



Severe craving associated with kaolin consumption

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Abstract

Purpose Kaolin eating is an ancestral and worldwide tradition, particularly in women in order to relieve nausea and abdominal troubles. Nevertheless, damaging effects such as anemia and intestinal troubles are well documented. However, compulsive disorders associated with kaolin intake are less known.

Result We reported in this paper a severe craving observed in a young woman consuming kaolin for several years, associated with a microcytic iron-deficiency non-regenerative anemia.

Conclusion This paper allows to draw attention among physicians who are rarely informed of this practice imported from abroad and have consequently a limited role in informing patients of the potential deleterious side effects of geophagia.

Keywords Kaolin · Craving · Anemia · Iron · Pica · Geophagia

Introduction

Pica means perverted appetite for substances of no nutritional value such as ash, bricks, chalk, charcoal, clay or earth (geophagia), ice cubes (pagophagia), or edible substances as dried pasta, raw starch, uncooked rice (amylophagia) [1]. This word is derived from latin word for Magpie (*Pica pica*), a specie of birds that feed on whatever it encounters. One of the first cases was noted in sixth century AD and was observed in a pregnant woman [2]. Pica has been observed in ethnic groups worldwide in primitive and modern cultures, in both sexes of all ages, but it is most prevalent among pregnant women and young children [3].

Pica may be beneficial, by protecting against harmful pathogens and toxin, quelling nausea, vomiting and diarrhea. However, pica may also be harmful, by reducing the

bioavailability of beneficial micronutriments, causing intestinal impaction, introducing toxic substances such as lead, e.g. when ingesting pottery with lead-based glazes [4], or by acting as a vector for geohelminth infection.

One example of geophagia is kaolin consumption. Kaolin is white brittle heat-resistant clay, consisting of kaolinite, an aluminum silicate. It is mainly used in porcelain manufacturing, in the paper industry (to coat the surface of the paper sheet and obtain a whiter and smoother aspect), for producing matt paintings and in cosmetics (poultices, skin care). However, in central or west Africa, kaolin may be consumed. But, according to DSM-5 criterions, kaolin consumption in the context of “culturally supported or socially normative practice” cannot be considered as pica behavior. This ancestral and strange tradition is common in pregnant women to relieve nausea, abdominal troubles and excessive salivation [3]. Kaolin can also be used by non-pregnant women, in the treatment of diarrheas and stomach pains.

If this consumption is well described in the literature, obsessive–compulsive disorders associated with kaolin intake are less known. We reported in this paper a severe craving to kaolin observed in a young woman.

This article is part of the topical collection on Food and Addiction.

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Case report

A 22-year-old non pregnant woman originated from Cameroon, studying business in university and living in France for 2 years, was hospitalized for disabling pelvic and abdominal pains. No previous history of such trouble was noted for this woman. However, the examination of this functional colopathy has been reassuring. Gynecological examination was normal except a minimal fluid effusion in pouch of Douglas detected by ultrasonography. Other physical examinations were entirely within normal limits.

Laboratory examination revealed a severe microcytic iron-deficiency non-regenerative anemia, characterized by hemoglobinemia: 5.8 g/dL, corpuscular volume: 68 fL, serum iron 2 mg/L, serum ferritin 9 µg/L. Folate and vitamin B12 were within normal limits.

This anemia was associated with exertional dyspnea, asthenia, dizziness and faintness. She was treated with transfusion of packed red blood cells and injection of 100 mg iron (Venofer®), followed by oral route iron supplement.

In the absence of any external hemorrhage, extensive occupational, behavioral, dietary and environmental evaluations were undertaken. This anemia could be explained by 3 potential causes: (1) a dietary deficiency (mainly in meat and eggs), corroborated by hypoalbuminemia (30 g/L); (2) non supplemented heavy menstrual periods; (3) and a severe craving to kaolin.

During evaluation in the hospital unit, the patient admitted to a 4-year history of kaolin consumption since the age of 18. At the beginning, she described an occasional eating for 1 year. Then, she related a strong increase, with daily intake for 3 years. She never stopped kaolin taking. To explain this behavior, she reported that this consumption brings her a great physical satisfaction, relief, psychological healing. However, she confessed an important craving: obsessive thoughts all day long and a burning desire to eat kaolin. She recognized her addiction.

Discussion

We reported here a case of a young woman eating kaolin which is a traditional practice in her native country. She rebuilds her identity and reproduced this habit in a foreign country. The important point of this case report is the severe craving related to kaolin intake. This patient is fully obsessed by this product, thus creating a major disturbance on daytime. As a matter of fact, this craving was revealed during her hospitalization for treatment of the anemia. To our knowledge, that is the first time in France that such a case was reported and described.

This patient is non pregnant, although this practice is usual in women during pregnancy leading to consequences for individuals and development of fetuses. However, the study of Golden et al. [1] showed that this behavior was widespread in male children and adolescents, and they found no peak during pregnancy.

Numerous studies have documented a strong association between pica and iron deficiency anemia [5, 6], but the answer to the question of whether iron deficiency anemia is a cause or a consequence of pica is still unknown. For example, in some patients with malnutrition who eat clay, it is not clear whether eating the clay impairs iron absorption by binding iron in the gut, or whether iron deficiency prompted the ingestion of clay [7]. In that respect, in some pica cases such as pagophagia, this unusual eating or chewing disappeared after iron supplementation [8]. Consequently, pica is believed to be a symptom of the deficiency rather than its cause.

Concerning this patient, we have retained several possible causes to explain the anemia. If dietary deficiency and non supplemented heavy menstrual periods represent relevant arguments pro anemia, high quantities of kaolin eaten may contribute to scavenge elements such as iron and obviously exacerbate the anemia.

Iron supplementation by oral route and diet modification enabled to correct this deficiency, but the patient left the hospital service, and we ignore whether her addiction was continued.

Besides anemia, kaolin absorption may expose consumers to a much neglected aspect of pica: the risk of overexposure to metals contained in soils. Indeed, by determining maternal and chord blood lead levels in pregnant women in Congo, Gundacker et al. [9] provide evidence that geophagy is a potential source of lead poisoning notably in pregnant women with low calcium and/or iron status. Furthermore, Lambert et al. [10], found that aluminium concentrations in plasma and urinary samples were significantly higher in geophagous anemic women than in controls.

Conclusion

This case report emphasizes the importance of skilled way of history recording because, frequently, patients showed reluctance to reveal their craving for substances and only after a detailed questioning, they admitted their history. It allows to draw attention among physicians who are rarely informed of this practice imported from abroad and had consequently a limited role in informing them of the potential deleterious side effects of geophagia. This lack of knowledge may contribute to continued practice of this habit leading to consequences previously mentioned.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest for this paper.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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