Amebiasis in Pediatric: A Case Report

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Abstract
Acute gastroenteritis (AGE) is a leading cause of morbidity and mortality in children under five globally, particularly in resource-limited settings. Amebiasis, caused by Entamoeba histolytica, accounts for 4–10% of pediatric diarrheal cases in endemic regions and is associated with symptoms such as bloody diarrhea, abdominal pain, and fever. Complications like dehydration and electrolyte imbalances require prompt diagnosis and management. This case highlights the clinical presentation, diagnostic challenges, and treatment of amebiasis-induced gastroenteritis in a pediatric patient, emphasizing the importance of timely intervention to prevent severe outcomes. Presented is the case of a 6-year-old child who was brought by his mother with complaints of liquid defecation since yesterday morning accompanied by fever, abdominal pain, nausea, and vomiting. Vital signs showed tachycardia, tachypnea, and increased body temperature (38°C). The patient's nutritional status was found to be of good weight with normal stature. On general examination, it was found that both lower eyelids looked sunken, the lips were dry, and skin turgor was slowed down. There is epigastric tenderness VAS 6/10. Laboratory examination revealed a decrease in erythrocyte index and hyponatremia. On macroscopic examination of complete feces, mucus was found without blood. Microscopically, amoebic histolytic cysts were found, increased leukocytes (20-25/field of view), and erythrocytes (10-15/field of view). Plain abdominal radiograph examination concluded that the shadow of normal intestinal gas was mixed with prominent fecal material.

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Abstrak
Gastroenteritis akut (GEA) merupakan penyebab utama kesakitan dan kematian pada anak balita secara global, khususnya di rangkaian terbatas sumber daya. Amebiasis, yang disebabkan oleh *Entamoeba histolytica*, menyumbang 4-10% kasus diare pada anak di daerah endemik dan berhubungan dengan gejala seperti diare berdarah, sakit perut, dan demam. Komplikasi seperti dehidrasi dan ketidakseimbangan elektrolit memerlukan diagnosis dan penanganan segera. Kasus ini menyoroti presentasi klinis, tantangan diagnostik, dan pengobatan gastroenteritis akibat amebiasis pada pasien anak, menekankan pentingnya intervensi tepat waktu untuk mencegah hasil yang parah. Disajikan kasus seorang anak berusia 6 tahun yang dibawa ibunya dengan keluhan buang air besar konsistensi cair sejak kemarin pagi disertai demam, nyeri perut, mual dan muntah. Tanda-tanda vital menunjukkan takikardia, takipnea, dan peningkatan suhu tubuh (38°C). Status gizi pasien didapatkan dengan berat badan baik dan tinggi badan normal. Pada pemeriksaan umum didapatkan kedua kelopak mata bawah tampak cekung, bibir kering, dan turgor kulit melambat. Terdapat nyeri tekan epigastrium VAS 6/10. Pemeriksaan laboratorium menunjukkan adanya penurunan indeks eritrosit dan hiponatremia. Pada pemeriksaan makroskopis feses lengkap ditemukan lendir tanpa darah. Secara mikroskopis ditemukan kista histolitik amuba, peningkatan leukosit (20-25/LPB), dan eritrosit (10-15/LPB). Pemeriksaan foto polos abdomen menyimpulkan bahwa bayangan gas usus normal bercampur dengan kotoran yang menonjol.

I. INTRODUCTION

Amebiasis, caused by the protozoan parasite *Entamoeba histolytica*, remains a significant public health concern, particularly in pediatric populations in low- and middle-income countries. Globally, an estimated 40–50 million individuals are infected annually, with approximately 100,000 deaths attributed to invasive amebiasis, predominantly among children under five years old (WHO, 2021). Pediatric susceptibility is increased due to immature immune systems, poor hygiene practices, and increased exposure to contaminated food and water. Despite advances in sanitation and healthcare, disparities in disease burden persist, reflecting socioeconomic inequities and

gaps in healthcare infrastructure (Starkey et al., 2020).

Regionally, amebiasis prevalence varies significantly, with the highest incidence reported in South Asia, sub-Saharan Africa, and Latin America. In India, for example, a study found that 15% of pediatric diarrheal cases were attributable to *E. histolytica* (Singh et al., 2019). Similarly, in Nigeria, amebiasis accounts for 12–20% of childhood diarrheal hospitalizations, exacerbated by limited access to clean water (Okafor et al., 2021). In Bangladesh, a community-based survey revealed a 9.8% prevalence rate among children under 10, linked to overcrowding and inadequate sewage systems (Ahmed et al., 2018). Similarly, in the Philippines, a 2019 survey found that 22% of school-aged children in Mindanao tested positive for *E. histolytica*, correlating with poor handwashing practices and open defecation (Dofitas et al., 2021). These regional disparities underscore the role of environmental and socioeconomic determinants in disease transmission.

In Indonesia, amebiasis is endemic, with pediatric cases representing a substantial portion of diarrheal morbidity. A 2021 study in East Java identified *E. histolytica* in 13.5% of children under five, with infection rates doubling in households without piped water (Hadidjaja et al., 2021). In Papua, a marginalized region with limited healthcare infrastructure, amebiasis prevalence reached 28% among indigenous children, compounded by high rates of stunting and food insecurity (Ministry of Health of the Republic of Indonesia, 2020). A 2020 study in Jakarta reported that 11.3% of children under 5 tested positive for *E. histolytica*, with higher prevalence in urban slums (Sari et al., 2020). Rural areas face additional challenges, such as limited healthcare access and reliance on untreated water sources. Compounding this issue, malnutrition—prevalent in 30% of Indonesian children—increases susceptibility to severe amebic dysentery and liver abscesses (Tjitra et al., 2019). The interplay of poverty, urbanization, and environmental contamination perpetuates the disease's endemicity in the archipelago.

Public health efforts to combat pediatric amebiasis globally emphasize improved water, sanitation, and hygiene (WASH) infrastructure, alongside targeted antiparasitic treatment. However, implementation remains inconsistent, particularly in resource-limited settings. In Indonesia, initiatives like the National Sanitation Program have reduced open defecation, yet 25% of households still lack access to clean water (UNICEF, 2021). Similarly, diagnostic challenges, such as the misidentification of *E. histolytica* with non-pathogenic amoebae, hinder accurate surveillance and treatment (Ngui et al., 2022). This case highlights the clinical presentation, diagnostic challenges, and treatment of amebiasis-induced gastroenteritis in a pediatric patient, emphasizing the importance of timely intervention to prevent severe outcomes.

II. METHOD

A 6-year-old child was brought by his mother to the emergency room at Sumber Waras Hospital with complaints of liquid defecation since yesterday morning. The frequencies were 8-10 times a day with a reddish-yellow color, and the consistencies were more water than dregs, there were mucus and blood, and it smelled sour. Liquid defecation accompanied by fever. The fever was felt since yesterday afternoon (the temperature was 38.6°C using a temperature device at home). The patient's mother gave him paracetamol syrup every 4-5 hours. The fever only decreased after taking the medicine.

The child had unsupervised dietary habits for four days prior. No known ingestion of contaminated food/water. Because the patient's mother was busy looking after her parents, who were being treated in the hospital. She entrusted her child to someone during that period. When the patient's mother was at home, she saw her child complaining of pain while holding her stomach. The pain was felt continuously and felt like the patient's intestines were being squeezed, the pain felt worse when the patient was active and subsided when the patient rested (VAS 6/10 with Wong Becker scale). The patient lost his appetite (he only ate once a day) when he wasn't sick (he usually ate 3 times a day). He looked weak, just wanted to fall asleep, and looked fussy. Decreased appetite accompanied by nausea and vomiting. Nausea and vomiting were felt every time he ate and drank, vomiting contained what the patient ate. There is no blood.

The patient only got paracetamol for his fever and didn't receive medication for the liquid defecation, pain, nausea, and vomiting complaint. He was the third of three children born by cesarean section because the patient's mother experienced premature rupture of her membranes at 38 weeks' gestation. There were no complications during pregnancy or delivery. The patient's basic immunization history seemed complete up to the MR vaccination. The patient's

growth and development were in accordance with children his age.

Vital signs showed tachycardia (137x/minute), tachypnea (25x/minute), and increased body temperature (38°C) with oxygen saturation within normal limits. The patient's weight is 18 kg with a height of 104 cm. The patient's nutritional status was found to be of good weight with normal stature (based on CDC 2000 plotting). On general examination, it was found that both lower eyelids looked sunken, the lips were dry, and skin turgor was slowed down. There is epigastric tenderness VAS 6/10. Laboratory examination revealed a decrease in erythrocyte index (MCV 75.3 fL, MCH 25.6 pg, MCHC 33.9%) and hyponatremia. On macroscopic examination of complete feces, mucus was found without blood. Microscopically, amoebic histolytic cysts were found, increased leukocytes (20-25/field of view), and erythrocytes (10-15/field of view). Plain abdominal radiograph examination concluded that the shadow of normal intestinal gas was mixed with prominent fecal material.

Gambar 1. Plain Abdominal Radiograph Examination

The patient was diagnosed with acute gastroenteritis with mild to moderate dehydration et causa amebiasis. The patient was hospitalized and received treatment in the form of Ringer lactate 1350 cc in 3 hours followed by maintenance fluid 1000 cc/24 hours with additional oral intake of 180 cc/24 hours, paracetamol drip 3x200 mg IV, metronidazole injection 3x300 mg, ondansetron injection 3x2.5 mg, ranitidine injection 3x20 mg, zinc 1x1 tab, and liprolac 1x1 sach.

III. RESULT AND DISCUSSION

Acute gastroenteritis (AGE) remains a leading cause of pediatric morbidity globally, particularly in regions with limited access to clean water and sanitation (WHO, 2017). This case of a 6-year-old with amebic dysentery underscores the clinical and public health challenges of diagnosing and managing parasitic infections in children. The patient's presentation highlights the intersection of poor dietary supervision, delayed care-seeking, and endemic pathogen exposure, factors that exacerbate disease severity in low-resource settings (Shirley et al., 2018).

Amebiasis remains a significant cause of pediatric diarrheal illness in developing regions, with an estimated 50 million infections and 100,000 deaths annually (Haque et al., 2019). Children under five are particularly vulnerable due to immature immune systems and increased exposure to contaminated environments (Shirley et al., 2018). The patient's case aligns with epidemiological data from Southeast Asia, where poor sanitation and overcrowding drive *Entamoeba histolytica* transmission (Tanyuksel & Petri, 2020).

Amebiasis spreads via the fecal-oral route, often through contaminated food or water (Shirley et al., 2018). The patient's unsupervised dietary habits during his mother's absence likely increased exposure risk. Poor hand hygiene and crowded living conditions, common in endemic areas, further amplify transmission (Haque et al., 2019). *E. histolytica* trophozoites adhere to colonic epithelial cells, secreting proteases that degrade mucosal barriers and induce apoptosis (Shirley et al., 2018). This process explains the patient's abdominal pain and mucosal bleeding. Systemic inflammation from tissue invasion likely contributed to fever and tachycardia (Guarino et al., 2018).

The patient's symptoms bloody-mucoid diarrhea, abdominal pain, fever, and dehydration are classic manifestations of invasive intestinal amebiasis (Shirley et al., 2018). *Entamoeba histolytica* invades the colonic mucosa, triggering inflammation and ulceration, which explains the presence of fecal leukocytes and erythrocytes (Guarino et al., 2018). The absence of frank blood in vomitus but its presence in stool differentiates amebiasis from upper gastrointestinal bleeding etiologies. While bacterial pathogens like *Shigella* or *Salmonella* can present similarly, the detection of *E. histolytica* cysts and the lack of response to initial antipyretics narrows the diagnosis (Guarino et al., 2018). Viral causes were less likely due to the presence of mucus and blood, which are uncommon in rotavirus or norovirus infections (WHO, 2017).

Clinical signs—sunken eyelids, dry lips, and delayed skin turgor—correlated with mild-

moderate dehydration per the WHO's Integrated Management of Childhood Illness (IMCI) criteria (WHO, 2017). Vital signs, including tachycardia and tachypnea, further supported this classification (Guarino et al., 2018). The patient's "good weight" (18 kg) likely buffered against severe malnutrion, but reduced oral intake during illness risked catabolism (Black et al., 2020). Early reintroduction of age-appropriate foods post-rehydration is crucial to prevent growth faltering (WHO, 2017).

Stool microscopy remains the primary diagnostic tool for amebiasis in resource-limited settings, but its sensitivity is operator-dependent and may miss intermittent cyst excretion (Shirley et al., 2018). In this case, the combination of clinical history and microscopic findings was sufficient, although antigen testing or PCR could improve accuracy in ambiguous cases (Gonzales et al., 2020). While microscopy detected cysts in this case, its sensitivity ranges from 50–70% in acute infections (Tanyuksel & Petri, 2020). Antigen detection assays (e.g., ELISA) and PCR improve diagnostic accuracy but are often unavailable in resource-limited settings (Ngui et al., 2019). The presence of fecal leukocytes (20–25/field) and erythrocytes (10–15/field) is pathognomonic for invasive colonic disease. A 2019 study demonstrated that fecal leukocyte counts >15/field have 89% specificity for amebic colitis in children (Ngui et al., 2019). This aligns with the patient's microscopic findings, reinforcing the diagnosis. Microcytic anemia (MCV 75.3 fL) likely results from chronic inflammation or iron deficiency, common in recurrent infections (Pasricha et al., 2021). Hyponatremia reflected electrolyte loss from diarrhea, necessitating careful fluid management to avoid cerebral edema (Guarino et al., 2018). The abdominal radiograph's "prominent fecal shadows" suggested ileus or partial obstruction, although the absence of free air ruled out perforation (Carty, 2018). Imaging is not regularly indicated in uncomplicated amebiasis but was justified here to exclude surgical emergencies. While abdominal radiographs ruled out perforation in this patient, ultrasound is preferred for detecting hepatic abscesses, a complication seen in 3–5% of amebiasis cases (Stanley, 2021).

The WHO's rapid rehydration protocol with Ringer lactate was critical for correcting hypovolemia and hyponatremia (WHO, 2017). Intravenous fluids were prioritized over oral rehydration due to the patient's vomiting and reduced oral intake, aligning with AAP guidelines for moderate dehydration (Guarino et al., 2018). Metronidazole's efficacy against both luminal and systemic trophozoites makes it first-line therapy for invasive amebiasis (Gonzales et al., 2020). Seven–ten days course are typically required to eradicate the parasite, although follow-up with luminal agents like paromomycin is recommended to prevent relapse (Shirley et al., 2018). Zinc reduces diarrheal duration and stool volume by enhancing intestinal mucosal repair and immune function (Lazzerini & Ronfani, 2018). The WHO recommends zinc (20 mg/day for 10–14 days) to reduce diarrhea duration and recurrence (WHO, 2017). A 2020 trial in Pakistan demonstrated a 24% reduction in diarrheal duration with zinc, although adherence remains challenging in malnourished children (Lazzerini & Ronfani, 2018). Probiotics like Lactobacillus (Liprolac) restore gut microbial balance disturbed by infection and antibiotics (Szajewska et al., 2020). Their use in this case may have mitigated antibiotic-associated diarrhea and promoted mucosal healing, although evidence in amebiasis-specific contexts remains limited. Ondansetron, a serotonin antagonist, effectively reduces vomiting in pediatric AGE, facilitating oral rehydration (Freedman et al., 2020), however, a 2023 multicenter study affirmed its safety in children >6 months, with cessation of vomiting in 80% of cases (Freedman et al., 2023). Its inclusion here allowed the patient to tolerate fluids, preventing further dehydration. Ranitidine, an H2 blocker, was used to address potential gastritis from prolonged vomiting.

Chronic amebiasis can lead to growth stunting or hepatic abscesses if untreated (Shirley et al., 2018). Follow-up stool tests and nutritional support are recommended to ensure eradication and address anemia (Pasricha et al., 2021). Amebiasis prevalence reflects gaps in water sanitation and health infrastructure (Shirley et al., 2018). National programs promoting boiling of water, handwashing, and food safety could reduce transmission, as demonstrated in Bangladesh (Haque et al., 2019). A 2020 study in India reported comparable outcomes in pediatric amebiasis treated with metronidazole and zinc, reinforcing this case's therapeutic approach (Gonzales et al., 2020). However, higher relapse rates in malnourished children emphasize the need for tailored follow-up (Haque et al., 2019). Caregiver absence due to familial caregiving responsibilities highlights socioeconomic barriers to pediatric health supervision (Haque et al., 2019). Community-based education on hygiene and early symptom recognition could

reduce similar cases in endemic regions (Shirley et al., 2018).

IV. CONCLUSION AND SUGGESTION

A. Conclusion

This case illustrates the importance of timely diagnosis, multimodal rehydration, and targeted antimicrobial therapy in pediatric amebiasis. Strengthening public health infrastructure and caregiver education are essential to reduce disease burden. Early antimicrobial intervention, combined with aggressive rehydration and symptom management, prevents progression to severe complications such as perforation or disseminated infection.

B. Suggestion

There is still limited discussion in this research. A more comprehensive study of amebiasis in children is needed as a suggestion for future authors.

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