Case Report

Gastrointestinal Sarcoidosis: Radiographic Findings

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Sarcoidosis is a systemic granulomatous disease of unknown origin. It is manifested pathologically by the presence of noncaseating granulomas containing multinucleated giant cells, although other granulomatous diseases may produce identical findings. The vast majority of patients have thoracic sarcoidosis with bilateral hilar lymphadenopathy and/or fibronodular pulmonary infiltrates on chest radiographs. About 40% of patients have extrathoracic disease involving the eye, skin, lymph nodes, liver, spleen, heart, and musculoskeletal or nervous system. Although sarcoidosis is rarely thought to affect the gastrointestinal (GI) tract, one investigator found noncaseating granulomas on mucosal biopsies of the stomach in 10% of patients with known sarcoidosis [1]. Thus, GI involvement by this disease may be more common than generally is recognized.

In sporadic reports, conventional single-contrast barium studies performed on patients with gastric sarcoidosis have shown gastric ulceration and narrowing due to granulomatous infiltration of the wall [2–5]. However, we report two patients with gastric sarcoidosis in whom double-contrast upper GI examinations revealed superficial mucosal abnormalities prior to the development of significant intramural disease. We also report one patient with an annular, obstructing lesion in the colon due to sarcoidosis.

Case Reports

Case 1

A 70-year-old white man with known pulmonary sarcoidosis for 30 years presented with severe epigastric pain, nausea, anorexia, and weight loss. A double-contrast upper GI examination revealed a localized area of mucosal nodularity and thickened, irregular folds on the posterior wall of the gastric fundus (Fig. 1). The findings were considered suspicious for an early gastric carcinoma. However, endoscopy revealed a focal area of gastritis in the gastric fundus without evidence of ulceration or tumor. Mucosal biopsies revealed noncaseating granulomas compatible with gastric sarcoidosis.

Case 2

A 72-year-old white man with long-standing pulmonary sarcoidosis presented with dysphagia and epigastric pain. A double-contrast upper GI examination revealed several discrete plaquelike lesions in the esophagus (Fig. 2A). The lesions ranged from 3 to 10 mm in size. In addition, a localized area of mucosal nodularity was found on the greater curvature of the gastric body (Fig. 2B). Endoscopy revealed grayish mucosal protrusions in the esophagus and stomach at the same locations shown on the upper GI study. Endoscopic biopsies revealed no evidence of fungal infection or tumor, but no granulomas were identified. The patient was treated with prednisone for 6 weeks, and a repeat endoscopic examination showed complete resolution of the lesions. The patient's symptoms had also resolved. The earlier findings therefore were attributed to esophageal and gastric involvement by sarcoidosis.

Case 3

A 44-year-old black man with a 3-year history of thoracic sarcoidosis presented with 2 days of worsening abdominal pain and distension. His stools were guaiac-negative. Abdominal plain films suggested a distal colonic obstruction. A single-contrast barium enema performed on an emergency basis revealed a partially obstructing 5-

Received February 22, 1989; accepted March 13, 1989.
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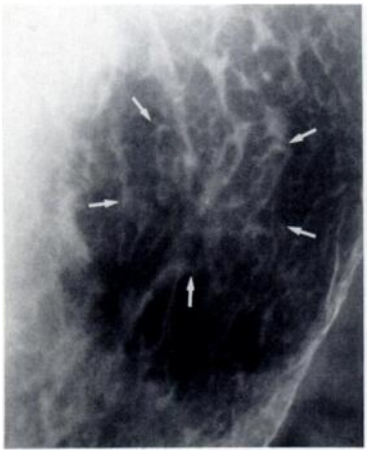
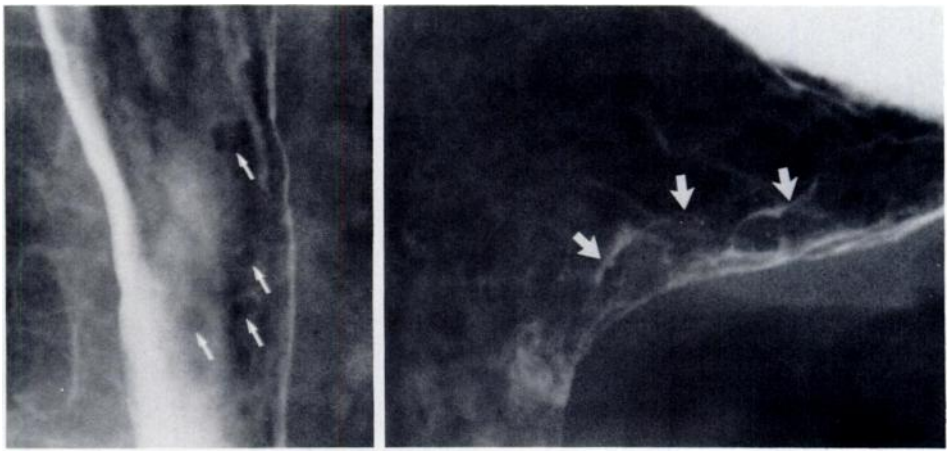


Fig. 1.—70-year-old man with known pulmonary sarcoidosis and epigastric pain. Double-contrast radiograph of stomach shows localized area of mucosal nodularity and thickened, irregular folds in proximal stomach (*arrows*). Mucosal biopsies from this region revealed noncaseating granulomas.



A B

Fig. 2.—72-year-old man with pulmonary sarcoidosis, dysphagia, and epigastric pain.
A, Double-contrast esophagram shows several plaquelike lesions in esophagus (*arrows*).
B, Double-contrast radiograph of stomach shows focal area of mucosal nodularity on greater curvature of gastric body (*arrows*). Although endoscopic biopsies failed to reveal granulomas, the patient had a dramatic clinical response to steroid therapy with resolution of lesions on repeat endoscopy 6 weeks later.

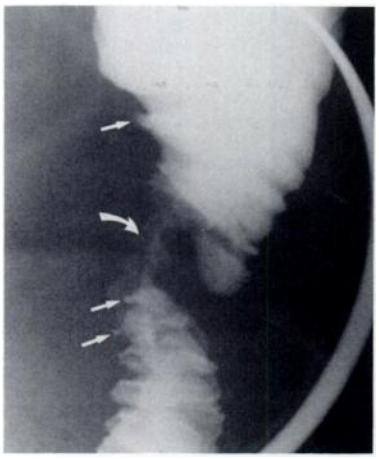


Fig. 3.—44-year-old man with pulmonary sarcoidosis and abdominal pain and distension. Close-up view from single-contrast barium enema shows partially obstructing 5-cm area of narrowing in mid–descending colon (*curved arrow*). Note intact mucosal folds and relatively tapered borders of lesion. Scattered diverticula (*straight arrows*) are also present in descending colon. These findings suggest diverticulitis. However, resected lesion contained numerous noncaseating granulomas without evidence of diverticulitis.

cm area of narrowing in the mid–descending colon (Fig. 3). The narrowed segment had intact mucosal folds with relatively tapered borders. Scattered diverticula were identified in the descending colon, and a diagnosis of acute diverticulitis was suggested on the basis of the radiographic findings. Colonoscopy was performed, but spasm and edema in the descending colon prevented adequate visualization of this region. The patient underwent an exploratory laparotomy, which revealed a 5-cm constricting lesion in the mid–descending colon. A partial left colectomy was performed. Examination of the resected specimen revealed normal mucosa with numerous noncaseating granulomas in the submucosa and deeper layers of the bowel wall and in adjacent mesenteric nodes. No acid-fast bacilli, other organisms, or foreign bodies were identified. The final pathologic diagnosis was colonic sarcoidosis.

Discussion

Sarcoidosis involves the stomach more frequently than any other portion of the GI tract. However, most patients with gastric sarcoidosis are asymptomatic [1]. Occasionally, antral narrowing may cause varying degrees of gastric outlet obstruction, manifested by epigastric discomfort and bloating, nausea, vomiting, anorexia, and weight loss [2, 6]. Other patients may have abdominal pain or upper GI bleeding due to ulceration of the overlying mucosa [3, 4]. When gastric sarcoidosis is symptomatic, treatment with steroids produces a dramatic clinical response in about two-thirds of patients, although symptomatic improvement is not necessarily accompanied by pathologic resolution of disease [6]. Occasionally, surgical intervention may be required if there is persistent gastric outlet obstruction, massive bleeding, or a suspicion of malignancy on the basis of the radiographic and/or endoscopic findings.

Gastric sarcoidosis is classically manifested on single-contrast barium studies by ulceration or narrowing. Both benign- and malignant-appearing ulcers have been reported [3, 4]. More frequently, these patients have smooth, cone-shaped antral narrowing and deformity [3, 4]. Similar findings may be caused by scarring from peptic ulcer disease, caustic ingestion, radiation, and a variety of other granulomatous conditions, including tuberculosis, fungal disease, syphilis, and Crohn disease [3]. Occasionally, more irregular gastric narrowing may produce a linitis plastica appearance indistinguishable from that of a scirrhous gastric carcinoma [2, 4, 5]. Whether smooth or irregular, antral narrowing results from

extensive granulomatous involvement of the stomach. Unfortunately, superficial endoscopic biopsies often fail to demonstrate granulomas when the disease is confined to the submucosa or deeper layers of the gastric wall.

In contrast, we report two patients who had superficial disease on double-contrast upper GI examinations, with a localized area of mucosal nodularity and/or thickened, irregular folds in the proximal stomach (Figs. 1 and 2B). Both patients had epigastric pain. One had noncaseating granulomas on endoscopic biopsies, whereas the other responded dramatically to steroid therapy, with a normal-appearing stomach on a repeat endoscopic examination 6 weeks later. Our findings indicate that double-contrast upper GI examinations are capable of detecting superficial mucosal disease in gastric sarcoidosis before circumferential narrowing of the stomach has occurred. In such cases, endoscopy and biopsy may be performed to rule out an early gastric carcinoma and, if possible, to document the presence of noncaseating granulomas in the mucosa. When gastric involvement by sarcoidosis is suspected, treatment with steroids, rather than the usual histamine blockers, may lead to rapid clinical improvement in these patients [6].

One of the patients who had mucosal disease in the stomach also had discrete plaquelike lesions in the esophagus (Fig. 2A). Although no granulomas were demonstrated on mucosal biopsies, the diagnosis of esophageal sarcoidosis was supported by the patient's response to steroid therapy, with rapid resolution of the lesions on follow-up endoscopy. Esophageal involvement by sarcoidosis has been described in a patient who had a dilated, aperistaltic esophagus on barium study [7]. To our knowledge, however, no cases have been reported previously in which discrete plaquelike lesions were detected on double-contrast esophagrams. Although *Candida* esophagitis and glycogenic acanthosis are more common causes of mucosal plaques, the possibility of esophageal involvement by sarcoidosis should be considered in patients known to have this disease.

In our remaining patient, an annular lesion in the mid–descending colon was causing an acute colonic obstruction. The radiographic findings favored diverticulitis rather than an annular carcinoma (Fig. 3), but examination of the resected specimen revealed colonic sarcoidosis. Other constricting lesions due to colonic sarcoidosis have been reported anecdotally [8]. Thus, colonic involvement by sarcoidosis should be included in the differential diagnosis when patients with known sarcoidosis have an annular lesion, particularly if the lesion has atypical radiographic features for colonic carcinoma.

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