

# A case of pica in childhood with intellectual disability: focus on non-psychopharmacology management

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## ABSTRACT

Non-psychopharmacology management is crucial in pica in childhood with intellectual disability. This case report shows the effectiveness of pica management centered on behavioral therapy over the use of pharmacotherapy in improving the patient's symptoms. A 7-year-old girl had been eating plastic bags since she was 3. In the last 6 months, this behavior worsened and coupled with emotional and behavioral problems. Her intellectual function showed that she had a moderate intellectual disability, which was confirmed by her intelligence quotient test result. She also had iron deficiency anemia and constipation. Non-psychopharmacological management was delivered to the patient and family. The patient was treated with a reinforcement strategy of behavioral therapy, involving parental education during the process to stimulate desirable behavior, discourage unwanted behavior, and improve parent-child interaction. After six sessions of behavioral therapy and parental psychoeducation, the patient showed improvement as the frequency of eating nonfood substances was decreasing.

**KEYWORDS** behavior, child, pica, therapy

The term pica, derived from the Latin word “pica pica,” which means magpies, is defined as eating nonnutritive, nonfood substances for at least 1 month. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V), the behavior needs to persist for at least 1 month, is inappropriate to the development level, and is not a part of a socially normative or culturally accepted practice.<sup>1</sup> While it has been challenging to identify the epidemiology of pica, the disorder seems to be prevalent in pregnant women and children.<sup>2</sup>

Despite its long history, the etiology of pica has not been clearly defined. The disorder has been linked to iron or zinc deficiency in previous studies, with findings showing low levels of ferritin in patients with pica.<sup>1,3</sup> Several studies have connected pica with psychological factors such as stress, child neglect, and abuse. Pica has also been shown to

correlate with the degree of mental retardation.<sup>1,4</sup> A comprehensive approach to pica management involves nutritional, psychological, pharmacological, and behavioral therapy.<sup>5,6</sup> Through this case report, we emphasize the importance of behavioral therapy in managing patients with pica.

## CASE REPORT

A 7-year-old Javanese girl was admitted to the Child and Adolescent Psychiatry Clinic at Cipto Mangunkusumo Hospital Jakarta in June 2019, because of eating plastic bags that started 4 years prior. At first, when she was caught eating a plastic bag, she would spit it out. However, this behavior worsened since the beginning of 2019, as whenever she was forbidden to eat the plastic bag, she would cry and throw a tantrum. Then, she would secretly search for the plastic bag

and try to reach it even if it was placed in a high or hidden place. Exaggerating her condition, the patient had several medical complications, such as decreased appetite, irregular defecation, constipation, and iron deficiency anemia (IDA). The patient had not received any previous treatment.

Overall, her socio-personal activities were quite similar to her age, despite the lack of cognitive ability. She had a good interaction using appropriate verbal and nonverbal communication. She could also perform daily activities such as taking a bath, eating, and wearing a t-shirt. Nevertheless, her intelligence quotient test score, according to the Wechsler Intelligence Scale for Children, was 44, which is categorized as a moderate intellectual disability.

There was no history of the psychiatric problem in the patient's family. The patient was the younger daughter of two siblings, and her older sister had just graduated from the university. Her father focused on work, whereas her mother helped with the family-owned convenience store and took care of the household. The patient lacked adequate supervision and faced different parenting styles between a strict mother and a permissive father. The patient's attitude toward her mother was docile. On the other hand, the patient's attitude toward her father was demanding. She likes to eat plastic bags, even though it is harmful. Aside from the possibility of a general medical disorder, the attitude of the patient who could not resist her desires also worsened the symptoms as she prioritized her pleasures.

The patient had gone to six sessions of therapy in the Child and Adolescent Psychiatry Clinic. The patient was treated using the reinforcement strategy of behavioral therapy. In the first session, the therapist assessed the antecedents of occurring problem behavior, the problem behavior, and the consequence afterward, which in behavior therapy is known as A-B-C analysis. In this case, the patient tended to search for plastic bags when she was alone and had nothing to do or when there was no one looking after her. Whenever she was found eating a plastic bag, everyone, especially her mother, would become anxious and angry toward her and accompanied her for quite some time. It was the only one-on-one time she got during the day, particularly if the mother was busy working with the household. Even though the parents complained about the patient's other behavior problems, such as a tantrum or disorganized

daily schedule, the parents and therapist agreed to focus on one specific problem behavior to be modified during this session, which was the eating nonfood behavior.

The second session was done by giving psychoeducation to the parents about their behavior toward the patient and the consequences and encouraging parents to modify their reaction toward the condition. The patient would get positive rewards, such as praise, longer playing time, and her favorite food when doing the desired behavior of not eating plastic bags. The third session, which was done in the following week, started by evaluating what has been done by the family: whether the parents implemented and modified their behavior consistently and whether the patient's eating nonfood behavior improved. The parents reported they still had some periods of unsuccessful control of the patient's behavior. It was when they needed to work together to serve their customers in their small store. At other times, the patient could be distracted by other activities such as playing with parents when she began to reach for the plastic bags container. The mother reported that her child enjoyed playing cards, blocks, and dolls with her and seemed to forget about eating plastic bags. During this session, it was agreed to relocate all the plastic bag containers to places unreachable by the patient. Also, the parents were encouraged to practice again the parenting and behavior modification, firmly and consistently, but still maintain a reassuring attitude to the patient. The process in sessions four and five was almost similar to session three. Also, the parents and therapist discussed the obstacles of doing behavior modification and set another strategy to practice in the following week. The therapist also praised and reinforced what has been done consistently by the parents and the good behaviors shown by the patient.

From time to time, the patient's behavior had improved, and after the six therapy sessions, the frequency of plastic bags consumption decreased, albeit sometimes the patient still secretly took a plastic bag and tried to put it in her mouth. However, after several times, she would spit the plastic bags when she put in her mouth without crying or whining anymore. The management provided was based on psychotherapy, particularly on behavioral therapy and parental psychoeducation. No pharmacotherapy was given by the psychiatrist in Child and Adolescent Psychiatry Clinic, as the parents were capable enough

to overcome this behavior. The patient had undergone several intelligence tests and treated by the doctor from Department of Pediatric at the same hospital for the management of the general medical condition, constipation, and IDA.

## DISCUSSION

The patient was diagnosed with pica based on the diagnostic criteria met in the International Classification of Diseases 10th Revision and DSM-V, which are persistent eating of nonnutritive, nonfood substances 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 or culturally supported or socially normative practice; if the eating behavior occurs in the context of another mental disorder (e.g., intellectual disability, autism spectrum disorder, and schizophrenia) or medical condition, it is sufficiently severe to warrant additional clinical attention.<sup>7</sup>

Based on medical terms, pica is a compulsion to consume items that are not typically thought of as food for at least 1 month. Individuals with pica usually have an uncontrollable appetite for nonfood items. This unusual behavior is not a part of the local socio-cultures or certain beliefs. Several terminologies of pica have been explained, for example, acuphagia for eating sharp objects, coprophagia for eating human feces, geophagia for eating dirt, sand, or clay, plumbophagia for eating paint chips or lead, and trichophagia for eating hair. However, some varieties of pica were not formally named yet, for example, eating cigarette ashes, building materials, dead insects, plastic, rubber, or toiletries.<sup>8-11</sup>

Pica is fairly common in children, particularly in individuals with intellectual disabilities or autism.<sup>11</sup> Studies investigating the age distribution of pica are scarce and sporadic, and it varies from 39 months according to an Egyptian prospective study to 10.5 years in a Germanic population-based study.<sup>12,13</sup> Similar to those, this patient had pica since she was 3 years old, and she also has a moderate intellectual disability.

Pica can be caused by a variety of factors, both internal and external, including emotional instability, hormonal disorders, and certain social cultures and beliefs.<sup>11</sup> Up to now, it is still unclear whether the etiology of pica is primarily inherited, secondarily caused by other illnesses, or considered

as a multifactorial phenomenon. In this case, the etiologies of pica were environmental and mental health factors. She had a behavioral problem from 3 years old, which was in the second stage of autonomy versus shame and doubt, according to Erik Erikson's psychosocial development theory.<sup>14</sup> However, since the patient had moderate intellectual disability and showed some delays in the psychosocial and emotional development, she was mentally like a 1.5–2 years old child at the age of 3, which is also in this developmental stage range. At this point, children want to show their autonomy, but at the same time, they are expected to have control over their impulses.<sup>14</sup>

This patient had IDA and constipation. As supported by previous studies, pica was associated with anemia, constipation, and nutritional deficiency.<sup>9,15</sup> The relationship between hemoglobin and pica was stronger in children, pregnant women, and those practicing geophagy.<sup>15</sup> The suggested underlying mechanism of anemia in pica is that pica materials may prevent the absorption and metabolism of micronutrients.<sup>14</sup> However, there is no clear explanation of how pica is associated with constipation. An earlier study found that 10% of pica children were constipated.<sup>16</sup>

Children with pica require health evaluations to identify medical factors that may be contributing to pica behavior and other health risks of pica. These evaluations consist of reviewing gastrointestinal symptom diet, allergies, general feeding habits, location of feeding, and presence of other problematic feeding behaviors such as aerophagia, rumination, disruptive mealtime behavior, and food refusal.<sup>13</sup> The behavioral status examination further takes place to gain information about pica behavior pattern, other mouthing behavior, the presence or absence of impulsivity, disruptive behavior (e.g., tantrums, aggression, and self-injury), and other repetitive or sensory-seeking behaviors.<sup>17</sup>

After the initial evaluation and further tests were conducted, the management procedures should be adjusted to resolve unusual findings. Some literatures mentioned various therapies regarding pica, including nutritional, psychological, pharmacological, and behavioral therapy.<sup>5,6</sup> Behavioral therapy is instrumental in the management of children with pica according to previous studies.<sup>18-20</sup> Several strategies of behavioral interventions were implemented

in this patient. Environmental arrangements and enrichment strategies were implemented by locking cabinets, dismissing any substances that can cause pica, and promoting the child's engagement in daily activities such as getting dressed and reading. Another strategy was teaching alternative skills by throwing pica items away or giving them to an adult. Reinforcement strategies were executed by providing "rewards" for her accomplishment in performing targeted behavior. However, the efficacy of these approaches in children still needs further evaluation as previous studies were conducted among adults.<sup>7,17</sup>

The first step of the reinforcement strategy implemented to our patient was the A-B-C analysis that consisted of investigating antecedents of the occurring behavior problem, the behavior problem, and consequence. This model is the basis of behavior therapy, which highlights the importance of positive reinforcement to maintain good behavior and negative reinforcement to decrease bad behavior.<sup>21</sup> In this patient, we analyzed that the problem behavior (eating nonfood) was firstly due to the patient's low understanding of what she should or should not eat. When she tried to eat plastic bags (problem behavior), her mother panicked and yelled at her (consequence). Subsequently, her father came and asked her to throw up what she ate (consequence). That problem behavior occurred repeatedly every day. We found that those were the moments when her parents gave her intense attention (reinforcement) and that she could rarely get one-on-one attention like the moment when she ate the plastic bag (maintaining consequence).

The second session of the behavior therapy was focused mainly on the parental session, including psychoeducation about their behavior, which maintained the consequences and encouraged them to modify it.<sup>20</sup> Parents were requested to give more attention to the patient during her good condition and more close communication at other times than eating nonfood. Attention is considered as a reward or positive reinforcement to this patient. Once she eats a plastic bag, parents should tell her it was unacceptable, control the nonfood material, and put it in an unreachable place. Right after that, parents should stop giving any further comments and ignore whatever actions she tried to seek parental attention (negative reinforcement). The goal at this stage was

rewarding the good behavior and learning to help the parents and the child shape their behavior to meet the family goal (not eating plastic bags or other nonfood materials). Behavior therapy requires time and effort and a lot of practice day by day by giving structure and consistency. Parenting with this patient needs to be firm and consistent but reassuring. In each following session, the therapist evaluated the child's behavior and parenting function, discussed the obstacles, and supported the parents' consistency. The parents have the greatest influence to shape the child's behavior in this case.

Pharmacological treatments are rarely indicated in children with pica. Hergüner and Hergüner<sup>22</sup> described a case of pica in an 8-year-old boy with attention deficit hyperactivity disorder, which was successfully treated with methylphenidate. A case of pica in an adolescent with autism spectrum disorder showing improvements in behavior after being treated with aripiprazole has also been reported.<sup>23</sup> However, the use of these pharmacological treatments is rare, and in this case, it was not the modality of choice as behavior therapy alone provides a favorable outcome for the patient.

In conclusion, behavior therapy is still a principal therapy in treating children with pica. Therapies focusing on establishing rewards and punishments as well as psychoeducation provided to both the parents and the child are effective in improving the child's behavior.

#### Conflict of Interest

The authors affirm no conflict of interest in this study.

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