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Ileus Presenting with Malnutrition Associated with Anti-diarrheal Drugs in Pediatric Patient: A Case Report

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A B S T R A C T

Ileus is described as a complication after the use of regular anti-diarrheal agents, such as loperamide. In children, loperamide is not recommended as a regular treatment for acute diarrhea. This case report aimed to elaborate on the cases of Ileus as a side effect of anti-diarrheal drug use in children and to signify parents' education role in cases of malnutrition. In this study, a-7-year old boy came with symptoms of increasingly severe abdominal pain, distended abdomen, and difficulty defecating in the last 3 days after consumption of anti-diarrheal drugs by his parents within 6 months. The patient has a poor history of food consumption. Clinical investigations revealed anemia, leukocytosis, underweight, short stature, and local ileus. He was diagnosed with Ileus and malnutrition and treated with fluid therapy, antibiotics, and blood transfusion and was consulted by a pediatric surgeon. In conclusion, the use of anti-diarrheal agents should be avoided in connection with their safety for children and the complications that can arise. Parental knowledge plays an important role in preventing malnutrition in children.

1. Introduction

World Health Organization and the American Academy of Pediatrics are concerned about anti-diarrheal drug use in young children because of their efficacy and safety.[1] In young children with acute diarrhoea. There is no place for medicinal treatment, and certainly not with antimotility drugs such as loperamide.[2] In fact, some of them are not only useless but may also be harmful.[3] Study shows that serious adverse events, defined as Ileus, lethargy, or death, were reported in eight out of 927 children allocated to loperamide.[1] Ileus, a condition accompanied by abdominal distension and hyperactive, sluggish, or absent bowel sounds and radiologic evidence of multiple gas-fluid levels in the abdomen, is described as a complication after the use of regular anti-diarrheal agents such as hydrochloride (loperamide). Ileus is a potentially life-threatening condition that needs immediate investigation and intervention.[4,5]

Malnutrition is one of the leading causes of childhood mortality worldwide and worsens children with acute diarrhea.[6] The United Nations Children's Fund (UNICEF) stated that around 2 million Indonesian children suffer from malnutrition.[7] Both maternal and paternal education are strong determinants of child stunting in families in Indonesia.[8] Educated parents are more likely to employ better child-care practices as compared to uneducated parents.[9] This case report aims to describe cases of Ileus as a side effect of anti-diarrheal

drug use in children and to signify parents' education role in cases of malnutrition.

2. Case Presentation

A 7-year-old boy came with symptoms of increasingly severe abdominal pain accompanied by a distended abdomen and difficulty defecating in the last 3 days. The patient needs to strain hard until screaming in pain. The abdominal pain has actually been felt in the previous 6 months, but it comes and goes. In the last 6 months, there were also disturbances in defecation, such as an increased frequency per day of around 6 to 7 times with a small amount of stool. The patient's parents did not take the patient to the health facility because, according to them, the patient was still in good condition and had normal activities as usual. The patient's parents decided to provide self-medication such as anti-diarrhea drugs with various brands such as loperamide and activated carbon. The frequency of giving anti-diarrheal drugs is 1 to 2 tablets per week. In the last 3 days, the frequency of administration of anti-diarrheal drugs has increased by 1-2 tablets per day.

From the alloanamnesis, it was found that the patient has not been given exclusive breastfeeding. The patient was given bananas from 3 until 5 months of age. The patient was not given formula milk nor UHT consumption, but only sweetened condensed milk from the age of 3 years. The patient's parents thought that sweetened condensed milk had the same function and composition as other milk. Since childhood, the patient was mostly taken care of by his father, who was a motorcycle taxi driver. The patient's mother spends more time outside doing odd jobs, so she does not have time to pay attention to the nutrition the patient receives. According to the patient's father, his son had difficulty consuming food, rarely ate rice, and was mostly given foods such as snacks and sweetened condensed milk. The patient's parents were educated up to junior high school.

From physical examination obtained, vital signs; pulse rate 155 times per minute, blood pressure 90/60 mmHg, respiratory rate 36 times per minute and temperature 38.7°C, 108 cm tall and weighed 15 kgs. The patient looked pale and weak, and both his conjunctiva were anemic, accompanied by tenderness in the right upper quadrant of the abdomen. Laboratory examination revealed a low haemoglobin count of 5.4 g/dl, leukocytosis with a WBC level of 19.200 uL, low haematocrit level of 22.3%, low erythrocytes count of 3.870.000 µL and elevated platelets count of 973.000 µL.

The patient was referred to the hospital for further treatment. At the hospital, the patient was given 1.250 cc of KAEN 3B per day, 1.5 gram IV ceftriaxone, 150 mg paracetamol injection every 8 hours, and 200 cc PRC transfusions twice in 4 hours with an interval of 12 hours. Patients were fasted and paired with a nasogastric tube to decompensate the stomach and intestines and also by providing nutrition as needed; 1700 calories of energy, 63 grams of protein, 47 grams of fat, and 255 grams of carbohydrates. Patients are advised to do a BNO 3 position examination.

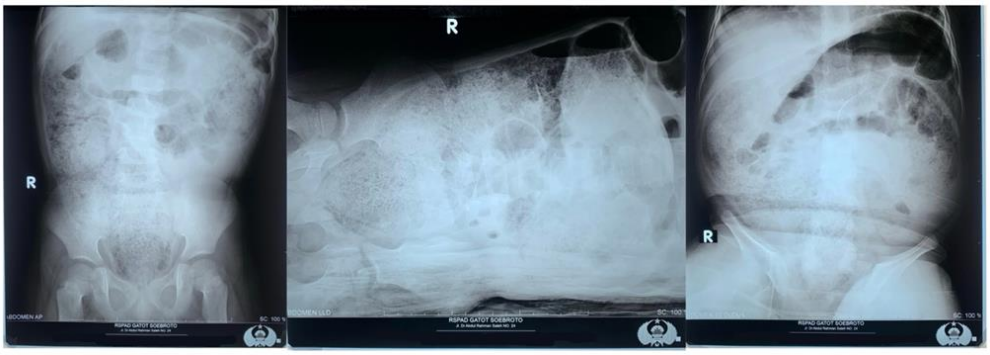

Figure 1. Imaging BNO 3 position shows localized ileus in the upper to mid-abdomen and excess fecal material in the right and left abdominal intestines.

The patient was consulted by a pediatric surgeon and given a laxative agent. The patient experienced an increasing frequency of defecation afterward, but overall there was a clinical improvement. Laboratory examination follow-up showed haemoglobin count of 12.2 g/dl, decreasing leukocyte count with a WBC level of 16.350 uL, haematocrit level of 40%, erythrocytes count of 5.900.000 uL and elevated platelets count of 626.000 uL.

The diagnosis of Ileus and malnutrition was made. After there was an improvement in the condition within 5 days of treatment, defecation normalized, and the abdomen was not distended anymore. The patient was discharged and advised to return to the pediatrician to monitor the development of the condition and nutritional status.

3. Discussion

Abdominal pain is one of the most common complaints in childhood. Although most of these complaints arise from self-limiting conditions, abdominal pain might herald a surgical or medical emergency. Acute abdomen may not be easily diagnosed in young children based on these clinical presentations because of their poor ability to express themselves. Local Ileus were the two most common findings on plain radiographs in children with acute abdomen.[10] In this case, the patient felt abdominal pain after his parents gave him anti-diarrhea drugs frequently. In fact, the administration of anti-diarrhea drugs is not included in the treatment of diarrhea in children. Management of diarrhea is otherwise usually supportive and non-pharmacologic.[11] Replacing fluid losses and avoiding dehydration are the primary aims of diarrheal management.[12] Anti-diarrheal (i.e., activated charcoal) and antimotility agents (i.e., loperamide) are contraindicated in the treatment of acute gastroenteritis in children because of their lack of benefit and increased risk of side effects, including Ileus, drowsiness, and nausea.[13] Although activated charcoal has been used empirically as an anti-diarrhoeal for many years, there is no clinical evidence that it shortens the duration of diarrhoea, or that it reduces the number or volume of stools.[14] There is no evidence of a practical benefit from using this drug for the routine treatment of acute diarrhea in children.[14] Loperamide is indicated for the symptomatic treatment of acute diarrhoea in adults and children over 12 years of age and for the symptomatic treatment of chronic diarrhea in adults. In malnourished children, loperamide use for diarrhea treatment has adverse events that outweigh the benefits. However, loperamide is widely used in adult patients and has shown some efficacy in paediatric studies. Its use in children has been discouraged by the WHO and the American Academy of Pediatrics due to concerns over its efficacy and safety in young children.[15] Abdominal distension and potentially fatal paralytic ileus have been reported in infants and young children treated with loperamide. Loperamide has no place in the routine management of diarrhoea in children, and there is thus no rationale for the production and sale of liquid or syrup formulations for paediatric use.[14]

Ileus is a neuroimmune interaction that consists of two phases: the early neurogenic phase and the inflammatory phase. The patient will present with abdominal distension and bloating that is often a slow onset as opposed to the sudden onset usually seen with mechanical bowel obstruction. Pain is usually diffuse and persistent without peritoneal signs. Plain abdominal films are usually the first diagnostic imaging obtained.[16] A localized ileus consists of a localized loop (sentinel loop) of the dilated small bowel. Radiologically, there are one or two loops of the small or large bowel, with often air-fluid levels in the sentinel loops.[17]

In this case, it is quite difficult to probe the patient's nutritional history due to the lack of knowledge and attention of the parents toward the patient. Parents' education status is one of the most important determinants of malnutrition.[9] Study shows that children of uneducated mothers are at risk of

stunting, they often need primary care for the first 6 years of life from the mothers/caregivers, and the quality of care given by the mothers/caregivers depends largely on the mothers' knowledge of basic health care practices and nutrition. Education can affect the child's health as well through the direct transfer of health information from one generation to another, through the ability to promptly detect illness and treatment administered, and through educated mothers who tend to be more receptive to orthodox medication than uneducated mothers. The above links have been established because educated women are more likely to marry men with higher income, live in a better neighbourhood, and get higher-paid jobs which directly or indirectly influence child survival and health. In developing countries, women have been recognized for playing dual roles as primary caregivers to their children and generators of household income. The more women participate in the labour workforce, the less attention they pay to household responsibilities, especially as they relate to the welfare of children, thereby placing younger children at risk of malnutrition. Children's nutrition and health status can be negatively affected by their mothers' occupations outside child rearing. This is so because time constraints may prevent working-class mothers from providing the needed care to their children. Parent education is also a strong determinant of children's nutritional status. That means that the higher educational status of parents is associated with better child-rearing and care practices. Children whose parents are educated up to the tertiary level are more likely to have a nutritious diet irrespective.[18]

Sweetened condensed milk consumed by patients from the age of three plays an important role in the patient's growth. The patient's parents thought that when the patient did not want to eat, the composition of the sweetened condensed milk would meet the patient's nutritional needs. As a common dairy product, sweetened condensed milk (SCM) is consumed by a variety of people of different ages and can be found easily in many parts of the world, including Indonesia. SCM is one of the very few dairy products that has been commonly consumed by the Indonesian population over the past few decades. However, because of its high content of sugar used as the preservative (estimated close to 50% of the total calories, although the exact amount is usually unspecified), ideally, SCM should not be given to young children as either breast milk or formula milk substitutes.[19] The product that has been known by the public as Sweetened Condensed Milk (SCM), it turns out, cannot be called milk. The BPOM instructed that sweetened condensed milk not be marketed as other types of milk, such as fresh milk, pasteurized milk, sterilized milk, formula milk, and fortified milk. It stated that sweetened condensed milk should not project images of children under five years old, images of fresh milk, and images of milk in a glass.[20] Sweetened condensed contain high sugar, which has a negative impact on children's health in low socioeconomic families, the sweetened condensed consumption can decrease food intake because they assume that food contains high nutrition. Various reasons for parents, especially in rural areas in giving sweetened condensed are based on other facts found in the community, especially in rural areas, parents still provide sweetened condensed creamer as a milk drink for their toddlers for various reasons including that sweetened condensed is indeed milk, as they know from TV ads and their parents. Sweetened condensed creamer is not the only variable that affects underweight children under age five. The causes of being underweight are directly related to inadequate dietary intake as well as disease. The low intake of food in the first 1000 days of a baby's life, starting from exclusive breastfeeding and continuing by feeding complementary feeding until the age of two years, is a major cause of being underweight in children, both in children who live in rural and urban areas.[19]

4. Conclusion

The use of anti-diarrheal agents should be avoided in connection with their safety for children and the

complications that can arise. Parental knowledge plays an important role in preventing malnutrition in children.

5. References

1. Li STT, Grossman DC, Cummings P. Loperamide therapy for acute diarrhea in children: systematic review and meta-analysis. PLoS Med. 2007; 4(3): e98.
2. Dudink J, Mearin LM, Sukhai RN. [Ileus after the use of loperamide in a child with acute diarrhea]. Ned Tijdschr Geneeskd. 2003; 147(14): 670–2.
3. Bhattacharya SK. Therapeutic methods for diarrhea in children. World J Gastroenterol. 2000; 6(4): 497–500.
4. Chisti MJ, Shahid AS, Shahunja KM, Bardhan PK, Faruque ASG, et al. Ileus in children presenting with diarrhea and severe acute malnutrition: A chart review. PLoS Negl Trop Dis. 2017; 11(5): e0005603.
5. Bultman WA, de Vries A. Gastro-enteritis and Ileus in two children in Suriname: the multiple effects of Guava leaves. Infectious Diseases and Tropical Medicine. 2018; 4(2): e468.
6. Müller O, Krawinkel M. Malnutrition and health in developing countries. CMAJ. 2005; 173(3): 279–86.
7. Fadilah C, Romadona NF. The causes of malnutrition in Indonesia a literature study. Proceedings of the 6th International Conference of Early Childhood Education (ICECE-6 2021). 2022; 668: 153–9.
8. Semba RD, de Pee S, Sun K, Sari M, Akhter N, Bloem MW. Effect of parental formal education on risk of child stunting in Indonesia and Bangladesh: a cross-sectional study. The Lancet. 2008; 371(9609): 322–8.
9. Khattak UK, Iqbal SP, Ghazanfar H. The role of parents' literacy in malnutrition of children under the age of five years in a semi-urban community of Pakistan: A Case-Control Study. Cureus. 2017; 9(6): e1316.
10. Tseng YC, Lee MS, Chang YJ, Wu HP. Acute abdomen in pediatric patients admitted to the pediatric emergency department. Pediatr Neonatol. 2008; 49(4): 126–34.
11. Cooke ML. Causes and management of diarrhoea in children in a clinical setting: invited communication. South African Journal of Clinical Nutrition. 2010; 23(sup-1): 42–6.
12. Guarino A, lo Vecchio A, Dias JA, Berkley JA, Boey C, et al. Universal Recommendations for the Management of Acute Diarrhea in Nonmalnourished Children. J Pediatr Gastroenterol Nutr. 2018; 67(5): 586–93.
13. Levine AC, Nguyen H, Santucci KA. Pediatric gastroenteritis in emergency medicine medication. Medscape. 2019 https://emedicine.medscape.com/article/801948-medication (date last accessed: Jan 6th, 2023)
14. Organization WH. The rational use of drugs in the management of acute diarrhoea in children. Geneva PP - Geneva: World Health Organization; Available from: https://apps.who.int/iris/handle/10665/39769
15. Faure C. Role of antidiarrhoeal drugs as adjunctive therapies for acute diarrhoea in children. Int J Pediatr. 2013; 2013: 612403.
16. Beach EC, Orlando De Jesus. Ileus. StatPearls. 2022.
17. Weledji EP. Perspectives on paralytic ileus. Acute Medicine & Surgery. 2020; 7(1): 1–5.
18. Kalu RE, Etim KD. Factors associated with malnutrition among underfive children in developing countries: A review. Global Journal of Pure and Applied Sciences. 2018; 24(1): 69.
19. Juffrie M, Sartika RAD, Sparringa RA, Wibowo L, Lukito W. Consumption patterns of sweetened condensed milk in the diet of young

Indonesian children and its potential nutritional health consequences. Asia Pac J Clin Nutr. 2020; 29(1): 16–26.

20. Permatasari TAE, Chadirin Y. Sweetened condensed consumption of more than 1 glass per day has an impact on underweight among children under age five. Advances in Health Sciences Research. Atlantis Press. 2020; 22(ISHR 2019): 615–9.