Incidence, Outcome, and Proposed Management of Isolated Abscesses Complicating Acute Left-Sided Colonic Diverticulitis

A Prospective Study of 140 Patients

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In a prospective evaluation of 140 consecutive patients with acute left-sided colonic diverticulitis demonstrated by computerized tomography (CT) in all cases, 22 (16 percent) were found to have an associated abscess without peritonitis. Thirteen of these 22 required surgery (seven during the first stay and six from 2 to 11 months after the acute episode; median, three months). Nine patients were treated conservatively, eight of whom are now totally asymptomatic 24 months after the initial attack (range, 10–47 months). There were 10 mesocolic abscesses (seven treated with antibiotics alone), nine pelvic abscesses (seven requiring surgery), and three intra-abdominal abscesses, all operated upon. These results suggest that mesocolic abscesses can usually be managed conservatively without drainage; should surgery be necessary, *en bloc* resection with immediate anastomosis can usually be safely performed. Pelvic and intra-abdominal abscesses behave more aggressively and usually require a two-stage surgical procedure when initial percutaneous drainage cannot be performed or is felt to be hazardous. [Key words: Colonic inflammation; Computerized tomography; Abscess; Drainage]

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The percentage of abscesses complicating acute colonic diverticulitis varies from 31 to 56 percent in series dealing with operated-upon patients with diverticulitis.[1–3] The diagnostic and therapeutic approach has dramatically changed with computed tomography (CT), which allows detection of such abscesses and percutaneous drainage followed by one-stage colectomy.[4–6]

This study focuses on 1) the incidence of abscesses detected by routine CT in a series of 140 consecutive cases of diverticulitis and 2) the fate of such abscesses when treated conservatively (*i.e.*, with antibiotics alone). This latter aspect has never been studied previously.

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METHODS

From October 1986 to February 1991, 140 patients (66 men and 74 women) with ages ranging from 23 to 92 (mean, 62) years were admitted because of acute left-sided colonic diverticulitis.

During the same period, 31 patients with the same disease but operated upon as emergencies without CT were excluded from the study. All had localized or diffuse peritonitis, and nine of them had an associated abscess.

Diagnosis of diverticulitis was assessed in all patients by CT within 72 hours of admission. CT used a high-resolution scan (fourth generation; 1200 SX type; Picker International, Highland, OH) using 8-mm thickness and index couches with contrast (Gastrografin®; E. R. Squibb & Sons, Inc., Princeton, NJ) orally and per rectum; I.V. contrast was added when an associated abscess was suspected. Tomographic criteria of diverticulitis included localized colonic wall thickening exceeding 5 mm and inflammation of pericolic fat. Pericolic abscesses, extraluminal air, and/or extraluminal Gastrografin® were occasionally noted but were not necessary to confirm the diagnosis of diverticulitis. Interpretation of the CT was carried out by radiologists who were unaware of clinical details.

Treatment of diverticulitis was either conservative with 10 days of intravenous broad-spectrum antibiotics active against Gram-negative and anaerobic bacteria (usually imipenem; Tienam®; Merck Sharpe & Dohme, Rahway, NJ) or surgical when

imposed by clinical presentation. All patients who did not need an operation during their first stay were rehospitalized three months later for a clinical and CT workup.

Percutaneous drainage was performed if the patient remained infected after 48 hours of conservative treatment (*i.e.*, temperature greater than 38.0°C, persistent guarding, leukocytosis above 15,000) and if drainage was felt to be feasible with a reasonable risk.

Groups of patients were compared using the BMDP Statistical Software (BMDP Statistical Software®, Inc., Los Angeles, CA),[7] with the chi-squared test using Yates correction when the minimal expected value was less than 5.

RESULTS

Of these 140 patients, 22 (16 percent) (8 men and 14 women) had abscesses demonstrated by CT and confirmed by surgery for those who have been operated upon. Sex and age of patients with abscesses were comparable to those of the overall series. Abscesses were always solitary and were found in the mesocolon in 10 (Fig. 1), in the pelvis in 9 (Fig. 2), or in the abdominal cavity between the sigmoid colon and the small intestine in 3 (Fig. 3).

Seven patients (32 percent) (three with an intra-abdominal abscess, three with a pelvic abscess, and one with a mesocolic abscess) required a laparotomy, while 15 (68 percent) could be handled conservatively. Indications for surgery included persistent sepsis (in three), acute abdomen (in two), small bowel obstruction (in one), and a huge intra-abdominal abscess refractory to conservative regimen (in one). One patient was operated upon within 24 hours of admission; the other six, for whom percutaneous drainage was felt to be hazardous because of intestinal interposition, were operated upon between 4 and 35 (median, 10) days later. The operative procedure consisted of Hartmann's resection in six patients and a one-stage sigmoidectomy with immediate anastomosis in another. Abscesses were confirmed in all patients operated upon.

The remaining 15 patients were handled conservatively with success using antibiotics alone. Only two of them, both with pelvic abscess, were drained, one percutaneously and the second by rectotomy.

Evolution After First Hospitalization

The patient whose pelvic abscess was drained percutaneously required a one-stage colectomy 11 months later because of a symptomatic sigmoid stenosis, while the other, who had had a rectotomy, is presently asymptomatic two years after the acute episode, without any surgery needed.

Five of the remaining 13 patients who had been

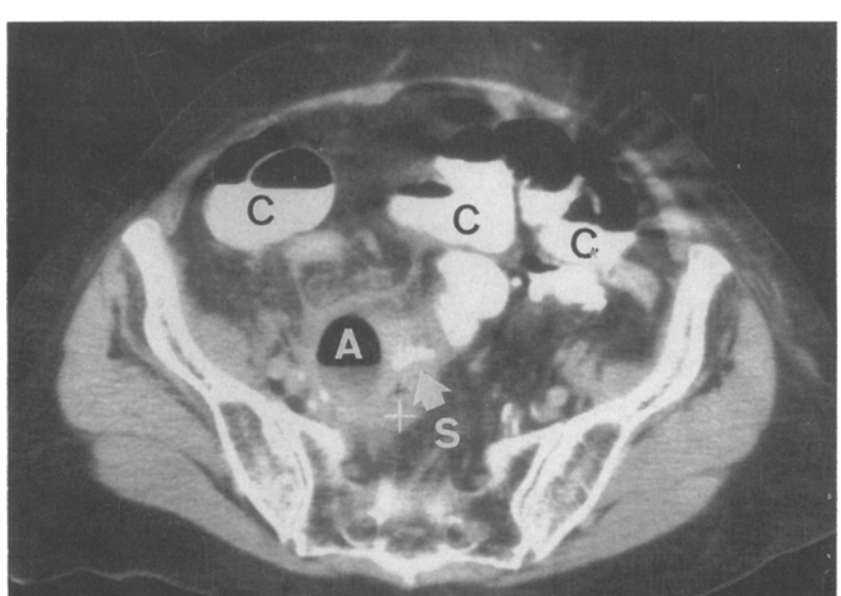

Figure 1. This mesocolic abscess (A) in an 82-year-old woman was managed conservatively. The abscess is in direct contact with the inflamed and thickened sigmoid colon (S). Gastrografin® can be seen in various portions of the colon (C).

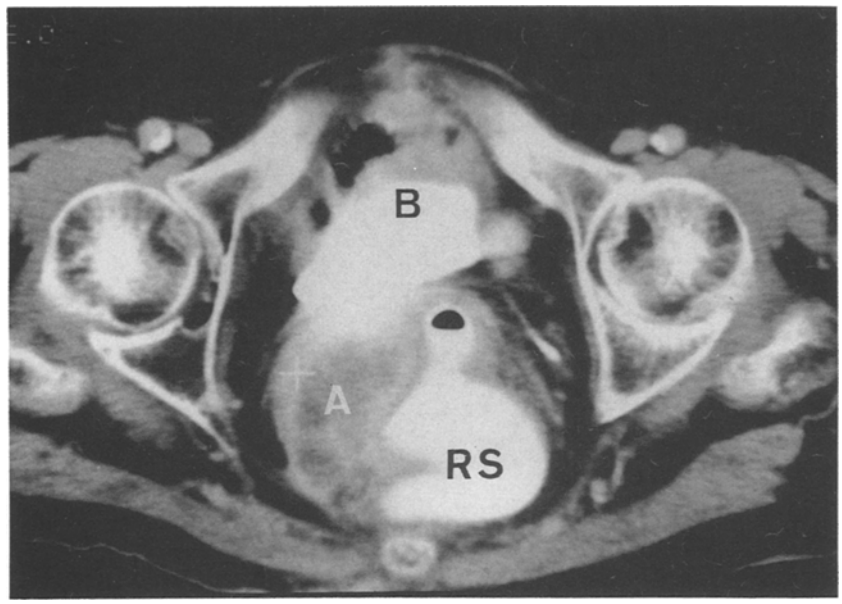

Figure 2. This pelvic abscess (A) in another 82-year-old woman required prompt surgery (Hartmann's procedure) because of frank localized peritonitis. The abscess is located in the pelvis, lateral to the rectosigmoid junction (RS), right behind the bladder (B).

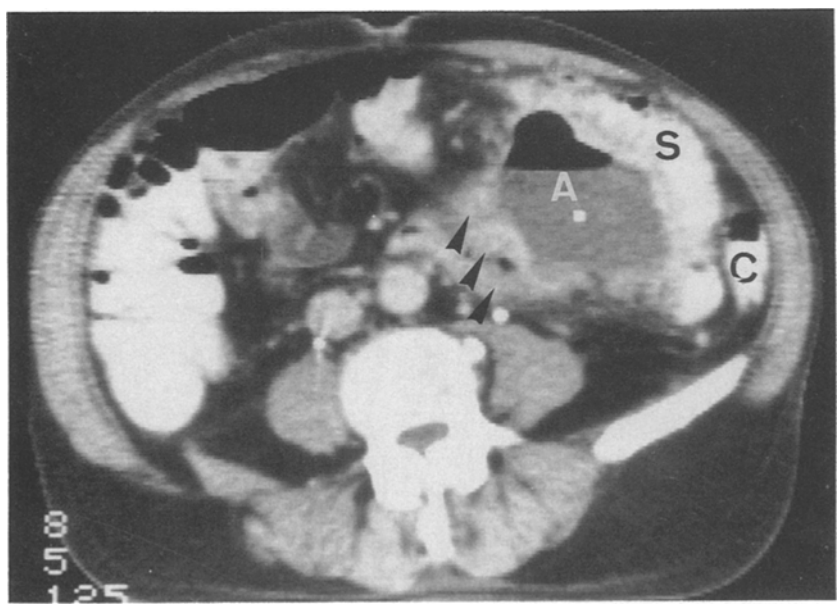

Figure 3. This 62-year-old man with an intra-abdominal abscess (A) 10 × 6 cm was operated upon on the fourth day of hospitalization (Hartmann's procedure). The abscess is circumscribed by the inflamed sigmoid colon (S) and small bowel (black arrows), which made percutaneous drainage hazardous. C = descending colon.

treated conservatively with success (three with a pelvic abscess and two with a mesocolic abscess) required surgery between 2 and 11 months after the acute episode (median, three months) for persistent diverticulitis in four and residual abscess in one; four had a colectomy with immediate anastomosis, and one had a two-stage colectomy.

Nine patients have so far not been operated upon. CT performed at three months showed complete resolution of the abscesses in seven patients and small residual abscesses in two. Follow-up averages 24 (range, 10–47) months. Eight patients are totally asymptomatic, while an 86-year-old female with constipation and persistent abdominal pain has been refused surgery because of age and cardiac insufficiency.

Size, location, and treatment of these abscesses are shown in Table 1.

Table 1.
Location, Size, and Treatment of Abscesses

	Mesocolic	Pelvic	Intra-abdominal	Mean Size (cm) (Range)
Group 1 (7 patients)	1	3	3	8.0 (3–15)
Group 2 (6 patients)	2	4	—	4.0 (2–7)
Group 3 (9 patients)	7	2	—	4.4 (2–8)
Total	10	9	3	

Group 1 = patients operated upon during first hospitalization.
Group 2 = patients operated upon later on in the course of their disease.
Group 3 = patients not operated upon.

DISCUSSION

These days, CT certainly provides the most complete information regarding acute colonic diverticulitis.[8, 9] Not only does it confirm the diagnosis, it also informs on the severity of the inflammatory process and can detect abscesses, which may occasionally be drained percutaneously.[4–6]

The incidence of abscesses in operative series of diverticulitis ranges from 31 to 56 percent.[1–3] This percentage is similar in our experience (16 abscesses in 38 patients operated upon, *i.e.*, 42 percent) but obviously only concerns cases of diverticulitis managed surgically (approximately one-fourth of all cases of diverticulitis treated). In fact, the incidence of abscesses in patients medically treated is considerably lower (15 cases in 133 patients; 11 percent; chi-squared with continuity correction; $P = 0.0001$). This finding has not been previously reported since one seldom resorts to formal confirmation provided by CT.

The present study suggests that the severity of isolated abscesses is directly related to their location.

Mesocolic abscesses found in 10 patients appear to have the best prognosis, since seven patients could be handled conservatively with success with a satisfactory two-year follow-up and six of them are presently asymptomatic. This favorable evolution is probably due to persistent fistula between the abscess and the colon that permits spontaneous internal drainage. Mueller *et al.*[5] found radiographic evidence of such fistulas in 5 of 21 cases. However, should surgery be necessary, a situation encountered in 3 of our 10 cases, *en bloc* colectomy removing the abscess followed by immediate anastomosis can usually be performed safely without having to resort to a previous percutaneous drainage.

Pelvic and intra-abdominal abscesses, on the contrary, behave less favorably. Seven of nine patients with *pelvic abscesses* required a colectomy. Of seven patients in whom percutaneous drainage was not considered possible, six needed surgery. None of the two percutaneously drained patients required surgery during their first stay, but one was operated upon 11 months later for a sigmoid stenosis. Our limited experience seems to indicate that pelvic abscesses behave aggressively and that elective colectomy should be proposed several weeks after the acute episode. Mueller *et al.*'s[5] policy of performing CT-guided percutaneous drainage as a first step should allow one-stage colectomy two or three weeks later.

Although less common in our experience than pelvic abscesses, *intra-abdominal abscesses* share a similar aggressive behavior since all three cases required early surgical intervention. This is probably due to their central location in the abdominal cavity with early repercussion on intestinal transit. Teitelbaum's[10] elegant double-needle aspiration technique might also permit one-stage colectomies for these ill-located abscesses once they have been evacuated.

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