CT Demonstration of a Giant Colonic Diverticulum

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Abstract. A case of giant sigmoid colonic diverticulum (GCD) is presented in which plain films showed an unchanging persistent large gas collection that did not opacify on barium enema. The computed tomographic scan revealed the GCD in close apposition to the adjacent sigmoid diverticulosis. Its walls were thin and more irregular than noted on plain films, and there was a suggestion of intraluminal contrast within it.

Key words: Colon, giant diverticulum – Abdomen, computed tomography.

Approximately 50 cases of giant colonic diverticulum have been reported, usually with plain film and/or barium enema documentation. To our knowledge, the following case is unique in demonstrating computed tomographic (CT) findings of this entity.

Case Report
An 83-year-old woman was admitted with increasing lower abdominal discomfort, nausea, and vomiting. She had been hospitalized for similar symptoms 3 years before. At that time her radiographic work-up, including GI series, barium enema, and plain films of the abdomen, was negative except for diverticulosis.

On physical examination she was obese. The abdomen was soft with normal bowel sounds, but there was mild tenderness in the left lower quadrant. No masses were palpable. An initial supine abdominal film revealed an elliptical 6 cm gas collection in the left lower quadrant (Fig. 1A). Subsequent follow-up films revealed it to be an unchanging air collection closely adjacent to the sigmoid colonic diverticulosis, which it slightly impressed. It did not communicate with the colon on barium enema (Fig. 1B). A small bowel study also failed to show barium communication. A CT scan (Fig. 2) revealed the well-defined air collection contiguous with the sigmoid to have a slightly irregular thin wall. There was a small fleck of contrast at its posterior dependent portion, while the adjacent sigmoid was at its anterior aspect. (The sigmoid was opacified with dilute Gastrografin enema as well as oral contrast administration.) This was interpreted as showing a small communication of the air cyst with the contiguous diverticulum-filled sigmoid colon. The symptoms subsequently subsided and the patient was discharged.

Discussion
Giant colonic diverticulum (GCD) or “giant air cyst” of the colon is an unusual condition of a large gas collection originating from the large bowel, which arises from the sigmoid colon in more than 90% of cases. Approximately 50 cases have been reported. Their cause is usually thought to be related to diverticulosis or diverticulitis, and theories include the concept of inflammation at the neck of a preexisting colonic diverticulum, leading to a ball–valve mechanism which in turn leads to a massively enlarged pseudodiverticulum of mucosa and submucosa protruding through the muscularis wall. Another theory involves perforation of a diverticulum, which may lead to a progressively enlarging pseudocyst, again secondary to a ball–valve mechanism [1]. Histologically, the wall of the GCD is most often composed of fibrous and granulation tissue consistent with chronic inflammation. Mucosal and/or muscular remnants may or may not be found; it is less common to find remnants, and their presence suggests that the lesion might be due to a true diverticulum or duplication [2].

On barium enema, GCDs fill slightly more than approximately 50% of the time and on pathologic examination it is rare not to find a communication with the colon. In most cases they arise on the
antimesenteric surface of the colon, though exceptions have been reported [3].

Clinically, GCD may be asymptomatic or present with abdominal signs of distention, pain, vomiting, or melena. The symptoms may often be mild but occasionally may be more acute, as seen with diverticulitis. The overall complication rate has been reported as 12% and includes perforation, pneumoperitoneum, peritonitis, local subserosal abscess, volvulus, and 1 reported case of carcinoma within the air cyst. Treatment for complications entails resection and end-to-end anastomosis [1, 3].

Radiographically, plain films of the abdomen show a roughly rounded or elliptical thin-walled air collection. The size is variable, reported from 6 to 27 cm in diameter [4]. The collections usually are in the lower abdomen in conjunction with the