

Perforation of the Sigmoid Colon Due to Geophagia

Alexander Woywodt, MD; Akos Kiss, MD, FCCSA

Geophagia, the habit of eating earth, soil, or clay, is common among African women and frequently encountered during pregnancy. The condition is relatively benign; grave surgical complications are infrequently observed. We describe an adult, non-pregnant, African woman with sigmoid colon perforation and fatal peritonitis due to geophagia. Geophagia is a rare cause of colonic perforation and peritonitis and a high degree of suspicion must be employed to identify this disorder.

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Throughout the world, *geophagia* (the deliberate consumption of earth, soil, or clay), has been practiced from antiquity to the present. Apart from being a culturally sanctioned practice, this custom may also occur in the mentally handicapped, during pregnancy, or as a feature of iron-deficiency anemia. There is reason to believe that geophagia is not rare, but rarely reported, since many patients are reluctant to volunteer a history of eating earth, soil, or clay and many physicians are generally unaware of the disorder. Therefore, a high degree of suspicion is necessary to suspect geophagical habits and tact must be employed to obtain such information. We describe a 45-year-old African woman who presented with a surgically acute abdomen and a plain abdominal x-ray film that was, in retrospect, highly suggestive of geophagia. It was not until a laparotomy was performed that a diagnosis of geophagia was made, and the patient died of "soil" peritonitis caused by perforation of the sigmoid colon. There was no evidence of any other pathologic condition, particularly diverticular disease or malignancy, that could have accounted for perforation. We believe that knowledge of the disorder and a timely diagnosis might have prompted more aggressive surgical management, although it is unclear whether this would have improved the outcome. Surgeons need to be more familiar with geophagia, since grave complications such as perforation of the sigmoid colon, may occur. We discuss another fatal case of geophagia that emphasizes the

complications, diagnosis, and management of this remarkable disorder.

REPORT OF A CASE

A 45-year-old Sowetan woman consulted her physician complaining of constipation and severe abdominal pain that had gradually increased during the past 3 days. There were no precipitating or aggravating factors. She denied having any medical history and was not receiving any medication, but did have a history of anorexia and amenorrhea, and had felt increasingly ill for 6 months. The patient was a housewife and had 4 pregnancies with uneventful deliveries. Her physician noted a mass on the left iliac fossa and she was admitted to the hospital.

On physical examination, the patient was pale, emaciated, and appeared acutely ill. She was pyrexial, with a temperature of 37.9°C, and her abdomen was distended with guarding to palpation in the right iliac fossa. A pregnancy test was negative. An abdominal x-ray film (**Figure**) showed free intraperitoneal air, and the entire colon appeared to be filled with radiopaque material.

A laparotomy was performed and showed the entire large bowel to be fragile and densely impacted with solid material. Generalized peritonitis originated from a sigmoid colon perforation, resulting in a mesenteric abscess that had perforated into the abdominal cavity. There was no evidence of a malignant neoplasm or diverticular disease. Resection, Hartmann procedure of the sigmoid colon, and colotomy of the transverse colon were performed to evacuate the impacted colonic contents that eventually

From the Department of Surgery, Chris Hani Baragwanath Hospital, Soweto, University of the Witwatersrand, Johannesburg, Republic of South Africa. Dr Woywodt is now with the Franz-Volhard-Clinic, Humboldt University, Charité Campus Berlin Buch, Berlin, Germany.



Plain abdominal x-ray film of the patient on admission to the hospital. Free intra-abdominal air is present and the entire colon appears to be densely impacted with radiopaque material that proved to be dry soil.

proved to be dry, feculent soil. Histological examination confirmed peritonitis, with no evidence of malignant neoplasm or colitis. Intensive care was unavailable and the patient eventually died of septic shock as a result of feculent peritonitis on the second postoperative day.

COMMENT

Pica (derived from the Latin word *Pica pica* for magpie, a bird known for its indiscriminate eating habits) is a persistent eating of nonnutritive substances beyond occasional childhood habits or culturally sanctioned practices. Geophagia is a subset of pica and is the habit of eating earth, soil, or clay.¹ The disorder is frequently encountered among natives of Africa and their descendants throughout the world.² Women are predominantly affected and the condition is particularly common during pregnancy. Less often, geophagia may occur due to iron deficiency. There is sufficient reason to believe that both pica and geophagia are underdiagnosed.

Complications of geophagia include parasitic infestation, electrolyte disturbance, and intestinal obstruction. Colonic perforation, however, has also been reported.³ In a review of surgical complications in 44 patients with pica, geophagia accounted for 11 of 31 patients who required laparotomy.⁴ Maternal death due to sigmoid perforation and peritonitis in a 31-year-old pregnant black woman has also been described.⁵ Our patient's prognosis underscores geophagia as a rare cause of surgical acute abdomen due to colonic perforation and "soil" peritonitis, but seems unique in that her entire colon was densely packed with solid material.

Little is known about the pathogenesis of perforation in geophagia. Infection with anaerobic organisms may play a role³ although many cases, like our patient, lack histological evidence for colitis. It may be reasonable to assume that chronic mechanical damage to colonic mucosa by progressive accumulation of dry, solid material in the lumen is a crucial factor.⁴ A colon densely filled with solid material may represent the end stage of an insidious process, with increased luminal pressures causing mucosal ulceration, necrosis, and perforation.

The diagnosis of geophagia rests on a history of ingesting earth, soil, or clay. Patients may be reluctant to volunteer such information and many physicians fail to inquire into this habit. Therefore, a high degree of suspicion and tact are necessary to elicit a history of geophagia. Plain abdominal x-ray films are the diagnostic procedure of choice for patients who deny geophagical habits.¹ An x-ray film showing colonic filling with radiopaque material, is specific for geophagia, provided that recent application of contrast material can be ruled out.

Little information is available regarding the management of obstruction in geophagia; however, disimpaction of rectal contents by irrigation or mechanical removal is beneficial in rectosigmoid obstruction.⁶ Successful resection and primary anastomosis have also been reported.³ In our patient, sigmoid resection and Hartmann procedure were performed instead of primary anastomosis because of the vulnerable colon, including the resection margins. In retrospect, we believe that total colectomy may have been warranted and easy to perform in this emaciated patient, since the dense, full-length, colonic impaction was impossible to evacuate both manually and by colotomy.

CONCLUSION

We report a case of fatal soil peritonitis due to perforation of the sigmoid colon in a 45-year-old African woman suffering from geophagia. If sought, geophagia is still common throughout the world, particularly among natives of Africa and their descendants, especially those with iron deficiency or who are pregnant. Colonic perforation is a rare but potentially fatal complication of this peculiar habit and necessitates early diagnosis and aggressive surgical management.

Reprints: Alexander Woywodt, MD, Franz-Volhard-Clinic, Charité Campus Berlin-Buch, Humboldt-University, Wiltbergstrasse 50, 13125 Berlin, Germany (e-mail: woywodt@aol.com).

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