Case Report

Successful Treatment in a Child with Feeding Problems and Growth Failure

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A 2-year-9-month-old boy presented with feeding disorder and poor growth. The clinical presentation was compatible with infantile anorexia, one of behavioral feeding disorders. The author proposed that the main cause of poor food acceptance and growth failure in this child was poor appetite. Treatments were composed of behavioral interventions, rescheduling meals and foods enrichment. Alternative managements by prescribing cyproheptadine as an appetite stimulant resulted in significant improvement of feeding behaviors and weight gain.

Keywords: *Anorexia, Child, Cyproheptadine, Eating disorders, Feeding behavior, Feeding and eating disorders of childhood, Growth disorders*

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Feeding problems are common behavioral problems in children. About 25-40% of infants and toddlers' caretakers reported feeding problems with their children[1-4]. A severe problem causes inadequate nutrition producing growth failure, so early diagnosis and interventions are important for preventing disadvantage consequences on child's health, growth and development. The author reported here a toddler with feeding disorder who responded well to treatment strategies of behavioral modification, enriched food and appetite stimulant.

Case Report

A 2-year-9-month-old Thai boy presented with feeding problems and poor growth. He was 2800 grams product of full term pregnancy to a 32-year-old female. The pregnancy, labor, delivery was uncomplicated and there was no perinatal problem. He was started on rice cereal and banana at 5 months of age and was gradually introduced to rice and meat with difficulty. His mother reported that it was hard to feed him and he has accepted a small quantity of foods since birth. He rarely asked for foods. The family history was non-contributory. There was no history of gastrointestinal tract symptoms such as diarrhea or vomiting. His weight was at around 3rd to 15th percentile from birth to 1 year and 8 months old and then decelerated to below 3rd percentile at the age of 2 years and 7 months old. His height was at around 3rd to 15th percentile from birth. His head circumference was normal.

The feeding records revealed that he had no feeding schedule. Recently, he was fed 8 oz of milk when he was hungry, about 4 times a day. He sometimes had 2-3 teaspoons of rice with meat and little dessert per day. The mother felt exhaust and worried about his weight and food intake. From observation, he had 4-5 teaspoons of rice after 4 hours fasting.

On physical examination, he was an alert boy. His weight was 11.1 kilograms (3rd percentile on WHO growth chart) and height was 88.5 centimeters (3-15th percentile on WHO growth chart). There was no dysmorphic feature. Other physical examination was unremarkable. He had normal oro-motor function evaluated by developmental pediatrician.

Initial laboratory evaluation showed normal serum electrolytes, blood urea nitrogen and serum creatinine. The results of complete blood count were hemoglobin 10.6 g/dL, hematocrit 30.2%, MCV 64.5 fL, MCH 22.6 pg, MCHC 35.1 g/dL, normal white blood cell and platelet count. The red blood cell morphology

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was hypochromic and microcytic picture. The serum ferritin was 5 ng/ml.

Progression of disease and treatment

Feeding the child on schedule, 3 meals and 2 snacks per day, was recommended. High-calories solid food was given before milk with no food at least 2 hours before meals, and behavioral intervention was introduced to increase child's food intake. The child was also given 6 mg/kg of iron per day and high-calories formula (30 calories/oz) 8 oz/day. After 28 days, his weight was 11.2 kilograms (3rd percentile). His weight gain was 100 grams with the average of 3.57 grams/day (normal 7-9 grams/day). He had high-calories solid foods 2-3 teaspoons per meal, 1-2 meals per day, 4 bottles of 8 oz of milk and 8 oz of high-calories formula per day. However, he continued refusing to eat. Therefore, the child was given an appetite stimulant, cyproheptadine, 0.25 mg/kg/day, 3 times a day. After taking cyproheptadine in first 28 days, the child gained 700 grams (average of 25 grams per day) and gained 300 grams more (average of 10.7 grams per day) in the 28 days later, which was catch-up growth for his age as shown in Fig. 1. He had rice with meat 15-20 teaspoons per meal, 3 meals per day and 2 snacks. He also had 24 oz of milk and 8 oz of high-calories formula per day. He started trying new kinds of foods easily and asking for rice. The mother gave him high calories diet by adding vegetable oil into food. There was no reported side effect of the medication.

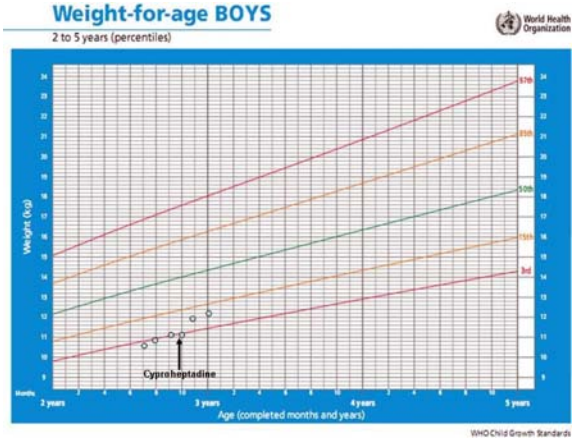

Fig. 1 Growth chart

From: WHO Multicentre Growth Reference Study Group. WHO Child Growth Standards: length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: methods and development. Geneva: World Health Organization, 2006

Discussion

Feeding disorder is a term used to describe the behavior of children who have difficulty in consuming adequate nutrition by mouth, problem during feeding and eating. According to Bernard-Bonnin AC[1], feeding disorders was classified into 3 categories including structural abnormalites, neuro-developmental disabilities and behavioral feeding disorders, depending on etiologies of the problems. The clinical presentation of this child was consistent with infantile anorexia, one of the behavioral feeding disorders, defined by Diagnostic and Statistical Manual of Mental Disorders, 4th edition, text revision (DSM-IV-TR) criteria[5]. Chatoor I defined infantile anorexia as a transactional feeding disorder which is characterized by extreme food refusal, growth deficiency, parental concern and anxiety about child's food intake and parent-child conflict during feeding. The diagnostic criteria were shown in Table 1. In addition, Chatoor I, et al also mentioned that food refusal is related to a lack of appetite caused by intense emotional arousal without associated with maternal deprivation and neglect[6]. Parents with attachment insecurity and the children characteristics of difficulty, irregularity, negativity and dependence will increase and maintain conflict during feeding interaction[6-8]. There is evidence supported that mothers with dysfunctional eating attitudes, anxiety, depression and hostility[9,10] and children with anxiety, depression and aggression may aggravate feeding disorder in children[9].

Management of feeding disorder is composed of treating underlying medical conditions, giving calorie-rich foods to children with growth failure[11] and providing behavioral interventions[12,13] with parent training[14]. The methods to increase caloric intake are concentrated infant formula, adding glucose polymer or vegetable oil into milk and taking high-caloric formula. Solid foods can be fortified with butter, vegetable oil, cream, glucose polymers and powdered milk[12]. The behavioral intervention consists of providing parent the knowledge about basic feeding rules as shown in Table 2 and helping parents to understand the temperament of child by observing child's response to environment.

In addition, Chatoor I, et al[6] recommended the procedures for behavioral management of infantile anorexia by using specific psycho-education intervention. They also provide parent training by addressing of children's temperament characteristics, parental vulnerabilities and conflict during feeding

Table 1. Diagnostic criteria for infantile anorexia[6]

Refuse to have adequate amounts of food for at least one month.
Onset often occurs during the transition to spoon and self-feeding, typically between 6 months and 3 years old.
Does not communicate hunger, lacks interest in food, but shows interest in exploration and/or interaction across caregiver contacts.
Shows sign of growth failure.
Does not follow a traumatic event.
Is not due to a medical illness.

Table 2. Basic feeding rules applicable to children beyond infancy[#]

Schedule
Regular mealtimes
3 meals with 2 snacks per day
Mealtime less than 30 minutes
Nothing offered between meals except water
Environment
Calm and pleasant meal atmosphere
Avoidance of mealtime power struggles
Minimized environmental distraction
Procedures
Offer small portions of foods
Offer solids before liquid
Encourage self-feeding
Wipe the child's mouth and clean after meal is completed
Use two spoons technique
Limit low-calorie beverages

[#] Modified from Bernard-Bonnin AC[1]

interaction. The therapy consists of helping parents to understand and deal with the special temperaments of their children as well as set limits and structure of mealtimes to facilitate internal regulation of eating[6,15]. The recommended treatment is focused on psychophysiology of children and parents for helping children to perceive their hunger sensation. In contrast, the author proposed that the main problem of this toddler is poor appetite which aggravated poor mother-child feeding interaction that led to poor food acceptance and eventually produced growth failure. A lack of appetite was also stated by some researchers that it is one of biological factors that contributed to poor food acceptance[12,13,16] and poor weight gain[17]. The child also had iron deficiency anemia that may affect appetite. However, iron treatment may improve behavior before hematological improvement[18] which occurred after 4 weeks of treatment. In this child, after being given therapeutic dose of iron for a month, the child continued to have poor appetite, feeding problems and poor weight gain. It suggested that poor appetite and poor weight gain of the child was not due to iron deficiency. Therefore, the author prescribed appetite stimulant along with behavioral intervention to increase food acceptance and weight gain. As a result, the feeding behavior and the growth of the child were significantly improved along with better mother-child interaction. Currently, children with infantile anorexia are believed to have transaction feeding problems and the main treatment is behavioral management. However, poor appetite may play a major role in some children; therefore, the author suggests appetite stimulant medication along with behavioral intervention for treatment.

The appetite stimulant, cyproheptadine, is a serotonin and histamine antagonist, with anticholinergic and sedative effects. It is used to treat a variety of allergic diseases[19], migraine prophylaxis[20] and as an appetite stimulant to induce weight gain in many conditions[21-25]. Cyproheptadine increases appetite through anti-serotonergic effect on 5 HT2 receptors in the brain[21]. The main side effect is sedation, but excitation and restlessness may occur. The author chose cyproheptadine due to its effectiveness with minimal acceptable side effects and there were no reported side effects in this child.

Conclusion

Feeding problems are common in infants and toddlers. There are multiple etiologies, including medical, nutritional, behavioral, psychological, and environmental factors. The biological disturbances such as oral-sensorial problem, oral-motor dysfunction and poor appetite in children can cause and aggravate the feeding disorder. Treatments include behavioral modification, enriched food strategies and rescheduling of meals depending on the causes of the problems. An additional alternative treatment, which can be effective in poor appetite children, is an appetite stimulant. However, the appetite stimulant should not be used in all cases of feeding disorders. It is recommended only for poor appetite and poor growth children.

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การรักษาที่ได้ผลในผู้ป่วยเด็กซึ่งมีปัญหาพฤติกรรมการรับประทานและการเจริญเติบโตช้า

บานชื่น เบญจสุวรรณเทพ

รายงานผู้ป่วยเด็กชายไทยอายุ 2 ปี 9 เดือน มาพบแพทย์ด้วยปัญหาพฤติกรรมการรับประทานและการเจริญเติบโตช้า การวินิจฉัยเข้าได้กับภาวะ infantile anorexia ผู้เขียนเสนอว่าปัญหาหลักของผู้ป่วยรายนี้น่าจะเกิดจากมีภาวะความอยากอาหารน้อย ทำให้เกิดปัญหาพฤติกรรมการรับประทานและการเจริญเติบโตช้า ดังนั้นการรักษาในผู้ป่วยรายนี้จึงประกอบด้วย การปรับพฤติกรรม การจัดตารางอาหารใหม่ให้เหมาะสม การให้อาหารที่มีพลังงานสูง และการรักษาเพิ่มเติมโดยการให้ยาเพิ่มความอยากอาหาร คือ cyproheptadine ทำให้ผู้ป่วยมีพฤติกรรมการรับประทานและการเจริญเติบโตดีขึ้นอย่างชัดเจน