

A taste for the unusual

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How would you handle this case?

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Ms. O, age 48, has been vomiting for 3 days. She has a history of eating cardboard and pencils, but the urge became uncontrollable since gastric bypass surgery 2 years ago. How would you treat her?

CASE Nauseous and full

Ms. O, age 48, presents to the emergency department reporting a 3-day history of vomiting approximately 5 minutes after consuming solids or liquids. She's had 10 vomiting episodes, which were associated with "fullness" and an "aching" sensation she rates as 6 on a 10-point scale pain scale that is diffuse over the upper epigastric area, with no palliative factors. Ms. O has not had a bowel movement for 3 days and her last menstrual period was 8 days ago. She is taking lorazepam, 1 mg/d. Her medical and psychiatric history includes anxiety, depression, personality disorder symptoms of affective dysregulation, obesity (270 lbs; medium height), and pica. She was 352 lbs when she underwent a Roux-en-Y gastric bypass 2 years ago. One year earlier, she had a laparoscopic gastric bezoar removal and an incisional hernia repair. Ms. O had no pica-related surgeries before undergoing gastric bypass surgery.

Ms. O denies shortness of breath, chest pain, allergies, smoking, or alcohol abuse, but reports uncontrollable cravings for paper products, specifically cardboard, which she describes as "just so delicious." This craving led her to consume large amounts of cardboard and newspaper in the days before she began vomiting.

What may be causing Ms. O's pica symptoms?

- a) iron deficiency anemia
- b) complications from gastric bypass surgery

- c) personality disorder
- d) generalized anxiety disorder (GAD)

The authors' observations

DSM-IV-TR diagnostic criteria for pica include the persistent eating of non-nutritive substances for ≥ 1 month that is inappropriate for the level of a person's development and not an acceptable part of one's culture.¹ If pica occurs with other mental disorders, it must be severe enough to indicate further clinical assessment to receive a separate diagnosis. Often associated with pregnancy, iron deficiency anemia, early development, and mental retardation, pica has been observed in post-gastric bypass surgery patients, all of whom presented with pagophagia (compulsive ice eating), and in one case was associated with a bezoar causing obstruction of the GI tract.^{1,2} With the dramatic increase in gastric bypass surgery and the required pre-surgical mental health evaluation, the consequences of failing to screen patients for pica behaviors can be devastating.

EVALUATION Low iron

Ms. O's vital signs on admission are stable, and physical exam is notable for mild abdominal dis-

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tention with no guarding, tenderness, rigidity, or masses. No rebound tenderness is elicited. CT scan shows evidence of post-surgical changes involving the small bowel consistent with gastric bypass surgery and a hiatal hernia, but no obstruction, focal inflammation, free fluids, or gas. Lab values for amylase, lipase, urinalysis, coagulation studies, cardiac enzymes, and complete metabolic profile are within normal limits. Although not anemic, Ms. O is iron deficient, with ferritin, 10 ng/mL (normal 10 to 120 ng/mL); B12, 299 pg/mL (normal 100 to 700 pg/mL); and iron, 25 µg/dL (normal 50 to 170 µg/dL).

A foreign body is removed endoscopically and the specimen is sent to pathology. It is determined to be a gastric bezoar, yellowish-green in color, measuring 2.5 cm × 1 cm × 0.8 cm. After bezoar removal, Ms. O tolerates food and is discharged home on vitamin B12, 1,000 mcg/d for 2 weeks; folate, 1 mg/d for 1 month; calcium with vitamin D, 1 g/d; and esomeprazole, 40 mg/d for frequent heartburn. She is referred to psychiatry for behavioral modification therapy and medication management.

How would you treat Ms. O?

- start a selective serotonin reuptake inhibitor (SSRI)
- prescribe an atypical antipsychotic
- continue lorazepam
- begin behavioral therapy

HISTORY Pica during pregnancy

During psychiatric workup, Ms. O admits to having pica urges most of her life, but experienced an uncontrollable exacerbation after gastric bypass surgery. This led to intense, chaotic periods of pica, resulting in a previous bezoar removal. She is particularly attracted to cardboard and newspaper cartoons, but notes she also has felt the urge to eat charcoal, moist soil, clay, chalk, pencils, and new shoes, which she chews on. In the past, her extreme anxiety and preoccupation with these urges had led to diagnoses of personality disorder not otherwise specified, GAD, and obsessive-compulsive disorder.

Her first experience with pica was during her first pregnancy at age 15, when she had an impulse to eat soil. The urges briefly stopped until she became pregnant again. During each of her 5 pregnancies her pica symptoms returned. At one point during her last pregnancy she reports having felt out of control, eating 2 to 3 pencils with the eraser per day, after which she would feel intense relaxation. Her mother also exhibited symptoms of pica toward charcoal and soil. Ms. O had been taking unknown dosages of lorazepam for anxiety and fluoxetine for depression, both of which she stopped because she feared side effects during her last pregnancy. However, she never experienced any side effects.

The authors' observations

Although pica is most commonly observed in young children, it sometimes is seen in pregnant women.¹ Pica frequently is associated with other mental disorders, such as pervasive developmental disorder and mental retardation,¹ and can be associated with premorbid psychosis and anxiety disorders. Occasional vitamin and mineral deficiencies, such as iron or zinc, have been reported, but usually patients' lab values are normal. Treatment usually is initiated in the context of medical complications, such as iron deficiency anemia. In Ms. O's case, the precipitating event was mechanical bowel obstruction due to a bezoar.

Several theories about the origins of pica have been proposed, but none truly are explanatory or satisfactory. The nutritional theory—that patients eat non-nutritive substances to compensate for mineral deficiencies—is popular because of pica's frequent association with mineral deficiencies, but it is unknown whether pica is the cause or the result of the deficiency. An example of this is anemia due to eating clay instead of foods that contain iron. Another theory is that because pica is normal in early childhood development, it may be a manifestation of delayed development or mental retardation. The cultural theory is attractive because

Clinical Point

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Table

Behavioral interventions for pica

Intervention	Comments
Environmental enrichment	Providing additional stimulus to increase neuronal activity and focus behaviors
Noncontingent reinforcement	Presenting reinforcers according to a fixed schedule
Differential reinforcement	Desired behaviors are reinforced and inappropriate behaviors are ignored
Response blocking	Physically block a patient's attempts to eat nonedible items

Source: Reference 8

Clinical Point

The Roux-en-Y procedure can significantly decrease a patient's iron uptake and could trigger pica in a susceptible patient

pregnant women in several cultures eat starch or clay as a part of their native rituals, and the incidence of pica is relatively high among pregnant African American women who live in rural areas.³ In the Roux-en-Y procedure, bypass of the duodenum and proximal jejunum can significantly decrease a patient's iron uptake, leading to iron deficiency anemia, and could trigger pica in a susceptible patient.⁴

Exacerbation after gastric bypass

Kushner et al⁴ describes re-emergent pica after bariatric surgery in 2 patients with pagophagia associated with concomitant iron deficiency anemia. A 41-year-old white woman presented with pagophagia and a history of childhood consumption of dirt, chalk, and clay. Another patient, a 34-year-old African American woman, suffered from a lifelong desire to eat dirt, which she was able to resist, but experienced pagophagia during pregnancy and later when she developed iron deficiency anemia.⁴ In another case series, Kushner et al⁵ describes a 35-year-old woman with iron deficiency anemia with pagophagia presenting 2 years after Roux-en-Y. Her history was significant for eating clay as a child, but this new-onset pagophagia was so intense she purchased 2 snow cone machines, one for home and one for work, to feed her urges. Another patient, a 45-year-old African American woman, had an irresistible craving for calcium carbonate antacids, eating 40 to 50 a day, as

well as several 30-ounce cups of ice.⁵ A third case report details a 33-year-old woman with iron deficiency anemia who presented with nocturnal pagophagia after Roux-en-Y anastomosis. She repeatedly rose during the night to eat the frost off the ice maker in her refrigerator.⁶ Another case described a female patient who ate cardboard after having a Roux-en-Y.²

Common themes in these case reports are female sex, Roux-en-Y, and dramatic resurgence of previously noted pica behaviors after gastric bypass surgery. Several studies have shown that pagophagia and pica in patients who are iron deficient or have iron deficiency anemia can be rapidly curbed with iron supplements.⁵ Ms. O, who has low iron, is taking iron supplementation, yet continues to experience pica cravings, albeit less severely. Her pica could be psychiatric in origin, perhaps related to her history of anxiety.

OUTCOME Combination therapy

We start Ms. O on ziprasidone, 80 mg twice a day, restart lorazepam, 1 mg/d, and schedule monthly follow-up appointments to monitor her pica symptoms. We prescribe ziprasidone because it could treat paranoia and preoccupations and is considered to be weight-neutral. She continues her supplements, including ferrous sulfate, 325 mg 3 times daily. Ms. O attends weekly behavioral therapy sessions, during which the therapist monitors her mood and cravings with response prevention, which entails purposely

avoiding behaviors after initiating a distressing stimulus. Ms. O responds well to medication and psychotherapy 1 month after the gastric bezoar removal, and she reports a decreased urge to eat cardboard. She is able to increase the amount of time she can go without eating non-nutritive substances—once daily, rather than repeatedly throughout the day.

The authors' observations

Each patient with pica likely needs customized care. Children need to be supervised to prevent ingestion of lead-containing substances such as paint chips. Iron supplements are recommended for iron deficiency anemia and prophylaxis for iron deficiency anemia in Roux-en-Y patients.^{3,4} Pica in pregnant patients should be addressed to maintain adequate nutrition and prevent accidental poisonings.⁷ Behavioral intervention strategies are based on positive reinforcement and punishment (*Table*).⁸ A report of 3 young children with pica noted successful treatment of one with automatic reinforcement, and the other 2 with a combination of social and automatic reinforcement.⁹ There are no FDA-approved medications for pica. Positive effects have been seen with SSRIs, bupropion, atypical antipsychotics, buprenorphine, and chlorimipramine.¹⁰ Olanzapine has shown positive results as a treatment for pica.¹¹ Most pica patients need concurrent psychotherapy.¹⁰

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Related Resources

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Drug Brand Names

Buprenorphine • Subutex	Fluoxetine • Prozac
Bupropion • Wellbutrin, Zyban	Lorazepam • Ativan
Chlorimipramine • Anafranil	Olanzapine • Zyprexa
Esomeprazole • Nexium	Ziprasidone • Geodon

Disclosure

The authors report no financial relationship with any company whose products are mentioned in this article or with manufacturers of competing products.

Clinical Point

Most pica patients need concurrent psychotherapy and pharmacotherapy but there are no FDA-approved medications

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Bottom Line

Pica—persistent eating of non-nutritive substances—is associated with developmental disorders, mental retardation, and pregnancy, and may be exacerbated after gastric bypass surgery. Customized care could include a combination of pharmacotherapy, dietary supplements to correct mineral deficiencies, and psychotherapy.