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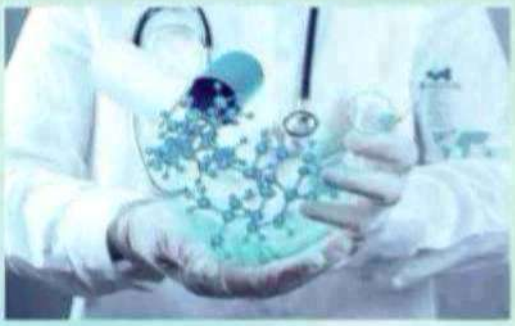

AVICENNA-MED.UZ

ISSN 2181-712X.
EiSSN 2181-2187

6 (80) 2025

ТИББИЁТДА ЯНГИ КУН
НОВЫЙ ДЕНЬ В МЕДИЦИНЕ
NEW DAY IN MEDICINE

Илмий-рефератив, маънавий-маърифий журнал
Научно-реферативный,
духовно-просветительский журнал

УЧРЕДИТЕЛИ:

БУХАРСКИЙ ГОСУДАРСТВЕННЫЙ МЕДИЦИНСКИЙ ИНСТИТУТ
ООО «ТИББИЁТДА ЯНГИ КУН»

Национальный медицинский исследовательский центр хирургии имени А.В. Вишневского является генеральным научно-практическим консультантом редакции

Журнал был включен в список журнальных изданий, рецензируемых Высшей Аттестационной Комиссией Республики Узбекистан (Протокол № 201/03 от 30.12.2013 г.)

6 (80)

2025

ИЮНЬ

www.bsmi.uz
https://newdaymedicine.com E:
ndmuz@mail.ru
Тел: +99890 8061882

Received: 20.04.2025, Accepted: 06.05.2025, Published: 10.05.2025

UDC 616.391-053.2-03

THE IMPORTANCE OF VITAMIN B12 DEFICIENCY IN CHILDREN WITH GASTROINTESTINAL DISEASES

Soliyeva Kamola Isomiddinovna https://orcid.org/0009-0003-8500-0113
E-mail: soliyeva.kamola@bsmi.uz

Bukhara State Medical Institute named after Abu Ali ibn Sina, Uzbekistan, Bukhara, st. A. Navoi. 1
Tel: +998 (65) 223-00-50 e-mail: info@bsmi.uz

✓ ***Resume***

Vitamin B12 plays a crucial role in DNA synthesis, red blood cell formation, and neurological development, especially in children. Gastrointestinal (GI) diseases can significantly impair the absorption of vitamin B12, leading to a range of hematological and neurological complications. This article reviews the causes, clinical implications, and management of vitamin B12 deficiency in children suffering from gastrointestinal disorders such as celiac disease, inflammatory bowel disease, and chronic gastritis.

Key words: vitamin B12 deficiency, children, gastrointestinal diseases, malabsorption, celiac disease, Crohn's disease, anemia

Relevance

Vitamin B12, also known as cobalamin, is an essential nutrient required for DNA synthesis, red blood cell production, and proper neurological function [1]. In children, adequate vitamin B12 levels are critical for normal growth and neurodevelopment. Gastrointestinal diseases such as celiac disease, Crohn's disease, and chronic gastritis can impair the absorption of vitamin B12 by damaging the mucosal lining or affecting the production of intrinsic factor, which is necessary for vitamin B12 uptake in the terminal ileum [2]. Deficiency of this vitamin in pediatric patients can lead to a range of clinical problems, including megaloblastic anemia, developmental delays, and neurological impairments [3-5]. Despite its importance, vitamin B12 deficiency in children with gastrointestinal disorders is often underrecognized, leading to delayed diagnosis and treatment [6]. This paper aims to explore the significance of vitamin B12 deficiency in children suffering from gastrointestinal diseases, emphasizing the need for early detection and appropriate management to prevent serious complications [7-9].

Vitamin B12 deficiency in pediatric patients often results from malabsorption caused by these gastrointestinal disorders, leading to a range of clinical manifestations such as megaloblastic anemia, developmental delays, and neurological impairments. Despite its significant impact on child health, vitamin B12 deficiency remains underdiagnosed due to the nonspecific nature of symptoms and overlap with primary gastrointestinal disease signs [10].

Early recognition and treatment are vital to prevent irreversible complications and support normal development. This study aims to review the prevalence, clinical significance, and management of vitamin B12 deficiency in children with gastrointestinal diseases, emphasizing the need for increased awareness and routine screening in at-risk populations.

The aim of this study is to evaluate the prevalence and clinical impact of vitamin B12 deficiency in children with gastrointestinal diseases, to understand the underlying mechanisms leading to malabsorption, and to emphasize the importance of early diagnosis and effective treatment to prevent hematological and neurological complications.

Materials and Methods

This study was conducted as a comprehensive review of existing literature focusing on vitamin B12 deficiency in children with gastrointestinal diseases. Articles were selected based on their relevance to pediatric patients and the presence of gastrointestinal disorders affecting vitamin B12 absorption. Both clinical studies and review articles were included to gather a broad understanding of the subject. Data from the selected studies were analyzed to assess the prevalence, clinical features, diagnostic methods, and treatment outcomes of vitamin B12 deficiency in this population.

Result and discussions

The review of the literature revealed that vitamin B12 deficiency is relatively common in children with gastrointestinal diseases, especially those diagnosed with celiac disease, Crohn's disease, and atrophic gastritis. Clinical manifestations frequently reported include megaloblastic anemia, developmental delays, fatigue, and neurological symptoms such as irritability and poor coordination. Laboratory tests consistently showed low serum vitamin B12 levels, often accompanied by elevated methylmalonic acid and homocysteine concentrations, indicating functional deficiency. Treatment with vitamin B12 supplementation, either orally or parenterally, resulted in significant clinical improvement and reversal of hematological abnormalities in most cases. However, the timing of diagnosis and intervention was critical, as delayed treatment was associated with persistent neurological deficits in some children.

The findings of this study emphasize the significant impact of vitamin B12 deficiency in children suffering from gastrointestinal diseases. The impaired absorption caused by mucosal damage or dysfunction in the gastrointestinal tract plays a central role in the development of this deficiency. Conditions such as celiac disease and Crohn's disease disrupt the normal uptake of vitamin B12, leading to hematological and neurological complications that can severely affect a child's growth and development. Early diagnosis is often challenging due to the nonspecific nature of symptoms, which may overlap with other nutritional deficiencies or the primary gastrointestinal condition. However, timely intervention with vitamin B12 supplementation has been shown to reverse many of the adverse effects, particularly the hematological abnormalities, and improve neurological outcomes if initiated early. This underscores the importance of routine screening for vitamin B12 levels in pediatric patients with chronic gastrointestinal diseases. Moreover, integrated management involving gastroenterologists, pediatricians, and nutritionists is essential for optimal care and prevention of long-term complications.

Conclusion

Vitamin B12 deficiency represents a significant health concern among children with gastrointestinal diseases due to the critical role of this vitamin in hematopoiesis and neurological development. The disruption of normal absorption mechanisms, commonly caused by conditions such as celiac disease, Crohn's disease, and chronic gastritis, leads to insufficient vitamin B12 levels which may result in megaloblastic anemia, developmental delays, cognitive impairment, and neuropathies. The nonspecific symptoms of deficiency often overlap with those of the primary gastrointestinal disorder, contributing to underdiagnosis and delayed treatment. However, with timely screening and appropriate supplementation—either oral or parenteral—many of the hematological manifestations can be reversed, and neurological progression can be halted or improved if therapy begins early. The integration of routine vitamin B12 status assessment into the clinical management of children with chronic GI diseases is thus imperative. Multidisciplinary approaches involving pediatricians, gastroenterologists, and nutrition specialists are essential to optimize patient outcomes, prevent long-term complications, and support healthy growth and neurodevelopment. Future research should focus on developing standardized screening protocols and evaluating the efficacy of different supplementation regimens in this vulnerable population.

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Entered 20.04.2025