Cureus
Part of SPRINGER NATURE

Open Access Case Report

Multimodal Management of Post-infectious Gastrointestinal Symptoms in a Toddler With Chronic Diarrhea and Abdominal Pain

Saikhat Shamsadova [1]

1. Pediatrics, Republican Children's Clinical Hospital Named After E.P. Glinka, Grozny, RUS

Corresponding author: Saikhat Shamsadova, shamsadova1992@gmail.com

Review began 10/07/2026
Review ended 11/10/2026
Published 11/13/2026

© **Copyright** 2026
Shamsadova. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

DOI: 10.7759/cureus.119589

Abstract

Persistent gastrointestinal symptoms following gastroenteritis in toddlers present diagnostic and therapeutic challenges. We describe the case of a 32-month-old boy with a 12-month history of diarrhea (five to six stools daily), recurrent abdominal pain, bloating, and low weight following an episode of acute gastroenteritis. Previous empirical treatments had not produced sustained improvement. Available investigations were reported as unremarkable, but malabsorption was not objectively established, and the evaluation did not definitively exclude all organic causes. The presentation could not be classified under a specific Rome IV diagnostic category for neonates and toddlers. Dietary FODMAP restriction, empirical pancreatic enzyme supplementation, and probiotics were introduced concurrently. Initial improvement was reported within two to three weeks, with one to two formed stools daily by the fourth week. Weight increased from 10.0 to 12.5 kg over eight weeks, and no recurrence of the presenting symptoms was reported during four months of follow-up after the active treatment phase. This report documents clinical improvement during combined management but cannot establish causality, efficacy, safety, or the contribution of any individual intervention.

Categories: Pediatrics, Internal Medicine, Allergy/Immunology
Keywords: abdominal pain, chronic diarrhea, gut microbiota, low fodmap diet, pancreatic enzymes, pediatrics, probiotics, toddler

Introduction

Persistent gastrointestinal symptoms may occur following acute infectious gastroenteritis [1,2]. Post-infectious functional gastrointestinal disorders are one possible diagnostic consideration; however, persistent abdominal pain, altered bowel habits, and bloating alone do not establish a functional diagnosis [3,4]. In pediatric populations, particularly among children under four years of age, diagnosis and management remain challenging because of limited evidence and variability in clinical presentation.

Current management strategies are largely supportive and may include dietary modifications, probiotics, and symptomatic treatment. However, symptoms may persist in some cases despite standard therapeutic approaches, highlighting the need to explore alternative or multimodal interventions. Emerging evidence suggests that dietary interventions, such as low-FODMAP diets, and microbiome-targeted therapies may contribute to symptom improvement in selected patients [5,6,7]. The diagnosis of functional gastrointestinal disorders in children is based on age-specific Rome IV criteria [8]; however, no specific Rome IV diagnostic category could be established for the present case.

This report describes a toddler with persistent diarrhea and abdominal pain following acute gastroenteritis, who experienced no sustained improvement with initial empirical management but subsequently showed clinical improvement during a multimodal therapeutic approach. The temporal association with gastroenteritis is reported without asserting a confirmed functional gastrointestinal diagnosis. Furthermore, the observed improvement during combined treatment does not establish a causal relationship or determine the contribution of any individual intervention.

The parents provided verbal informed consent for the treatment and publication of this case report. All data were anonymized in accordance with the Declaration of Helsinki.

Case Presentation

A two-year-eight-month-old boy presented with a prolonged history of gastrointestinal symptoms that had developed following an episode of acute gastroenteritis. The initial infectious episode was followed by persistent diarrhea, recurrent abdominal pain, and abdominal distension. These symptoms had persisted for approximately 12 months before presentation. At the initial in-person assessment, at 32 months of age, the patient's height was 85 cm, and weight was 10.0 kg. His calculated BMI was 13.84 kg/m². Based on the WHO Child Growth Standards monthly reference tables for boys, the height-for-age, weight-for-age, and BMI-for-age z-scores were approximately −2.38, −2.64, and −1.66, respectively, corresponding to approximately the

0.9th, 0.4th, and 4.8th percentiles. His weight was below the third percentile for age.

The patient lived in an urban setting with both parents in a middle-income household with stable access to medical care. Both parents had higher education and actively participated in the child's care. The family had access to fresh foods and sufficient resources to implement dietary recommendations. The child had received mixed feeding with breast milk and infant formula until 12 months of age. Complementary foods were introduced at six months, and he transitioned to the family diet after 12 months. Before the gastroenteritis episode, there were no reported significant dietary restrictions, allergic reactions, or food intolerances. His reported diet included vegetables, fruits, cereals, dairy products, and meat. A quantitative assessment of pre-treatment energy intake was not available in the case description.

The reported family history was negative for functional gastrointestinal disorders, inflammatory bowel disease, celiac disease, and inherited enzyme disorders. No close relatives were reported to have chronic gastrointestinal conditions requiring long-term follow-up. The clinical timeline is summarized in Figure *1*.

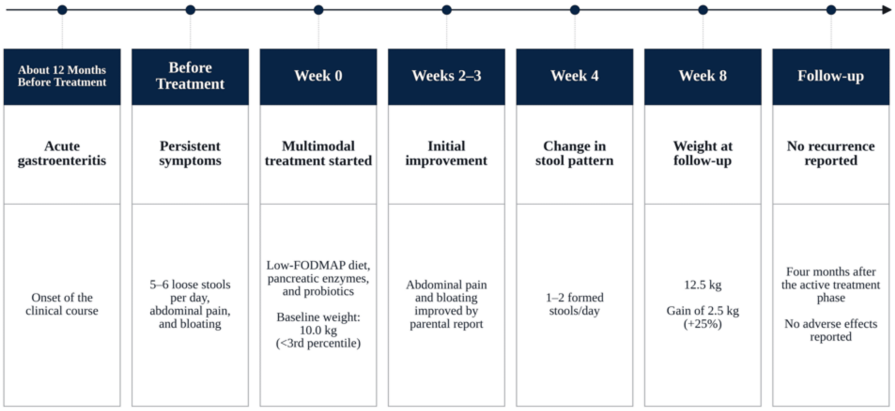


FIGURE 1: Clinical timeline of symptom progression, treatment intervention, and outcomes

Clinical timeline. Treatment initiation is Week 0. The schematic is not drawn to a proportional time scale. Reported stool changes, weight changes, and subsequent follow-up are shown

Previous empirical management included dietary modifications, Lactobacillus rhamnosus GG and Bifidobacterium lactis, the enterosorbent Polysorb, and symptomatic treatment, without sustained improvement. Physical examination revealed abdominal distension. The reported investigations included a complete blood count; biochemical testing, including C-reactive protein, electrolytes, and liver and renal function tests; stool culture, ova and parasite examination, and fecal calprotectin; anti-tissue transglutaminase IgA (tTG-IgA); and abdominal ultrasonography. The results were reported to be within reference ranges. These investigations did not identify an inflammatory or structural explanation for the symptoms; however, they did not definitively exclude all organic causes.

The tTG-IgA level was within the laboratory reference range. However, total serum IgA was not measured, limiting the interpretation of this result in the evaluation for celiac disease. Fecal elastase, fecal fat testing, and sweat chloride testing were not performed. Malabsorption was not objectively confirmed, and exocrine pancreatic insufficiency was not definitively excluded. A specific Rome IV diagnosis for infants and toddlers could not be established. The criteria for functional diarrhea require painless passage of stools and the absence of faltering growth when caloric intake is adequate [9]. The child had recurrent abdominal pain and a weight below the third percentile for age, while caloric intake had not been quantified. The criteria for irritable bowel syndrome in older children and adolescents did not apply to this patient [4]. Accordingly, the case is described as chronic diarrhea and abdominal pain following an episode of acute gastroenteritis.

Management consisted of a structured six-week period of dietary FODMAP restriction, pancreatin (Creon 10,000) at 5,000 lipase units with each main meal for two weeks, and probiotics, reported as Saccharomyces boulardii and Bifidobacterium longum. At the baseline weight of 10 kg, the pancreatin dose corresponded to 500 lipase units/kg per main meal. Pancreatic enzymes were prescribed empirically in the setting of persistent diarrhea and low weight rather than for documented exocrine pancreatic insufficiency.

The family received structured dietary instructions. They were advised to limit apples, pears, peaches, cherries, watermelon, plums, mangoes, legumes, onions, garlic, large portions of wheat and rye products, lactose-containing dairy products (milk, soft cheeses, and yogurt), honey, high-fructose syrups, and

products containing sorbitol or xylitol. Suggested alternatives included rice, oats, potatoes, carrots, zucchini, pumpkin, unripe bananas, oranges, kiwifruit, meat, fish, eggs, hard cheeses, and lactose-free dairy products. Dietary counseling addressed nutritional adequacy and the risk of inadequate calcium, vitamin D, and iron intake. Following six weeks of restriction, foods were gradually reintroduced while symptoms were monitored. Weight and height were measured during follow-up. No systematic laboratory assessment of nutritional status was performed.

Initial improvement was reported within two to three weeks. By the fourth week, stool frequency had decreased from five to six loose stools daily to one to two formed stools daily. The parents also reported improvement in abdominal pain and bloating. At the in-person follow-up visit eight weeks later, the child's weight was 12.5 kg, and height was 86 cm, corresponding to a calculated BMI of 16.90 kg/m². Using the WHO monthly reference tables for an approximate age of 34 months, the weight-for-age z-score was approximately −0.95 (17th percentile), the height-for-age z-score was approximately −2.42 (0.8th percentile), and the BMI-for-age z-score was approximately +0.95 (83rd percentile) [10]. Weight increased by 2.5 kg, representing a 25% increase from baseline. Despite the increases in weight and height, height remained low for age. These changes do not establish complete nutritional recovery or resolution of possible malabsorption.

No recurrence of the presenting symptoms was reported during the four months following completion of the active treatment phase. No adverse effects were reported. Symptom assessment relied on parental reporting, including a parent-completed visual analogue scale, which was not an age-validated objective measure of pain. Oral informed consent for publication was reported as having been obtained from the parents.

Discussion

Post-infectious symptoms have been associated with altered intestinal motility, immune activation, visceral sensitivity, and changes in the gut microbiota [2,11]. These mechanisms provide a possible explanation for the temporal relationship observed in this case; however, they were not investigated in this patient and do not establish a specific diagnosis. Diagnostic uncertainty is central to the interpretation of this case. The absence of abnormalities in the reported initial investigations does not, by itself, establish a functional disorder. Low weight and height warrant careful assessment of nutritional intake and possible underlying organic disease. The available information does not establish whether caloric intake was adequate before treatment or explain the observed growth parameters. Improvement during treatment does not retrospectively confirm a Rome IV diagnosis or exclude alternative explanations.

A low-FODMAP diet can reduce the intake of poorly absorbed, fermentable carbohydrates, thereby influencing intestinal water content and gas production [5,6]. A randomized crossover study reported fewer episodes of abdominal pain in children with IBS during a low-FODMAP diet [7]. However, these findings cannot establish the potential benefit of this intervention in a toddler with the present clinical presentation. The ESPGHAN position paper highlights the limited evidence supporting this approach in children and emphasizes the potential nutritional risks associated with dietary restriction [12]. Accordingly, the dietary intervention in this case should be regarded as an individualized management decision rather than an established recommendation for toddlers with chronic diarrhea.

The indication for pancreatic enzyme supplementation also remains uncertain. In an observational study, Olmos et al. evaluated adults meeting the diagnostic criteria for IBS-D and identified a subgroup with exocrine pancreatic insufficiency [13]. These findings do not establish the benefit of empirical pancreatic enzyme supplementation in toddlers without documented pancreatic insufficiency. In the present case, neither pancreatic insufficiency nor transient enzyme deficiency was established. The use of pancreatic enzymes and the clinical rationale for their administration are reported for transparency, without claiming a confirmed mechanism of action or independent therapeutic benefit.

Probiotics have been discussed in relation to host-microbial interactions and gut-brain signaling [14,15]. However, these general mechanisms do not establish the efficacy of the specific probiotic combination used in this case. The case description does not include microbiome testing to guide probiotic selection. Dietary modifications, pancreatic enzymes, and probiotics were introduced concurrently; therefore, their individual effects cannot be distinguished, and a synergistic effect cannot be inferred. The observed improvements could also reflect changes in overall nutritional intake, the natural course of the illness, or other unmeasured factors. Although improvements in stool characteristics and weight gain were reported, these observations cannot establish treatment efficacy or generalizable safety.

The limitations of this report include its single-case, uncontrolled design; incomplete exclusion of organic causes; lack of objective confirmation of malabsorption and absence of pancreatic function testing; reliance on parental symptom assessment; limited anthropometric data; and absence of systematic laboratory assessment of nutritional status. Follow-up was limited to the reported four-month period after completion of the active treatment phase. Furthermore, the absence of reported adverse effects does not establish treatment safety. Further studies incorporating age-appropriate diagnostic evaluations and systematic nutritional monitoring are needed before this therapeutic combination can be recommended.

Conclusions

A toddler with chronic diarrhea, abdominal pain, and low weight following gastroenteritis showed clinical improvement during concurrent dietary FODMAP restriction, empirical pancreatic enzyme supplementation, and probiotic use. Stool frequency and consistency improved, and weight increased over an eight-week period. The parents reported no recurrence of symptoms during the four months following completion of the active treatment phase. However, a specific Rome IV diagnosis was not established, and malabsorption was not objectively confirmed. This case report cannot establish causality, determine the contribution of individual interventions, or demonstrate a synergistic effect. Accordingly, these findings should not be interpreted as supporting the routine use of this treatment combination in toddlers.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Saikhat Shamsadova

Acquisition, analysis, or interpretation of data: Saikhat Shamsadova

Drafting of the manuscript: Saikhat Shamsadova

Critical review of the manuscript for important intellectual content: Saikhat Shamsadova

Supervision: Saikhat Shamsadova

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Thabane M, Kottachchi DT, Marshall JK: Systematic review and meta-analysis: the incidence and prognosis of post-infectious irritable bowel syndrome. Aliment Pharmacol Ther. 2007, 26:535-44. 10.1111/j.1365-2036.2007.03399.x
2. Barbara G, Grover M, Bercik P, Corsetti M, Ghoshal UC, Ohman L, Rajilić-Stojanović M: Rome Foundation Working Team Report on Post-Infection Irritable Bowel Syndrome. Gastroenterology. 2019, 156:46-58. 10.1053/j.gastro.2018.07.011
3. Ford AC, Lacy BE, Talley NJ: Irritable bowel syndrome. N Engl J Med. 2017, 376:2566-78. 10.1056/NEJMra1607547
4. Hyams JS, Di Lorenzo C, Saps M, Shulman RJ, Staiano A, van Tilburg M: Functional disorders: children and adolescents. Gastroenterology. 2016, 4:32-4. 10.1053/j.gastro.2016.02.015
5. Halmos EP, Power VA, Shepherd SJ, Gibson PR, Muir JG: A diet low in FODMAPs reduces symptoms of irritable bowel syndrome. Gastroenterology. 2014, 146:67-75. 10.1053/j.gastro.2013.09.046
6. Gibson PR, Shepherd SJ: Evidence-based dietary management of functional gastrointestinal symptoms: the FODMAP approach. J Gastroenterol Hepatol. 2010, 25:252-8. 10.1111/j.1440-1746.2009.06149.x
7. Chumpitazi BP, Cope JL, Hollister EB, et al.: Randomised clinical trial: gut microbiome biomarkers are associated with clinical response to a low FODMAP diet in children with the irritable bowel syndrome. Aliment Pharmacol Ther. 2015, 42:418-27. 10.1111/apt.13286
8. Drossman DA: Functional gastrointestinal disorders: history, pathophysiology, clinical features and Rome IV. Gastroenterology. 2016, 4:1262-79. 10.1053/j.gastro.2016.02.032
9. Benninga MA, Faure C, Hyman PE, St James Roberts I, Schechter NL, Nurko S: Childhood functional gastrointestinal disorders: neonate/toddler. Gastroenterology. 2016, 6:1443-55. 10.1053/j.gastro.2016.02.016
10. World Health Organization. WHO Child Growth Standards. Weight-for-age, length/height-for-age, and BMI-for-age. (2026). Accessed: November 10, 2026: https://www.who.int/tools/child-growth-standards.
11. Camilleri M: Peripheral mechanisms in irritable bowel syndrome. N Engl J Med. 2012, 367:1626-35. 10.1056/NEJMra1207068
12. Thomassen RA, Luque V, Assa A, et al.: An ESPGHAN Position Paper on the Use of Low-FODMAP Diet in Pediatric Gastroenterology. J Pediatr Gastroenterol Nutr. 2022, 75:356-68. 10.1097/MPG.0000000000003526
13. Olmos JI, Piskorz MM, Litwin N, et al.: Exocrine pancreatic insufficiency is undiagnosed in some patients with diarrhea-predominant irritable bowel syndrome using the Rome IV Criteria. Dig Dis Sci. 2022, 67:5666-

75. 10.1007/s10620-022-07568-8
14. Hill C, Guarner F, Reid G, et al.: Expert consensus document. The International Scientific Association for Probiotics and Prebiotics consensus statement on the scope and appropriate use of the term probiotic. Nat Rev Gastroenterol Hepatol. 2014, 11:506-14. 10.1038/nrgastro.2014.66
15. Cryan JF, O'Riordan KJ, Cowan CS, et al.: The microbiota-gut-brain axis. Physiol Rev. 2019, 99:1877-2013. 10.1152/physrev.00018.2018