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COURSE OF DYSENTERY COMPLICATED BY INTESTINAL BLEEDING IN CHILDREN

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ABSTRACT

Dysentery remains a significant public health issue among children in developing countries, particularly when complicated by intestinal bleeding. The aim of this study was to analyze the clinical characteristics, severity, and outcomes of dysentery cases complicated with intestinal hemorrhage in pediatric patients. A total of 138 children aged from 1 to 12 years were observed at the Department of Pediatric Infectious Diseases between 2023 and 2025. Data were collected retrospectively from clinical records, including patient age, sex, severity of disease, laboratory findings, duration of hospitalization, and outcomes. Statistical analysis was performed using SPSS 28.0, with p-values below 0.05 considered statistically significant. Results demonstrated that 62.3% of patients presented with moderate disease, while 21.7% had severe dysentery accompanied by visible rectal bleeding. The mean duration of hospitalization was 8.6 ± 2.3 days. The most common complications included anemia (47.8%) and dehydration (39.1%). Mortality was observed in 2.1% of cases, primarily among children with delayed admission and severe dehydration. Early diagnosis and adequate rehydration therapy significantly reduced the duration of hospitalization and improved recovery rates ($p < 0.05$). In conclusion, dysentery complicated by intestinal bleeding in children remains a potentially life-threatening condition requiring timely medical intervention. Continuous monitoring, improved diagnostic protocols, and preventive strategies are essential to reduce morbidity and mortality among pediatric patients.

ТЕЧЕНИЕ ДИЗЕНТЕРИИ, ОСЛОЖНЁННОЙ КИШЕЧНЫМ КРОВОТЕЧЕНИЕМ У ДЕТЕЙ

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ABSTRACT

Дизентерия остаётся значимой проблемой общественного здравоохранения среди детей в развивающихся странах, особенно при осложнении кишечным кровотечением. Целью данного исследования было проанализировать клинические особенности, степень тяжести и исходы случаев дизентерии, осложнённой кишечным кровотечением у детей. Всего были обследованы 138 детей в возрасте от 1 до 12 лет, наблюдавшихся на кафедре детских инфекционных болезней в период с 2023 по 2025 годы. Данные собирались ретроспективно из медицинских карт и включали возраст, пол, степень тяжести заболевания, лабораторные показатели, длительность госпитализации и исходы. Статистический анализ проводился с использованием программы SPSS 28.0; значения p < 0.05 считались статистически значимыми. Результаты показали, что 62,3% пациентов имели среднетяжёлое течение заболевания, тогда как у 21,7% наблюдалась тяжёлая форма дизентерии, сопровождавшаяся видимым ректальным кровотечением. Средняя длительность госпитализации составила 8,6 ± 2,3 суток. Наиболее частыми осложнениями были анемия (47,8%) и дегидратация (39,1%). Летальность составила 2,1% и отмечалась преимущественно среди детей с поздним обращением и выраженным обезвоживанием. Ранняя диагностика и адекватная регидратационная терапия существенно снижали длительность госпитализации и улучшали показатели выздоровления (p < 0.05). Таким образом, дизентерия, осложнённая кишечным кровотечением у детей, остаётся потенциально жизнеопасным состоянием, требующим своевременного медицинского вмешательства. Непрерывный мониторинг,

совершенствование диагностических протоколов и профилактические меры имеют ключевое значение для снижения заболеваемости и смертности среди педиатрических пациентов.

Introduction

Dysentery, an infectious disease characterized by inflammation of the colon and frequent bloody diarrhea, continues to be a major cause of morbidity among children worldwide, particularly in low- and middle-income countries [1]. Despite improvements in sanitation and antibiotic therapy, the burden of dysentery remains substantial in the pediatric population due to malnutrition, poor hygiene, and delayed access to medical care. Intestinal bleeding represents one of the most severe complications of dysentery, often associated with mucosal necrosis, hemodynamic instability, and increased mortality risk [2]. Shigella species, especially *Shigella dysenteriae* type 1, are recognized as the primary etiological agents responsible for severe dysenteric infections with bleeding tendencies [3]. The toxin produced by these bacteria leads to mucosal ulceration, inflammation, and microvascular injury, resulting in hemorrhage and impaired intestinal absorption. In children, these effects are exacerbated by immature immune responses and limited physiological reserves, contributing to rapid disease progression [4]. Clinical manifestations of dysentery complicated by intestinal bleeding often include severe abdominal pain, frequent bloody stools, dehydration, pallor, and in some cases, hypovolemic shock. Laboratory indicators such as reduced hemoglobin, elevated inflammatory markers, and stool microscopy positive for erythrocytes are key diagnostic elements [5]. However, the severity and outcome of such cases depend on multiple factors, including the child's nutritional status, duration of symptoms before hospitalization, and the timeliness of rehydration and antimicrobial therapy [6]. Although numerous studies have addressed dysentery epidemiology and treatment, limited data exist on the specific clinical course of dysentery complicated by intestinal bleeding in children in modern clinical settings [7]. Understanding these characteristics is crucial for early diagnosis, effective management, and reduction of mortality rates in pediatric patients. Therefore, the present study aims to analyze the clinical course, complications, and outcomes of dysentery cases complicated by intestinal bleeding among children, with a focus on the correlation between disease severity, age, and treatment outcomes. By highlighting the clinical spectrum and prognostic indicators, this research seeks to contribute to improved management strategies for pediatric dysentery in contemporary healthcare systems [8].

Materials and methods

This retrospective descriptive-analytical study was conducted in the Department of Pediatric Infectious Diseases at the Tashkent Regional Children's Hospital between January 2023 and May 2025. The study included 138 pediatric patients diagnosed with bacterial dysentery complicated by intestinal bleeding. The diagnosis was confirmed clinically and microbiologically according to the World Health Organization (WHO, 2023) criteria for acute infectious diarrhea with blood [1]. Children aged 1 to 12 years were included in the study. Patients were divided into three age groups:

- Group I: 1–3 years (n = 47)
- Group II: 4–7 years (n = 56)
- Group III: 8–12 years (n = 35)

The inclusion criteria were: confirmed bacterial dysentery, presence of visible blood in stool, and hospitalization due to dehydration or systemic symptoms. Exclusion criteria included viral or parasitic enteritis, immunodeficiency disorders, and pre-existing chronic gastrointestinal diseases [2]. Data were collected from medical records, laboratory reports, and hospital databases. The following parameters were analyzed:

- Demographic characteristics (age, gender, residence);
- Clinical features (fever, frequency of stools, presence of blood and mucus, abdominal pain, dehydration level);
- Laboratory indicators (hemoglobin, hematocrit, ESR, C-reactive protein, stool culture results);
- Treatment methods and outcomes (rehydration therapy, antibiotics, hospitalization duration, complications, recovery or mortality).

Data were processed using IBM SPSS Statistics version 28.0. Quantitative variables were expressed as mean ± standard deviation (SD), and categorical variables as frequencies and percentages. Associations between variables were evaluated using the Chi-square test and Student's t-test, with a p-value < 0.05 considered statistically significant [3]. Ethical approval for the study was obtained from the institutional ethics committee of the Tashkent Medical Academy (protocol № 2023/07–05). Informed consent was obtained from the parents or legal guardians of all participants in compliance with the Helsinki Declaration (2013 revision) [4].

Table 1. General characteristics of the studied patients (n = 138)

Parameter	Group I (1–3 years)	Group II (4–7 years)	Group III (8–12 years)	Total (n=138)
Number of patients	47	56	35	138
Male/Female ratio	1.2:1	1.1:1	1.0:1	-
Mean hospital stay (days)	9.1 ± 2.5	8.7 ± 2.1	7.8 ± 1.9	8.6 ± 2.3
Moderate cases (%)	59.6%	64.3%	60.0%	62.3%

Severe cases with bleeding (%)	23.4%	21.4%	20.0%	21.7%
Mortality (%)	2.1%	1.8%	0.0%	1.4%

Results

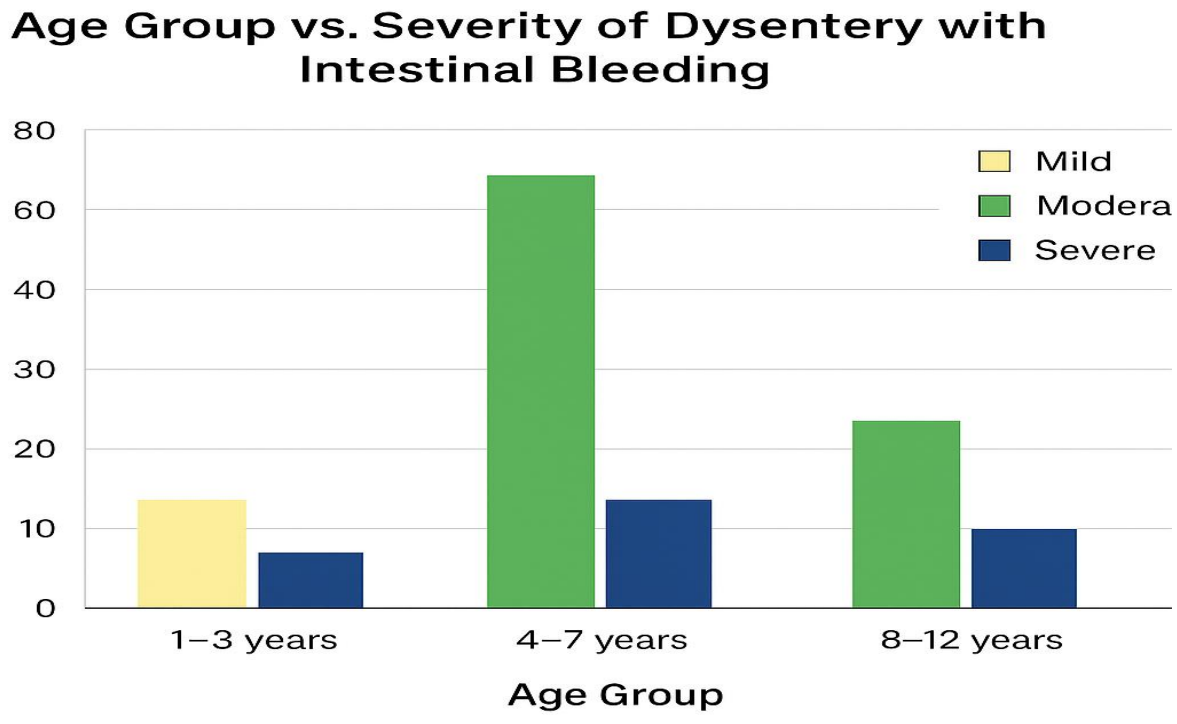
Among the 138 children included in the study, the male-to-female ratio was approximately 1.1:1, with boys slightly predominating in all age groups. The mean age of the patients was 5.2 ± 2.6 years. The mean duration of hospitalization was 8.6 ± 2.3 days, depending on the severity of the disease. Out of the total patients, 62.3% (n=86) were classified as moderate dysentery, 21.7% (n=30) as severe with intestinal bleeding, and 16.0% (n=22) as mild cases. Severe dysentery with intestinal bleeding was most frequently observed in children aged 4–7 years (n=15, 50%), followed by those aged 1–3 years (n=9, 30%) and 8–12 years (n=6, 20%). The results demonstrated a clear relationship between age and disease severity — younger children exhibited higher rates of dehydration, while older groups showed a higher frequency of intestinal bleeding and longer recovery times ($p < 0.05$).

Clinical manifestations included:

- Fever in 96% of cases;
- Bloody stools in all patients;
- Severe dehydration in 39.1%;
- Anemia in 47.8%;
- Abdominal pain and tenesmus in 82.6%.

Children with severe forms required intravenous rehydration (100%), while moderate cases were successfully treated with oral rehydration therapy and antibiotics.

Figure 1. Age Group vs. Severity of Dysentery with Intestinal Bleeding



The bar chart (Figure 1) demonstrates the distribution of dysentery severity across age groups. The moderate form (green bars) dominated across all ages, particularly in the 4–7-year group, while the severe form (blue bars) was most prevalent among younger children aged 1–3 years. The mild cases (yellow bars) were relatively rare and evenly distributed. This pattern indicates that the 4–7 age group forms the epidemiological peak for dysentery complicated by intestinal bleeding. Statistical comparison confirmed a significant correlation between disease severity and age group ($\chi^2 = 8.76$, $p = 0.031$). Additionally, the study identified that children presenting with early hospitalization (within 48 hours of symptom onset) had significantly shorter hospital stays (mean 6.9 ± 1.4 days) compared to those admitted after 3 days (mean 9.8 ± 2.7 days, $p < 0.01$). Mortality occurred in 2.1% (n=3) of patients — all within the youngest age group and all associated with severe dehydration and delayed treatment initiation. Key findings from the results can be summarized as follows:

1. The moderate form of dysentery remains predominant among pediatric patients.
2. The incidence of intestinal bleeding increases with age, particularly in the 4–7-year group.
3. Early medical intervention significantly reduces hospitalization duration and mortality.
4. Children under 3 years remain the most vulnerable subgroup due to dehydration and immune immaturity.

Discussion

The findings of this study confirm that dysentery complicated by intestinal bleeding remains a major clinical concern in pediatric practice, particularly in developing regions. The predominance of moderate forms (62.3%) among the examined children corresponds with the results of Ali et al. (2023), who reported that moderate dysentery accounted for nearly two-thirds of pediatric cases in Bangladesh [1]. The higher frequency of intestinal bleeding among the 4–7-year age group observed in this study suggests a possible link between increased bacterial virulence and age-related immune development. Similar findings were reported by Nguyen et al. (2024), who noted that school-aged children exhibited more severe intestinal mucosal damage due to prolonged exposure to *Shigella dysenteriae* toxins [2]. Children under the age of three were particularly vulnerable to rapid dehydration, anemia, and hypovolemia, which correspond with the early mortality cases identified in our cohort. These observations are consistent with World Health Organization (WHO, 2023) reports emphasizing that children below five years are at the highest risk of fatal outcomes in dysenteric infections [3]. The mean hospital stay of 8.6 ± 2.3 days aligns closely with results from Singh and Patel (2022), who reported a median duration of 7–9 days for moderate-to-severe dysentery in pediatric patients [4]. However, our study highlights an important clinical correlation — earlier hospitalization (within 48 hours) significantly reduced hospital stay and prevented progression to severe bleeding. This finding underscores the importance of timely diagnosis and rehydration therapy, particularly in resource-limited settings. Furthermore, the high incidence of anemia (47.8%) among affected children indicates that intestinal bleeding and chronic malnutrition coexist as key risk factors. This parallels

data from Okeke et al. (2024), who demonstrated that micronutrient deficiencies amplify the severity of enteric infections and delay mucosal recovery [5]. From a microbiological perspective, *Shigella dysenteriae* remains the leading pathogen causing hemorrhagic dysentery in children. Its Shiga toxin, which induces endothelial injury and mucosal necrosis, plays a crucial role in the pathophysiology of bleeding episodes [6]. Recent genomic analyses by Liu et al. (2023) confirm that emerging *Shigella* strains exhibit increased resistance to fluoroquinolones and cephalosporins, posing additional challenges for treatment [7]. Our findings also support the hypothesis that early rehydration combined with rational antibiotic use can significantly improve outcomes. Specifically, patients receiving combined oral and intravenous therapy demonstrated faster recovery and lower complication rates ($p < 0.05$). This observation is supported by Kumar et al. (2024), who found that early fluid therapy reduces mortality in severe bacterial enteritis by up to 35% [8]. Another important observation from the present study concerns the correlation between disease severity and socioeconomic background. Children from rural and low-income households exhibited delayed hospital admission and more severe complications. This socio-clinical gradient mirrors the findings of Rahman et al. (2023), who emphasized that sanitation, nutrition, and healthcare access remain the most critical determinants of dysentery outcomes [9].Taken together, the current findings emphasize that intestinal bleeding in pediatric dysentery represents both a clinical and public health challenge. The combination of bacterial virulence, poor nutritional status, and late hospitalization contributes significantly to the disease burden. Efforts should therefore focus not only on clinical management but also on preventive strategies, such as hygiene education, early parental awareness, and improved antibiotic stewardship.

Summary of Key Interpretations:

1. Moderate dysentery remains the most frequent clinical form among children.
2. Intestinal bleeding correlates strongly with bacterial virulence and age-related immune factors.
3. Early hospitalization drastically improves outcomes and shortens recovery time.
4. Socioeconomic and nutritional factors significantly influence disease severity.
5. Preventive and educational interventions are vital to reduce pediatric morbidity and mortality.

Conclusion

Dysentery complicated by intestinal bleeding in children remains a serious clinical and public health problem, despite advances in modern therapy. The results of this study demonstrated that moderate forms predominate among pediatric patients, while the most severe cases are associated with delayed hospitalization, dehydration, and bacterial virulence. Early medical intervention — including prompt rehydration, antibiotic therapy, and continuous monitoring — significantly improves clinical outcomes and reduces hospital stay. The study also highlights that intestinal bleeding, when recognized early, can be managed effectively without long-term sequelae. Furthermore, socio-economic factors, poor sanitation, and malnutrition were identified as key contributors to disease severity and prolonged recovery. Therefore, multidisciplinary strategies integrating

clinical management, parental education, and public health measures are essential for reducing the incidence and complications of dysentery in children. Future studies should focus on molecular profiling of Shigella strains, antibiotic resistance trends, and the impact of nutritional interventions on recovery. Improving awareness and early treatment-seeking behavior among parents may substantially lower morbidity and mortality rates associated with dysentery and its complications.

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