



148

Pica

BRUCE E. JOHNSON

Definition

Pica is the compulsive eating of material that may or may not be foodstuff. The material is often consumed in large quantities without regard for nutritional consequences. The medical term comes from the Latin for magpie (*Pica pica*), a bird that by folklore incessantly gathers objects to satiate its curiosity. Many terms have been coined to describe certain picas. These terms have in common a Greek root for the material ingested followed by *phagia*, for “eating.” An exemplary glossary is provided in Table 148.1.

Technique

Although it is a compulsive behavior, most adults with a pica do not have a psychologic disorder. The pica is usually a manifestation of an underlying medical condition, most often iron deficiency anemia. Yet compulsive eating, especially of inedible objects, can be a source of considerable embarrassment or ridicule. Hence, only a few patients come to the physician complaining of their unusual eating habit. More frequently, patients believe that their behavior represents a disordered psyche and are reluctant to admit to this symptom. A permissive, nonjudgmental line of questioning by the physician is clearly important when a pica is suspected.

Because the patient rarely presents with a pica as the chief complaint, circumspect interviewing technique may be used. The topic can be introduced as part of the dietary history. One begins with questions about usual food intake, the time of day the patient eats, how much is eaten, when and what is taken for snacks. A more leading question could then be phrased in a nonjudgmental way, such as, “Are there things you feel you simply must eat?” or, “Do you find yourself craving certain foods?” The object is to allow the patient to admit to this behavior.

A productive approach is to explain the reason for the questions (“Many people with low iron have different eating habits”). Examples of objects eaten by other people may permit the patient to answer in the affirmative. Often there

is a sense of relief at having an explanation for the behavior. Under other circumstances, a person may not recognize that a “habit” in fact may be a pica. Regular ingestion of something, for example, ice cubes, might not be recognized as a behavior having a pathophysiologic basis. By introducing the topic of pica, one permits discussion of eating behaviors that may be viewed as harmless by the patient but are additional clues to the physician.

Because a pica often involves disruption of daily activities (awakening at night to eat or other surreptitious behavior), questioning of a family member may be necessary. In most cases, however, embarrassment by the patient makes it more convenient and successful to interview the patient by himself or herself.

Once a pica is identified, other information should be relayed to the patient. For instance, when treatment for iron deficiency is begun, the pica resolves rapidly, often within days. In fact, the patient may actually develop an aversion to or disgust with the object craved previously. This is a natural response and indicates that therapy is successful. Also, persons with a pica often crave the same object if iron deficiency occurs again. Understanding of what a pica means may indicate to the patient that investigation is necessary should the craving return.

Pica in children is different, and the technique for eliciting information is directed to the parent rather than the child. Close questioning of eating habits, especially related to mouthing activities, is done; explicit questions with examples may be necessary.

Basic Science

There are four major circumstances in which an eating behavior can be considered a pica. These circumstances are disparate enough to reduce the likelihood that one underlying abnormality accounts for all pica. In a very general sense, the disorder originates from either behavioral or biochemical sources. The somewhat loose use of the term *pica*, though, makes it difficult to generalize and contributes to the lack of an all-embracing hypothesis.

A mentally disturbed or retarded person may impulsively ingest any available object, suffering the medical consequences thereof. Persons with an obsessive personality disorder may fixate on an ingestion activity. These persons have behavioral abnormalities in which the ingestion activity (“pica”) is more the choice of a disordered mind than a response to a biochemical deficiency.

The mouthing activity of children is at least in part a learning behavior and may not represent a pica. Children seem to derive as much tactile information from inserting objects into the mouth as touching with the fingers. This discovery process, unfortunately, can have adverse medical consequences, highlighted by the problem of lead poisoning. Ingestion of paint chips or plaster may originate as an

Table 148.1
A Glossary of Pica Terms

Geophagia:	Dirt or clay eating
Chthonophagia:	Dirt eating (archaic)
Lithophagia:	Stone or gravel eating
Amylophagia:	Starch eating
Pagophagia:	Ice eating
Geomelophagia:	Potato eating
Cautopyreiophagia:	Burned match eating
Trichophagia:	Hair eating

innocent mouthing activity but develop into a true pica, perhaps due to the semisweet taste of lead-based paints. Some investigators believe that a pica in childhood has the same significance as in adults. They point to the fact that many milk-fed children become iron deficient and contend that compulsive drinking of milk or eating of paint chips, dirt, and so on, reflects the same poorly understood craving as in adults.

A third important circumstance in which a pica is found is the compulsive ingestion of dirt or clay, as practiced in the rural South (or by migrants from that region). This geophagia seems to have originated as an ethnic-cultural habit passed down from mother to child. Children of both sexes learn the behavior as toddlers and generally outgrow the activity a few years later. Daughters, however, are re-introduced to the behavior years later, often during a first pregnancy. Pregnancy is a time when many women are iron deficient, but the behavior seems to be widespread enough for a deficiency not to be the complete explanation. Geophagia manages to persist even with migration. Older black women in the Midwest recall being sent shoeboxes filled with clay from relatives in the deep South. In fact, clay from certain sites was highly regarded for its taste, and clay from substitute sites was quickly spotted. In more recent years, geophagia may have been replaced by amylophagia (starch eating), which is considered more sanitary. Although many women who have this pica may be nutritionally deficient, the bulk of the evidence suggests that an ethnic-cultural practice is the explanation (Vermeer and Frate, 1979).

The majority of pica seen by physicians in Western countries can be traced to iron deficiency, with or without anemia. In fact, a pica may be detected in as many as 50% of all persons with iron deficiency. Crosby (1976) is the most prominent proponent of the idea that a pica is a manifestation of a lack of iron stores and not of the anemia itself. He points out that pica is not common in other anemias. The pica also disappears, in most cases, once iron replacement begins and long before the anemia is corrected. He wryly notes that in most cases the choice of material ingested rarely is a good source of the missing mineral. For a pica to occur, it is not important how the iron deficiency develops. Hence, a pica may be seen whether the person has a chronic gastrointestinal bleed, menorrhagia, inadequate diet, or any of the other causes of iron loss.

There is no good explanation, however, for why an eating behavior is a manifestation of iron deficiency. It is true that the mineral is found in some important enzyme systems involving taste and digestion. In some way, perhaps deficiency of iron in those enzymes could induce an "iron seeking" behavior. An entirely different explanation relates to the observation that certain lesions of the brain may result in hyperphagia. It has been noted that those sites are high in iron content. The extrapolation, then, is that lack of iron in those sites induces hyperphagia (again, "iron seeking"), of which the pica is a manifestation. This hypothesis has never been put to experimental trial.

Pica is not necessarily a manifestation of iron deficiency only. Zinc deficiency has also been noted as a cause of pica, and it is not unreasonable to suspect that other minerals may be implicated.

Clinical Significance

The clinical significance of a pica separates into three areas. First is the importance of the underlying disorder that leads

to the pica. In the public's mind, the most common "pica" could be the craving for a certain food (e.g., pickles) that occasionally occurs during pregnancy. While this may truly reflect iron deficiency, in most cases the significance is unclear. In fact, in this country, the most common pica in adults is probably associated with iron deficiency. As noted, the cause of iron deficiency is not related to development of the pica, and diagnostic investigation for the cause is important.

Another clinical concern is the consequence of ingesting whatever material is chosen to satisfy the pica. Virtually any object may be chosen. Table 148.1 lists only those materials for which a term has been coined and entered into the medical literature. Actually, the list of materials chosen could never be complete but would at least include peanuts, potato chips, carrots, parsley, lettuce, toast, mint leaves, celery, peanut butter, raw potatoes, orange peel, tomato seeds, coffee grounds, baking soda, charcoal/soot, mortar, tire inner tubes, and sawdust. Such a list would be worthy of little more than astonishment were it not for the important medical consequences of the chosen object. For instance, a pica for toilet-bowl fresheners and mothballs has resulted in hemolytic anemia. Geophagia has caused intestinal obstruction and perforation, and premature labor in pregnant women. Certain fruits or hair can result in bezoars. A pica for paper (tissue boxes and cigarette packages) has resulted in mercury poisoning. Clay ingestion has been suggested as a cause of hyperkalemia in renal failure and hypokalemia in other cases. On a less bizarre and more common level, amylophagia can cause obesity while failing to provide appropriate nutrition during pregnancy. In summary, there can be serious consequences to a pica, so recognition and treatment are imperative.

Finally, many people with a pica realize that they are engaging in an unusual behavior and are embarrassed or ashamed. These people may have been subjects for ridicule by family and friends or have gone to great lengths to hide their compulsion. An explanation of the disorder, appropriate treatment, and resolution of the craving may result in a very appreciative patient.

Tracking down a pica is challenging. The physician can practice subtle interviewing skills, make a clear diagnosis, and expect full resolution of the problem with treatment. Few conditions offer such a gratifying course for both physician and patient.

References

- Cooper M. Pica. Springfield, Ill.: Charles C Thomas, 1957.
- Crosby WH. Pica: a compulsion caused by iron deficiency. *Br J Hematol* 1976;34:341-42.
- Johnson BE, Stephens RL. Geomelophagia. An unusual pica in iron-deficiency anemia. *Am J Med* 1982;73:931-32.
- Lackey CJ. Pica during pregnancy. *Bol Assoc Med Puerto Rico* 1984;76:405-7.
- Reynolds RD, Binder HJ, Miller MB, et al. Pagophagia and iron deficiency anemia. *Ann Intern Med* 1968;69:435-40.
- Roselle HA. Association of laundry starch and clay ingestion with anemia in New York City. *Arch Intern Med* 1970;125:57-61.
- Vermeer DE, Frate DA. Geophagia in rural Mississippi: environmental and cultural contexts and nutritional implications. *Am J Clin Nutr* 1979;32:2129-35.
- VonBonsdorff B. Pica—a hypothesis. *Br J Hematol* 1977;35:476-77.