

Does your child have pica ?

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Pica is a habit disorder involving the compulsive, irrational ingestion of nutrient or non-nutrient substances over a sustained period of time. Geophagy is the most common pica in the child. Other substances eaten include clay, earth, soil, paper, ice cubes, raw rice... .

Pica is often associated with iron and zinc deficiency. It remains an intriguing, little understood occurrence. A number of examples of pica practice are reported from Africa, Middle East area and the south of United States. In these countries, children and pregnant women are frequently concerned (1). In developed countries, pica is mainly reported in mental retardation or in cases of abnormal mother child relationship (2).

We report here the case of pica revealed by iron-deficiency anaemia in a child and review the literature regarding this compulsive dietary aberration.

Case report

A 15-months old girl, full term infant, born by caesarean section for toxemia with a birth weight of 2950 g, is referred to hospital because of a severe anaemia. She had breast feeding till now, received fruits and wheat products since the age of 6 months. Her medical history was unremarkable for chronic diarrhoea or vomiting. However, her mother reported that she eats earth since she was 11 months old. On examination, weight was below the tenth percentile with normal height. There was a pallor and stomatitis. Macroscopic examination of the stools is unremarkable. Haemoglobin was 6.5 g/dl, MCV was 52 fL, red blood cells were 3 millions/ μ L and reticulocytes were 24000 per μ L. Iron concentration was 2.9 μ mol/L. White blood cells were 8400 per μ L with 7% of eosinophils. Cysts of *Giardia lamblia* were found in the stools. She was given a 3-months trial of iron and metronidazole in addition to dietetic recommendations. Pica spontaneously resolved within 2 weeks. The patient is currently asymptomatic 3 months later and her haemoglobin is 12.5 g/dl. She has no more *Giardia* ova in the stools. Family members however have not been screened for *Giardia* infection.

Discussion

We presented a case report of a 15-month old girl presenting with severe iron deficiency anaemia, pica and

Giardia infection. Almost strict diet made of milk and wheat products unsupplemented with iron, are responsible of a precarious iron state secondarily disequibrated by geophagy. Treated with metronidazole and iron replacement, haemoglobin levels returned to normal and the pica resolved. Pica is rather rare in western countries (3,4). In iron deficiency patients whether with or without anaemia, reported frequency of pica was 5.3 per cent (5). Contrasting with these rates, pica is more frequent in developing countries. In Africa, geophagy is practiced by 43 (6) to 73 per cent of children aged between 1 and 18 years (7). Differences between pica rates in different parts of the world might be explained by the presence of other causes of iron deficiency (8). In fact, intestinal parasites infections such as hookworms : *Ancylostoma duodenale* and *Necator americanus* can cause pica in addition to blood loss, anaemia, and wasting (9). On the other hand, the frequency of pica is probably under estimated because of a lack of interviewing (10). In fact, when exploring iron deficiency, few physicians ask for pica when the origin of the deficiency is known.

Pica has been associated with iron deficiency and anaemia, but no causal relationship has been established. Current literature leaves uncertain whether pica causes iron deficiency or, conversely, whether iron deficiency causes pica. Some data suggest that in most of the cases, pica is a consequence of the iron deficiency rather than its cause (7). The rapid disappearance of pica after iron supplementation argues for this hypothesis (11). However, in a major large study conducted in 406 Zambian schoolchildren, iron supplementation had no effects on geophagous behaviour (12). On the other hand, studies in the animal, using iron radionuclide, showed that earth and starch reduce iron absorption by chelating it (13,14). Geophagy could be a copied behaviour and the association between geophagy and iron deficiency due to impaired iron absorption following earth eating (12).

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Reported pica consequences in the child include : abdominal pain, vomiting, peritonitis, helminth infections (3,15), delayed puberty, failure to thrive, abnormal behaviour, zinc deficiency, vitamins deficiencies and lead intoxication. Giardia infection reported in our case is a common infection that causes nausea, vomiting, malabsorption, diarrhoea, and weight loss.

In conclusion, pica is a commonly missed problem in children. Earth or non-nutrient substance ingestion has to be looked for in every iron-deficiency anaemia, even though the origin of the deficiency is known. Treatment with adequate amounts of iron in addition to zinc supplementation is usually followed by its disappearance. Parasite studies in children and family members are however mandatory to search for helminth and Giardia infections associated to pica and treat them with metronidazole. Pica prevention requires information of parents and dietary prevention of early iron deficiency.

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