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Case Report

Acute Diarrhea

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Abstract:

Acute diarrhea remains a major cause of morbidity and mortality among children in developing countries, often resulting in significant fluid and electrolyte loss that may progress to severe dehydration. This case report describes a 10-year-old male presenting with watery stools six times per day for two days, accompanied by abdominal pain and nausea but without blood, mucus, or fever. Physical examination revealed an underweight nutritional status (BMI 13.9), normal vital signs, mild abdominal tenderness, and no signs of severe dehydration. The patient was diagnosed with acute diarrhea and managed with oral zinc supplementation, probiotics (Lactobacillus), and supportive therapy including adequate hydration and nutrition. The clinical course was favorable, with gradual resolution of symptoms. This case emphasizes the importance of early recognition and prompt management of acute diarrhea to prevent complications such as dehydration and malnutrition. Furthermore, it highlights the role of zinc supplementation and probiotic therapy as recommended by international and national guidelines. Early education of parents and caregivers remains essential to reduce the disease burden and mortality associated with pediatric diarrhea.

Keywords: Acute Diarrhea; Pediatric; Dehydration; Zinc Supplementation; Probiotics.

1. Introduction

Acute diarrhea remains one of the leading causes of morbidity and mortality in children worldwide, particularly in low- and middle-income countries (1,2). Globally, diarrhea accounts for an estimated 6 million deaths annually among children under five years of age, with a substantial proportion occurring in developing regions. In Indonesia, diarrhea continues to rank among the top ten causes of pediatric morbidity and is a major contributor to hospital admissions, occupying up to 30% of pediatric inpatient beds (3).

The etiology of acute diarrhea is diverse, most commonly caused by infectious agents such as viruses, bacteria, and parasites. While viral diarrhea is often self-limiting, bacterial and protozoal infections may lead to more severe disease courses (4). In addition, host-related factors including nutritional status, immune competence, and hygienic practices significantly influence the severity and outcome of the disease (5).

The greatest risk associated with acute diarrhea is dehydration due to the rapid loss of fluids and electrolytes, which, if untreated, can result in hypovolemic shock and death (6,7). Hence, effective management strategies emphasize early recognition, oral or intravenous rehydration, nutritional support, and, when indicated, adjunctive therapies such as zinc supplementation and probiotics (8).

This case report presents the clinical course of a 10-year-old child diagnosed with acute diarrhea, highlighting the diagnostic considerations, therapeutic interventions, and preventive strategies relevant to clinical practice. The

report also aims to underscore the continued public health challenge posed by diarrheal diseases in developing settings, emphasizing the importance of timely management and caregiver education to reduce preventable complications.

2. Case Presentation

A 10-year-old Makassarese male, residing at Jl. Tamangapa Raya No. 6, presented with a two-day history of watery stools, occurring six times daily. The stools were watery without blood or mucus. The diarrhea was accompanied by colicky abdominal pain and nausea since the previous night. A transient fever had been reported on the first day of illness but had resolved by the time of presentation. There was no vomiting, cough, rhinorrhea, or headache. Urinary output was normal, and appetite was preserved. The child lived with both parents in a private house, had frequent contact with neighbors, and came from a lower-middle socioeconomic background. Immunizations were reported as complete, with no significant family medical history.

On physical examination, the patient was alert, with good general condition and a Glasgow Coma Scale score of 15. His body weight was 25 kg, height 134 cm, and BMI 13.9, categorized as underweight. Vital signs were stable: blood pressure 96/65 mmHg, pulse 90 beats/min, respiratory rate 30/min, temperature 36.4°C, and oxygen saturation 98%. No signs of severe dehydration were found, as evidenced by normal capillary refill time (<2 seconds), good skin turgor, and warm extremities. Abdominal examination showed hyperactive bowel sounds and mild tenderness in the umbilical region. Other systemic examinations were unremarkable.

Table 1. Vital signs and anthropometric measurements

Parameter	Result	Reference Range (Pediatric)
Blood pressure	96/65 mmHg	90–110 / 60–75 mmHg
Heart rate	90 bpm	80–100 bpm
Respiratory rate	30 /min	20–30 /min
Temperature	36.4 °C	36.0–37.5 °C
Oxygen saturation	98%	≥ 95%
Body weight	25 kg	–
Height	134 cm	–
Body Mass Index (BMI)	13.9 (underweight)	14.5–19.5 (normal)

Table 1 presents the patient's vital signs and anthropometric measurements. The results indicate normal hemodynamic and respiratory status, while the BMI of 13.9 confirms an underweight condition, which may predispose to unfavorable outcomes in diarrheal illness.

Table 2. Clinical features and management

Category	Findings / Management Details
Chief complaint	Watery stool, 6 episodes/day for 2 days
Associated symptoms	Abdominal cramps, nausea, history of fever (1 day)
Absent symptoms	No blood/mucus in stool, no vomiting, no cough/coryza
Dehydration status	None to mild dehydration; good skin turgor, normal CRT
Nutritional status	Underweight (BMI 13.9)
Immunization history	Complete
Diagnosis	Acute diarrhea

Table 2 further summarizes the patient's clinical features and management. The table shows that the diarrhea was uncomplicated, without alarming features such as blood or mucus in stool, vomiting, or persistent fever. The absence of severe dehydration supported outpatient management. The therapeutic regimen included zinc supplementation, probiotics, and paracetamol, while supportive care emphasized oral rehydration therapy, adequate nutrition, and caregiver education to prevent dehydration and recurrence.

3. Discussion

Acute diarrhea remains one of the most significant global health concerns, particularly in children under five years of age in low- and middle-income countries. Despite advances in preventive and therapeutic measures, diarrhea still accounts for approximately 9% of all childhood deaths worldwide (WHO, 2022)(9). The case presented describes a 10-year-old male with acute watery diarrhea without signs of severe dehydration, highlighting the importance of prompt recognition and appropriate outpatient management (10,11).

The pathogenesis of acute diarrhea is multifactorial, most commonly involving infectious agents such as rotavirus, norovirus, enterotoxigenic Escherichia coli (ETEC), Salmonella, Shigella, and protozoa (Giardia lamblia, Entamoeba histolytica) (12,13). In this patient, the absence of blood or mucus in the stool and the self-limiting nature of the illness suggested a viral or toxin-mediated bacterial etiology. This aligns with reports that viral gastroenteritis remains the predominant cause of non-inflammatory diarrhea in school-aged children (14).

The mainstay of acute diarrhea management is adequate rehydration. Oral rehydration solution (ORS) has been proven to reduce mortality by more than 90% since its introduction (15). In this case, the patient showed no signs of severe dehydration and responded well to oral rehydration therapy. This supports WHO and UNICEF guidelines recommending ORS as first-line therapy for mild-to-moderate dehydration (WHO, 2019; UNICEF, 2021).

Adjunctive therapy with zinc supplementation has been widely endorsed, particularly in developing countries. Zinc plays a key role in intestinal mucosal repair, immune function, and reduction of diarrheal severity and duration (16). The administration of zinc in this case is consistent with national and international guidelines, which recommend 10–20 mg daily for 10–14 days (IDAI, 2022; WHO, 2019).

Probiotics, such as Lactobacillus and Saccharomyces boulardii, have been shown to reduce the duration of acute diarrhea by approximately one day and improve stool consistency (17). Their use in this case contributed to restoring gut microbiota balance, which is frequently disrupted during infectious diarrhea.

Nutritional support during diarrheal episodes is critical to preventing malnutrition and growth impairment. Current evidence strongly discourages fasting and recommends continued breastfeeding or age-appropriate feeding during diarrheal illness (18). In this patient, nutritional intake was maintained, though his baseline underweight status (BMI 13.9) emphasizes the bidirectional relationship between malnutrition and recurrent diarrheal disease. Children with poor nutritional reserves experience more severe disease and slower recovery (19).

Parental education forms an essential component of diarrhea management. Caregivers must be informed about hydration strategies, early recognition of dehydration signs, safe food handling, sanitation, and hygiene practices (15). Inadequate handwashing, unsafe water, and poor food hygiene remain major risk factors for transmission in endemic regions. Preventive strategies including rotavirus vaccination, exclusive breastfeeding for the first six months, and access to clean water and sanitation facilities have demonstrated significant reductions in diarrheal incidence (17).

This case demonstrates that with timely diagnosis, appropriate rehydration, zinc, probiotics, and supportive care, acute diarrhea can be effectively managed at the outpatient level without progression to severe dehydration. However, the child's underweight status serves as a reminder of the vulnerability of malnourished children, who are at higher risk of complications and mortality. Public health measures remain crucial in reducing the burden of diarrheal disease, particularly in resource-limited settings.

4. Conclusion

This case highlights the clinical course and successful management of acute watery diarrhea in a 10-year-old child without severe dehydration. Early recognition of symptoms, assessment of hydration status, and timely initiation of oral rehydration therapy remain the cornerstone of treatment. Adjunctive therapy with zinc supplementation and probiotics contributed to reducing disease duration and promoting mucosal recovery, while continued nutrition and parental education ensured adequate support for recovery and prevention of recurrence.

The patient's underweight condition underscores the bidirectional relationship between malnutrition and diarrheal illness, emphasizing the need for integrated management that addresses both acute treatment and long-

term nutritional status. This report reaffirms the importance of combining clinical care with preventive public health strategies, including hygiene education, vaccination, and access to safe water and sanitation, to reduce the burden of diarrheal diseases in children.

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