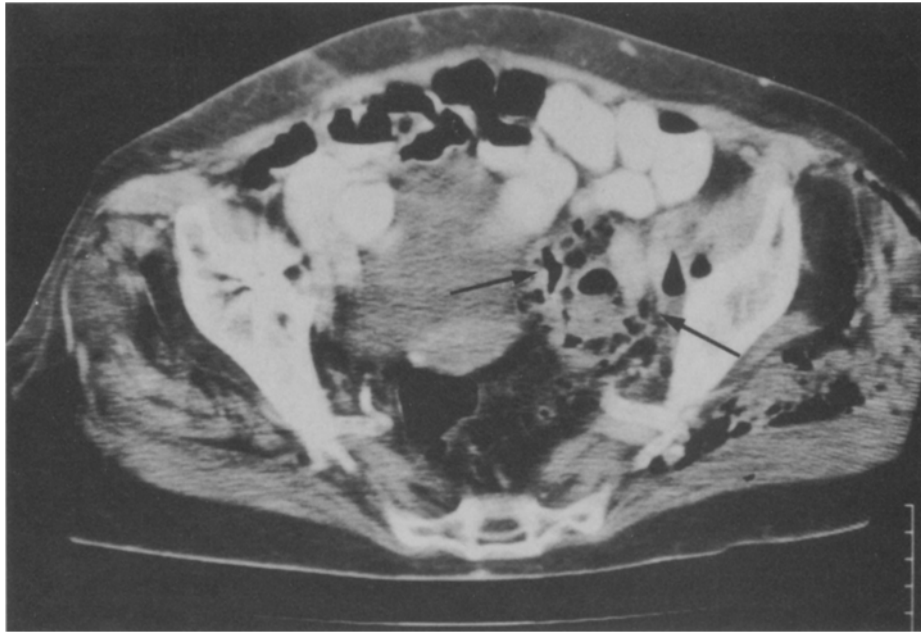


Fig 1. A computerized axial tomographic scan revealing a pericolic abscess formation (arrows) and the presence of gas in the left gluteal region.

result of a paracolic or pelvic abscess. The various possible routes of abscess spread from the abdomen into extraabdominal areas were investigated by Stahlgren and Thabit in 1961 (5). They injected air into the presacral space of cadavers and observed emphysema in the soft tissues of the lower abdom-

inal wall, thigh, buttock, perineum, and scrotum. Therefore, a paracolic abscess may spread from the pelvis externally by seven anatomic pathways: (1) along the neural and vascular structures which penetrate directly into the abdominal wall; (2) along the funicular structures through the inguinal ring; (3)

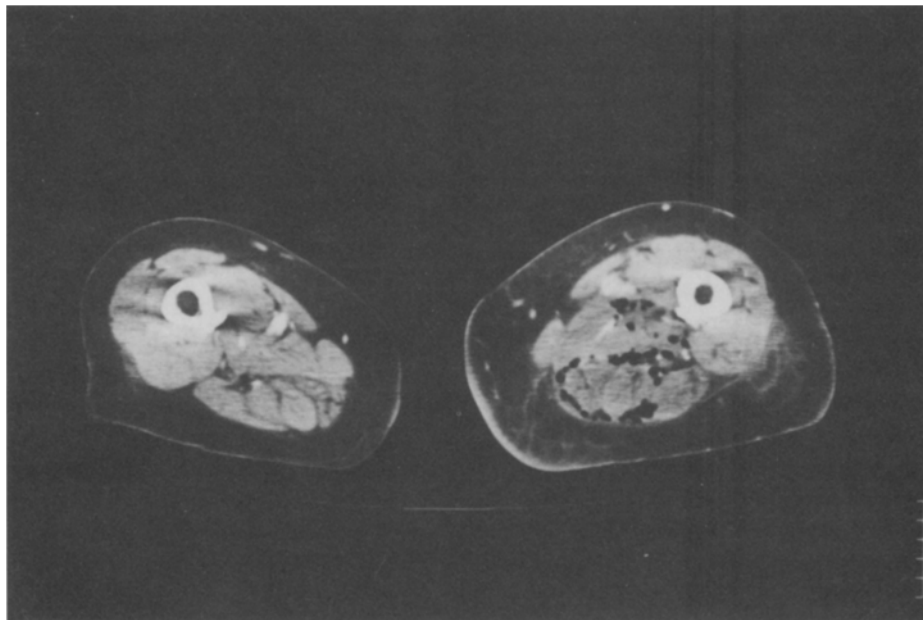


Fig 2. A computerized axial tomographic scan showing soft tissue edema of the left thigh with the presence of gas in the medial and dorsal parts of the muscles.

along the iliopsoas muscle and the femoral vessels into the anterior thigh; (4) downwards through the obturator foramen into the ischioanal fossa; (5) downwards through the fossa piriformis to the gluteal region and hip joint; (6) along the rectum, penetrating the levator ani muscle into the perineum and perianal region; and (7) along Denonvillier's fascia, penetrating the so-called perineal body and involving the external genitalia (i.e., Fournier's gangrene).

Rotstein et al reviewed 56 reported cases of thigh abscesses and pointed out that 39 were found to arise from the colon and rectum. The main underlying diseases were diverticulitis and colorectal cancer (1). In their review of extraperitoneal manifestations of complicated diverticulitis, Ravo et al found that a majority of the patients reported in the literature had presented diagnostic problems. Initially, most of them had received a false clinical assessment. Definitive diagnosis was confirmed at surgery in 57%, by dye enema in 38%, and at autopsy in 23% of cases (2).

There is evidence of the necessity to treat both the diverticulitis and the local process. In a review of thigh abscesses from intraabdominal sepsis, a high mortality of 93% was reported in patients who were treated only by local drainage. By contrast, the mortality rate decreased to 34% if an additional attempt to control the intraabdominal sepsis was performed (1).

Several different operative techniques are available for the management of acute diverticulitis. Staged operations were recommended for many years in the past; however, in an extensive review, mortality was highest in multistaged procedures (6). Today it is generally accepted that the septic focus ought to be eliminated at the initial operation after adequate preoperative resuscitation of the patient. There are four operative possibilities known to treat with this intention: (1) resection, closure of the rectum stump and colostomy (ie, Hartmann procedure); (2) resection, primary anastomosis, and protecting colostomy; (3) resection and primary anas-

tomosis without stoma; and (4) intracolonic bypass, an alternative possibility to the defunctioning colostomy after primary anastomosis (7, 8).

In general, the primary disadvantage of the Hartmann procedure is the potential difficulty in reestablishing intestinal continuity at the time of the subsequent intervention. Patients retain their defunctioning colostomy in 31–42% of cases (9, 10). Therefore, we advocate resection and primary anastomosis whenever possible. Especially if the anastomosis remains surrounded by inflamed and heavily contaminated tissue, we prefer to divert the bowel stream.

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