

## CLINICAL AND LABORATORY FEATURES OF INTESTINAL INFECTIONS OF PROTEUS ETIOLOGY IN CHILDREN

**Guliston Buribaevna Mustaeva**

**Assistant, Department of Infectious Diseases**

**Samarkand State Medical University,**

**Samarkand, Uzbekistan**

**Gulomova Farangiz Sarvar kizi**

**Fifth-year student, Faculty of Pediatrics**

**Samarkand State Medical University, Samarkand,**

**Uzbekistan.**

**ABSTRACT.** This article presents data from the examination of 88 children under 14 years of age. It was found that intestinal infections of *Proteus* etiology are more common in young children, especially in those with altered reactivity and an unfavorable premorbid background. The course of the disease tends toward widespread lesions of the gastrointestinal tract, such as enteritis, enterocolitis, and gastroenterocolitis, occurring in severe forms with significant disturbances in water-electrolyte balance. The severity of the patient's condition correlates with the intensity of the diarrhea syndrome.

**Keywords:** *Proteus*, premorbid background, diarrhea

Diseases caused by microorganisms of the genus *Proteus* are referred to as proteus infections. *Proteus* was first isolated by G. Hauser in 1885 and was long considered a saprophyte found widely in the environment. Reports linking *Proteus* to pathological conditions in humans began appearing in the 1930s–1940s. One of the first to draw attention to *Proteus* was I.I. Mechnikov, who isolated this microbe in 93.6% of children with acute intestinal infections. In the 1960s–1980s, *Proteus* was classified as conditionally pathogenic flora and considered a cause of nosocomial infections [1,2,3].

The causative agents of Proteus infections belong to the Proteus genus of the Enterobacteriaceae family. These bacteria are widespread in soil, water, and air [8,9]. In hospitals, they can be found on patient care items, medical equipment, and sanitary facilities. Their widespread presence is attributed to high resistance to most antibacterial drugs and frequent irrational antibiotic use [6,9,10]. Proteus infection spreads via contact and alimentary routes. Newborns and young children, individuals with urinary tract anomalies or immunosuppression, and those who have undergone surgeries are especially susceptible. In neonatal departments, Proteus can cause exogenous nosocomial infections. Overall, Proteus accounts for about 10% of nosocomial infections. There is no seasonality in the incidence; sporadic cases predominate [4,5,7].

**Objective:** To study the clinical features of intestinal infections of Proteus etiology and identify characteristics of the premorbid background.

**Materials and Methods:** clinical and laboratory studies were conducted according to current standards. Diagnosis was confirmed based on bacteriological examination of stool showing massive bacterial growth in early disease and through serological testing.

**Results and Discussion:** the study is based on the analysis of 88 case histories of children aged 1 month to 14 years treated at the Samarkand Regional Infectious Disease Hospital from 2020 to 2024 for Proteus-related intestinal infections. All patients had Proteus mirabilis isolated. Age distribution: under 6 months – 31.8% (28), 1–3 years – 40.9% (36), 3–6 years – 11.4% (10), 6–10 years – 10.2% (9), 10–14 years – 5.7% (5) (Figure 1).

Figure 1. Age Distribution of Patients

Acute intestinal infection diagnosis was based on the combination of general toxic syndrome and gastrointestinal symptoms.

In 87% of cases, various unfavorable premorbid factors were identified: Grade I hypotrophy (16.2%), anemia (63.6%), congenital heart defects (1.1%), pneumonia (2.3%), and acute bronchitis (4.5%) (Figure 2).

### Figure 2. Premorbid Background of Patients

Additionally, among infants under 1 year: 53.6% were on mixed feeding, 21.4% on formula, and only 25% were breastfed.

Epidemiological history showed that in 63.6% of cases, infection came from contaminated food; in 10.2% from contact with infected persons; in 4.54% from prolonged antibiotic therapy; and in 21.6%, the source was unknown. In 93.75%, the disease began acutely with a fever (22% subfebrile, 38.5–39°C in severe forms). Fever lasted 1.3±1.3 days (mild), 3.8±1.5 days (moderate), and 5.2±1.3 days (severe). Severe forms were more common in formula-fed infants.

Bowel dysfunction manifested as enteritis or enterocolitis. Diarrhea lasted 5.1±2.3 days (mild), 7.0±1.1 days (moderate), and 8.5±2.4 days (severe). Stool frequency: mild (3–5 times/day), moderate (up to 10 times/day in 76%; over 10 in 12.8%), severe (over 10 in 68.75%), leading to dehydration Grades I–II. Two patients had a gradual onset with regurgitation, lethargy, bloating, weight loss, followed by diarrhea. Toxic complications with dehydration Grades I–II occurred in 75%, and Grade III in 3.1%. Vomiting occurred in 14 cases (mainly severe forms), 1–3 times/day (Figure 3).

### Figure 3. Disease Severity

From 88 patients, 49 were urban, and 39 rural. Distribution by region: Samarkand rural (8), Oqdaryo (6), Taylak (5), Pastdargom (2), Nurabad (1),

Payarik (4), Bulungur (4), Kattakurgan (1), Urgut (6), and 2 from Kashkadarya and Jizzakh regions.

Among 88 children, 88.7% had a moderate form, 6.8% had a mild form, and 4.5% had a severe form. Severe cases were in formula/mixed-fed infants under 1 year.

Patients were hospitalized on day  $3.1 \pm 0.3$  of illness. Fever to  $38-38.5^{\circ}\text{C}$  was noted in 65 patients, accompanied by weakness, irritability, poor sleep, and loss of appetite. Toxic symptoms lasted  $3.7 \pm 0.7$  days. Vomiting occurred once in 18 children, multiple times in 27. Stools were watery, mucous, green, 10–14 times/day. Normalization occurred on day  $8.1 \pm 0.7$ . Blood streaks were found in 7 cases. Average hospital stay was  $9.4 \pm 0.6$  days.

Severe forms (4.54%) involved pronounced intoxication and dehydration. Symptoms included loss of appetite (all 4), adynamia, sleep disturbances, bloating (3), and persistent vomiting. Intoxication lasted  $8.9 \pm 0.5$  days. Stool had mucus, green color, and blood streaks (3 patients), frequency over 12/day, with normalization on day  $12.3 \pm 0.6$ . Hospital stay:  $14.0 \pm 1.7$  days.

Notably, dehydration was not an initial symptom but developed on day  $4.3 \pm 1.3$ . Sixty patients had Grade II dehydration; 4 had Grade III. Gastroenterocolitis and enterocolitis were observed in children under 3, while gastritis, gastroenteritis, and enteritis occurred mainly in children over 3, with milder symptoms.

Etiological diagnosis was based on isolation of *Proteus mirabilis* from stool cultures in all patients.

**Conclusion:** intestinal infections of *Proteus* etiology are more frequent in young children, particularly those with altered immune reactivity and unfavorable premorbid conditions. These infections tend to cause widespread gastrointestinal lesions—enteritis, enterocolitis, and gastroenterocolitis—with severe forms and significant water-electrolyte imbalances. Disease severity correlates with the intensity of diarrheal symptoms.

**References:**

1. **Жога В.Д., Соловьева А.А., Домнина Е.В. Клиника кишечных инфекций протейной этиологии у детей // Вопросы охраны материнства и детства. - 1985. -№10.-С.28-31.**
2. **Мазанкова Л. Н., Ильина Н. О., Кондракова О. А., Затевалов А. М. Оценка состояния кишечной микрофлоры при острых кишечных инфекциях у детей младшего возраста // Детские инфекции. - 2005. - Т. 4.- № 3. - С. 11-15.**
3. **Новокшенов А.А., Мацулевич Т.В. Острые кишечные инфекции (ОКИ) - актуальная проблема здравоохранения // Консилиум. - 1999. - № 9.- С. 30-32.**
4. **Мустаева Г. Б. Особенности течения клебсиеллезной инфекции по данным Самаркандской областной клинической больницы //Вестник науки и образования. – 2020. – №. 18-2 (96). – С. 81-85.**
5. **Мазанкова Л.Н., Ильина Н.О., Кондракова О.А., Затевалов А.М. Оценка состояния кишечной микрофлоры при острых кишечных инфекциях у детей младшего возраста // Детские инфекции. – 2005. – Т.4. - №3. – С.11-5.**
6. **Шендеров Б.А. Диагностика, прогнозирование течения и лечение острых кишечных инфекций условно-патогенной и смешанной этиологии // Вестник РАМН.-2005.-№12.-С.13-7.**
7. **Мустаева Г. Б. Современные аспекты клинико-эпидемиологических особенностей течения клебсиеллеза //Science and Education. – 2023. – Т. 4. – №. 1. – С. 212-219.**
8. **Тиркашев О.С., Мустаева Г.Б. Самарканд вилояти худудида шартли патоген флора тамонидан кузгатиладиган ичак касалликларининг эрта ешли болаларда клиник-эпидемиологик кечиш хусусиятлари//Биология ва тиббиет муаммолари - 2020/11.-№4(120). -С.91-94.**

9. Красная М., Мустаева Г. Современные эпидемиологические аспекты острых кишечных инфекций в самаркандской области //Журнал проблемы биологии и медицины. – 2018. – №. 1 (99). – С. 52-56.

10. Тиркашев О. С. и др. Актуальные аспекты клиничко-лабораторного течения кишечных протеозов //Вестник Ташкентской медицинской академии. – 2022. – С. 1.1.

11. Тиркашев О. С., Мустаева Г. Б. Цитробактер этиологияли уткир ичак инфекцияларининг клиник ва эпидемиологик хусусиятлари //Биология ва тиббиёт муаммолари. – 2023. – №. 3.1. – С. 145.