Giant Colonic Diverticulum: An Unusual Abdominal Lump

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Giant colonic diverticulum is a rare complication of diverticular disease of the colon and is thought to result, in most cases, from a "ball-valve" effect. The presentation and clinical course can be variable and confusing. The most common symptoms are abdominal pain and a palpable abdominal lump, with many patients presenting acutely with complications such as perforation and peritonitis. Preoperative diagnosis requires a high degree of suspicion and needs to be differentiated from sigmoid volvulus, caecal volvulus, intestinal duplication cyst, pneumatosis cystoidis intestinalis, and similar conditions. A plain x-ray and computed tomography (CT) scan of the abdomen shows a huge air-filled cyst termed "balloon sign" and confirms the diagnosis. The barium enema shows a communication with the bowel in most cases. In view of the high incidence of complications, treatment is advised even in asymptomatic cases and consists of excision of the cyst with resection of the adjacent colon with primary anastomosis. This treatment would, in most cases, be a sigmoid colectomy. Percutaneous drainage and Hartmann's procedure may be appropriate in some cases who present with a well-formed abscess or gross fecal peritonitis, respectively. A case is described, and the literature is reviewed. (J Surg 64: 97-100. © 2007 by the Association of Program Directors in Surgery.)

KEY WORDS: diverticulitis, cyst, sigmoid, colon, acute abdomen

COMPETENCY: Patient Care

INTRODUCTION

Diverticulosis is a common clinical entity affecting 35% of persons over the age of 60 years.[1] Giant colonic diverticulum (GCD) is a rare complication of this disease, with only 121 cases described so far in the English literature. A case of GCD is described here, and the literature is reviewed regarding the origin, presentation, and management of this rare condition.

CASE REPORT

A 50-year-old Danish woman presented to the emergency department with a history of abdominal pain over the left iliac fossa and associated bowel disturbance for about a week's duration. A day before presentation, she noticed a lump in her abdomen at the site of the pain. She was on holiday in the United Kingdom and found that her pain increased rapidly during her flight to London along with an increase in the size of the lump and vomiting. This reaction forced her to seek medical help immediately after arrival. She had no significant medical history nor was she on any medication. On examination, she was found to be febrile and in pain. Abdominal examination revealed a 20-cm smooth, mobile, tense, and tender mass in her left iliac fossa, with rest of her abdomen being soft and nontender. Blood tests were normal apart from an increased white cell count (13.87 × 1000 cells/cu mm), which were predominantly neutrophils. Plain x-ray of the abdomen showed a large air-filled cyst (Fig. 1), which was confirmed on a computed tomography (CT) scan to be in relation to the sigmoid colon and probably in its mesocolon (Fig. 2). A laparotomy was then performed, where a large air-filled cyst was found developing from the antimesenteric border of the mid-sigmoid colon and adherent to the abdominal wall laterally.

Moderate diverticular disease was found in the adjacent sigmoid colon. Sigmoid colectomy with excision of the cyst was performed with primary anastomosis and covering loop ileostomy. She had an uneventful postoperative recovery, and was discharged home on the 12th postoperative day. Histology confirmed a "pseudocyst" with a wall consisting of fibrous tissue, chronic inflammatory cells, and foreign-body reaction around some fecal matter.

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FIGURE 1. Plain x-ray of the abdomen shows a large air-filled cyst (Balloon sign).

DISCUSSION

Colonic diverticulosis has its highest incidence in Western industrialized nations. The decreased intake of dietary fiber is considered to be the major etiologic factor. The resultant diminished stool volume facilitates the development of segmental high-pressure regions most frequently in the sigmoid colon because of its smaller radius. Over a period of time, pseudodiverticula is produced, resulting in diverticular changes.

Approximately 20% of these pseudodiverticula become symptomatic with the development of complications. Giant colonic diverticulum is one of the lesser known complications[2] and was first described in 1946 by Bonvin and Bonte in the French literature[3] and by Hughes and Greene in the American literature, 7 years later.[4] Giant colonic diverticulum has been described under various names in previous medical literature, including solitary air cyst, giant air cyst, giant gas cyst, encysted pneumatocele, and colonic pneumocyst. To prevent confusion, it was suggested that the term GCD be universally used to describe a large colonic diverticulum, 4 cm or larger,[3] and GCD was divided into 2 types on the basis of histology and probable origin:

- Type 1 GCD: Pseudodiverticulum with the cyst wall consisting mainly of fibrous tissue and inflammatory cells, which constitutes the predominant type (87%) and, in most cases, is a complication of diverticular disease.
- Type 2 GCD: True diverticulum containing all bowel wall layers, which are essentially communicating cystic colonic duplications.[5] They usually present as a pediatric condition and account for 13% of all cases.

ORIGIN

Various theories have been proposed to explain the mode of formation of these cysts, as follows[6]:

1. Ball-Valve Mechanism: The colonic bowel diverticulum begins as an outpouching of mucosa and submucosa herniating through the circular muscle of the bowel wall. An unidirectional ball-valve mechanism through a tiny communicating ostium causes gas-entrapment, allowing air to enter but not to exit, with progressive enlargement and consequent GCD.
2. Inflammatory Mechanism: This mechanism is secondary to a focal, well-contained, subserosal perforation leading to a walled-off abscess cavity, which gradually enlarges to form a GCD.
3. Infection with Gas-Forming Bacteria: It was suggested that the enlargement to form a giant cyst was secondary to gas-forming organisms.[3] However, this theory is not widely accepted as the cultures usually do not show bacterial growth and the clinical evidence does not support this mechanism.
4. True GCD: This disease is thought to be a congenital form of communicating bowel duplication cyst, and it possesses all 4 layers of the bowel wall. It usually presents as a pedi-

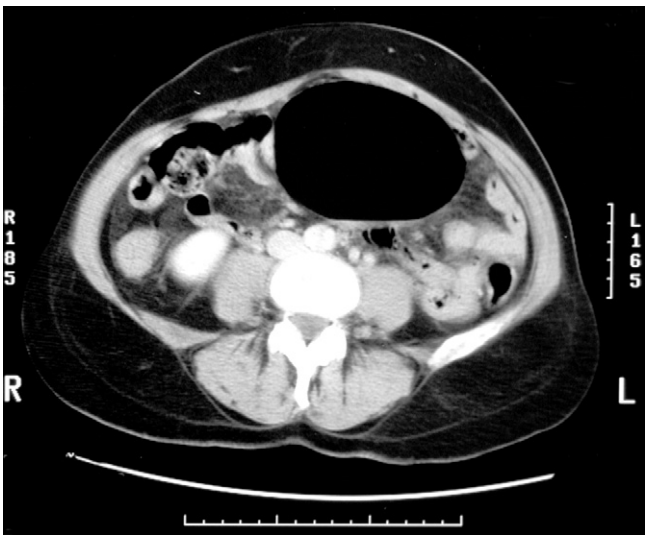

FIGURE 2. Computed tomograhy scan of the abdomen shows the large cyst in relation to the sigmoid colon.