



Current Approach to The Child with Pica

Pikalı Çocuğa Güncel Yaklaşım

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ABSTRACT

Pica is an eating disorder that is characterized by the ingesting of non-food substances. Although pica is common in young children, it is an overlooked condition. Although the etiology of pica is not known for certain, some hypotheses are emphasized. The prevalence of pica varies according to societies. Pica is a clinical diagnosis based on the The Diagnostic and Statistical Manual of Mental Disorders-V diagnostic criteria. In children, pica management can be achieved with a multidisciplinary approach. It should be acted on together with child psychiatry. Patient and family education are important. If there are nutritional deficiencies such as iron or zinc deficiency, it should be replaced. This review provides important information about the current approach to the child with pica. It will also shed light on the evaluation of children with a history of pica.

Keywords: Child, eating disorder, iron deficiency, pica, zinc deficiency

ÖZ

Pika, gıda dışı maddelerin yutulması ile karakterize olan bir yeme bozukluğudur. Pika küçük çocuklarda sık görülmesine rağmen gözden kaçan bir durumdur. Pika etiyojisi kesin olarak bilinmemekle birlikte bazı hipotezler üzerinde durulmaktadır. Pika prevalansı toplumlara göre değişmektedir. Pika, Teşhis ve Mental Bozuklukların İstatistiksel El Kitabı-V tanı kriterlerine dayalı bir klinik tanıdır. Çocuklarda multidisipliner bir yaklaşımla pika yönetimi sağlanabilir. Çocuk psikiyatrisi ile birlikte hareket edilmelidir. Hasta ve aile eğitimi önemlidir. Demir veya çinko eksikliği gibi beslenme eksiklikleri varsa yerine konmalıdır. Bu derleme pikalı çocuğa güncel yaklaşım hakkında önemli bilgiler sunmaktadır. Pika öyküsü olan çocukların değerlendirilmesine de ışık tutacaktır.

Anahtar Kelimeler: Çocuk, yeme bozukluğu, demir eksikliği, pika, çinko eksikliği

INTRODUCTION

This review provides important information about the current approach to the child with pica. It will also shed light on the evaluation of children with a history of pica.

The Latin word pica means a magpie bird that eats whatever it finds. Today, pica refers to the persistent, compulsive craving for and eating of substances generally considered indigestible. This behaviour should be disagreeing with cultural practices and remain beyond the normal developmental phase of occasional indiscriminate for at least one month. Pica is most commonly seen in children aged 24 or 36 months. Children with learning disabilities and attention deficit hyperactivity disorder have a significant history of pica (1,2). The materials ingested as a result of pica depend on their availability in the environment

as well as conscious selection factors. Various substances may be craved, including clay (geophagia), raw starch (amylophagia), dirt (coniohphagia or chthonophagia), ice (pagophagia), raw, raw potatoes (gemelophagia), hair (trichophagia), fibrous plant roots (phytobezoar), paint chips (plumbophagia), sand, pebbles/stones (lithophagia), sharp objects (acuphagia), glass (hyalophagia), uncooked rice (ryzophagia), paper (xylophagia), soap (sapophagia), burned matches (cautopyreiophagia), feces (coprophagia), vomitus (emetophagia), wooden materials, sponge, polyurethane foam, grass, leaves, paper, chalk, baby talcum powder, crayons, pencil erasers, cigarette butts, ashes, charcoal, coins, buttons, cloth, eggshells and insects. By far, geophagia and amylophagia are among the most common types of pica. By far, geophagia and amylophagia are among the most common types of pica (3).

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ETIOLOGY

Three evidence-based perspectives have been described in order to explain the etiology of pica: biomedical, psychiatric, or behavioral. According to the biomedical view, that pica is a result of nutritional deficiencies, indicates that it may be due to neurological impairment and/or defective neurochemical transmission. An example of this is the relationship between iron deficiency and pica in young children and pregnant women. Unfortunately, this link does not provide a clear indicator of the direction of the relationship (i.e., Do deficiencies cause pica or does pica lead to deficiencies?). However, there are studies showing that pica disappear after iron treatment in individuals with iron deficiency anemia (4). A neurological impairment hypothesis suggests that pica is the result of brain damage, dementia, or defective neurochemical transmission. Pica may be caused by faulty dopaminergic neurotransmission (5).

According to the psychiatric view, that pica is an appearance of another mental illness or a form of obsessive-compulsive disorder. Studies showing that serotonin reuptake inhibitors are beneficial in the treatment of pica support this view (5)

According to the behavioral/learning perspective, pica is explained as a result of some rewarding outcome resulting from pica behavior or due to an individual's failed discrimination of appropriate consumables. Therefore, pica behavior may be learned or the result of poor stimulus control (5).

EPIDEMIOLOGY

It is very difficult to estimate the true prevalence of pica in children. Pica is slightly more common in boys than girls. Population studies have shown that about one quarter of children from one to six years have practiced pica (3). The prevalence in children decreases with increasing age. However, this rate is estimated to be 10% in 12-year-olds. It is known in the society that pica is more common among very young children, individuals with autism spectrum disorder and developmental disabilities, and pregnant women (5). The results of the study involving German children aged 7-14 showed that approximately 12% of these children described pica (6). Similarly, the results of the comprehensive study involving Swiss children aged 7-13 showed that approximately 10% of these children had a history of pica. The results of the study conducted in Australia showed that the incidence of pica in children was up to 20% higher. Pica is more common among children in lower socioeconomic classes. The prevalence of pica is higher in Africa compared to the rest of the world. The prevalence rate of pica could be as high as 77%

in African children (7,8). Although it was shown in an old study showing the relationship between pica and iron deficiency in adults in Turkey, the frequency of pica in children has not been investigated recently (9). Geophagy is a long-known problem in Turkey. In a study by Çavdar and Arcasoy on children, they reported that geophagy is the most common type of pica in Turkey and stated that individuals with this disorder are found in 70% of the country (10). The environment and society have an important effect on the emergence of pica types. Pica is most common in rural areas in the Central Anatolian region of Turkey. The clinical presentation of pica is variable and is thought to be related to the specific nature of the comorbidities and the type of pica object (11).

Some Diseases that Accompany Pica

Conditions found to be associated with pica include mainly iron deficiency anemia, lead exposure, and parasitic infections (8,12). Recently, pica has been reported in sickle cell anemia (13).

Identified Adverse Effects due to Pica

Significant undesirable side effects may occur due to ingestion of substances that should not be eaten in children with pica. These adverse effects include potassium abnormalities and gastrointestinal conditions ranging from irritation and abdominal pain to perforation, blockage, and colon ischemia. Sometimes this can result in death (5,12,14).

CLINICAL FINDINGS

Anamnesis

Pica is a finding that is often overlooked because it is not asked in the history. Therefore, pica should be included in the anamnesis. Adolescents may deny pica behavior. Information about the living environment should be obtained. It also seems important to take a history of nutrition and accompanying diseases. Anamnesis should concentrate on the substance ingested because the clinical presentation is different according to the substance taken. There is no specific test for diagnosis. More importantly, the diagnosis is made with the clues in the anamnesis (1).

Physical examination

Findings of the underlying diseases, if any, of patients with pica can be detected in the physical examination. Pallor in iron deficiency anemia may be observed. Patients with zinc and iron deficiency have growth retardation, hepatosplenomegaly, and hypogonadism (Tayanç-Reimann-Prasad syndrome) (15). Also, there may be signs of lead exposure. Parasite infestation can be seen in soil eaters, intestinal obstruction in bezoar eaters, tooth damage in hard substance eater (1).

THE DIAGNOSIS OF PICA

Since pica is a clinical diagnosis confirmed by anamnesis, there is no specific diagnostic test in children. Diagnostic tests should be planned for whatever underlying cause is considered in the anamnesis (12.). Due to the cultural differences of societies, criteria have been developed for the objective diagnosis of pica. The diagnosis of pica is made using the The Diagnostic and Statistical Manual of Mental Disorders (DSM)-V diagnostic criteria (**Table 1**). In order to diagnose of pica, the patient should be 24 months or older.

Table 1. The diagnosis criteria of pica based on the DSM-V (5,16)

The eating of non-nutritive, non-food substances is persistent for at least 1 month.

The eating of nonnutritive, nonfood substances is inappropriate to the developmental level of the individual.

The eating behavior is not part of a culturally supported or socially normative practice.

If occurring with another mental disorder (e.g., autism or intellectual disability), or during a medical condition (e.g., pregnancy), it is severe enough to warrant independent clinical attention.

Detecting conditions accompanying pica

In the literature, it is recommended to perform full-blood picture and iron studies in all children with pica and treat any nutritional deficiencies identified. It is recommended to check at least urea and electrolytes, liver function tests, calcium, phosphate, magnesium and trace elements in children with growth retardation (1). It is also suggested to examine serum lead levels in mud eaters, parasites in soil eaters and serum mercury levels in paper eaters (12). Abdominal imaging methods will be useful in children with suspected bowel obstruction (1).

MANAGEMENT

Pica can be a problematic disorder to treat and may require thorough assessment to identify the most effective treatment approach. In children, pica management can be achieved with a multidisciplinary approach. It should be acted on together with child psychiatry. Patient and family education are important. If there are nutritional deficiencies such as iron or zinc deficiency, it should be replaced. Treatment approaches are primarily preventive, educational, and directed toward modification of pica behavior. Pharmacological treatment should be rarely applied (1). Pharmacological treatment has been found beneficial in some patients with learning disabilities and attention deficit hyperactivity disorder.

CONCLUSION

Pica is actually common in childhood, often overlooked. It is very important for physicians to inform families about pica and to ask about pica in the anamnesis in revealing the underlying conditions in these children. It is seen that there is a need for studies on this subject in our country.

ETHICAL DECLARATIONS

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REFERENCES

- McNaughten B, Bourke T, Thompson A. Fifteen-minute consultation: the child with pica. *Arch Dis Child Educ Pract Ed* 2017;102:226-9.
- Cardoso, D, Duarte L, Fonseca-Pinto V, Cartaxo T. Pica and attention deficit hyperactivity disorder: is there a link?. *Nascer Crescer-Birth Growth Med J*. 2021;30:12-7.
- Leung AKC, Hon KL. Pica: A Common Condition that is Commonly Missed - An Update Review. *Curr Pediatr Rev*. 2019;15:164-9.
- Osman YM, Wali YA, Osman OM. Craving for ice and iron deficiency anemia: A case series from Oman. *Pediatr Hematol Oncol* 2005;22:127-31.
- O'Brien M. Pica. In: Matson, JL. *Handbook of intellectual disabilities*. Springer, 2019. p. 606-27.
- Hartmann AS, Poulain T, Vogel M, Hiemisch A, Kiess W, Hilbert A. Prevalence of pica and rumination behaviors in German children aged 7-14 and their associations with feeding, eating, and general psychopathology: a population-based study. *Eur Child Adolesc Psychiatry* 2018;27:1499-508.
- Ardehshirian KA, Howarth DA. Esperance pica study. *Aust Fam Physician* 2017;46:243-8.
- Borgna-Pignatti C, Zanella S. Pica as a manifestation of iron deficiency. *Expert Rev Hematol* 2016;9:1075-80.
- Okcuoğlu A, Arcasoy A, Minnich V, et al. Pica in Turkey. 1. The incidence and association with anemia. *Am J Clin Nutr* 1966;19:125-31.
- Cavdar AO, Arcasoy A. Hematologic and biochemical studies of Turkish children with pica. A presumptive explanation for the syndrome of geophagia, iron deficiency anemia, hepatosplenomegaly and hypogonadism. *Clin Pediatr (Phila)* 1972;11:215-23.
- Bay A, Dogan M, Bulan K, Kaba S, Demir N, Öner AF. A study on the effects of pica and iron-deficiency anemia on oxidative stress, antioxidant capacity and trace elements. *Human & Experimental Toxicology* 2013;32:895-903.
- Mishori R, McHale C. Pica: an age-old eating disorder that's often missed. *J Fam Pract* 2014;63:E1-4.
- Hackworth SR, Williams LL. Pica for foam rubber in patients with sickle cell disease. *South Med J* 2003;96:81-3.
- Höger A, Hartmann, AS. Pica. In: Manzato, E., Cuzzolaro, M., Donini, L.M. (eds) *Hidden and Lesser-known Disordered Eating Behaviors in Medical and Psychiatric Conditions*. Springer, 2022, Cham. https://doi.org/10.1007/978-3-030-81174-7_15
- Özsoylu Ş. Clinical picture in hematology. *Turk J Haematol*. 2015;32:89.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington, VA: American Psychiatric Association; 2013.