

**IRON-DEFICIENCY ANEMIA IN YOUNG WOMEN: SILENT COURSE AND
DELAYED DIAGNOSIS**

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Abstract

Iron-deficiency anemia (IDA) is a common hematological disorder in young women, often presenting with subtle or nonspecific symptoms, which can delay diagnosis. Typical clinical manifestations include fatigue, pallor, dizziness, weakness, and reduced exercise tolerance, but many patients remain asymptomatic in early stages. Delayed recognition of IDA can lead to impaired cognitive function, reduced quality of life, and complications during pregnancy. Early detection through routine screening, laboratory evaluation of hemoglobin, ferritin, and iron levels, and addressing underlying causes is critical for effective management. Increasing awareness among clinicians and patients is essential to prevent delayed diagnosis and long-term consequences [1,2].

Keywords

Iron-deficiency anemia, young women, silent course, delayed diagnosis, hemoglobin, ferritin, iron deficiency.

Annotatsiya

Temir tanqisligi anemiyasi (TTA) yosh ayollarda keng tarqalgan qon kasalligi bo'lib, ko'pincha noaniq yoki sezilmas belgilar bilan namoyon bo'ladi, bu esa tashxisni kechiktiradi. Klinik belgilarga charchoq, teri pallorasi, bosh aylanishi, zaiflik va jismoniy chidamlilikning pasayishi kiradi, ammo ko'pchilik bemorlar dastlab simptomsiz bo'lishi mumkin. TTAni kech aniqlash kognitiv funksiyaning pasayishi, hayot sifatining kamayishi va homiladorlik davrida asoratlarni keltirib chiqarishi mumkin. Tashxisni o'z vaqtida qo'yish uchun muntazam skrining, gemoglobin, ferritin va temir darajasini laboratoriya tekshiruvini va asosiy sabablarni aniqlash muhimdir. Shifokorlar va bemorlar o'rtasida xabardorlikni oshirish kechikkan tashxis va uzoq muddatli oqibatlarini oldini olishga yordam beradi [1,2].

Kalit so'zlar

Temir tanqisligi anemiyasi, yosh ayollar, yashirin kechish, kech tashxis, gemoglobin, ferritin, temir yetishmovchiligi.

Аннотация

Железодефицитная анемия (ЖДА) является распространённым гематологическим нарушением у молодых женщин, часто проявляясь слабыми или неспецифическими симптомами, что может привести к задержке диагностики. Типичные клинические проявления включают усталость, бледность кожи, головокружение, слабость и снижение физической выносливости, однако на ранних стадиях многие пациенты остаются бессимптомными. Позднее выявление ЖДА может привести к нарушению когнитивных функций, снижению качества жизни и осложнениям во время беременности. Раннее выявление с помощью регулярного скрининга, лабораторного определения гемоглобина, ферритина и уровня железа, а также выявление и устранение первопричин имеет решающее значение для эффективного лечения. Повышение осведомлённости среди

врачей и пациентов необходимо для предотвращения задержки диагностики и долгосрочных последствий [1,2].

Ключевые слова

Железодефицитная анемия, молодые женщины, скрытое течение, поздняя диагностика, гемоглобин, ферритин, дефицит железа.

Introduction

Iron-deficiency anemia (IDA) is one of the most common nutritional and hematological disorders worldwide, disproportionately affecting young women due to menstrual blood loss, dietary insufficiency, and increased iron requirements during adolescence and pregnancy [1]. Despite its high prevalence, IDA often remains underdiagnosed in young women because early symptoms are subtle, nonspecific, or even absent. Fatigue, pallor, dizziness, headaches, reduced concentration, and diminished exercise tolerance are common presentations, but these can easily be mistaken for normal physiological variations, stress, or other medical conditions.

Delayed diagnosis of IDA can have significant consequences, including impaired cognitive function, reduced physical performance, decreased quality of life, and increased risk of complications during pregnancy. Additionally, chronic iron deficiency may contribute to long-term health issues such as restless leg syndrome, impaired immunity, and cardiovascular stress [2].

Laboratory evaluation remains the cornerstone of diagnosis, including hemoglobin concentration, serum ferritin, transferrin saturation, and serum iron levels. Early recognition and management of IDA require not only laboratory confirmation but also identification and treatment of underlying causes, such as menstrual disorders, gastrointestinal blood loss, or inadequate dietary intake. Increased awareness among clinicians and young women themselves is essential to improve early detection and prevent complications.

In summary, understanding the silent course of iron-deficiency anemia in young women and implementing timely diagnostic strategies are critical steps for effective prevention, management, and improvement of patient outcomes [1,2].

Research Methodology

This study employed a combination of literature review and clinical data analysis to examine the silent course and diagnostic delays of iron-deficiency anemia (IDA) in young women. Peer-reviewed journals, clinical guidelines, and recent research articles published over the last decade were reviewed. The selection criteria focused on studies addressing prevalence, risk factors, clinical manifestations, diagnostic challenges, and management strategies in women aged 15–35 years [1].

The methodology included the following steps:

Systematic Literature Review: Scientific databases such as PubMed, Scopus, and Web of Science were searched using keywords including “iron-deficiency anemia,” “young women,” “silent course,” and “delayed diagnosis.” Articles describing epidemiology, laboratory diagnostics, and clinical management were prioritized.

Clinical Data Analysis: Reported laboratory parameters such as hemoglobin, ferritin, serum iron, and transferrin saturation were analyzed to identify common diagnostic patterns and thresholds for early detection.

Comparative Analysis: Studies comparing symptomatic and asymptomatic cases of IDA were examined to understand factors contributing to delayed recognition, including lifestyle, dietary intake, menstrual history, and comorbid conditions.

Synthesis of Findings: The collected data were integrated to identify key barriers to early diagnosis, highlight effective diagnostic approaches, and propose strategies for improved patient awareness and clinical management [5].

This methodological framework ensures a structured, evidence-based approach to understanding the silent progression of IDA in young women, the factors contributing to delayed diagnosis, and strategies for early intervention to improve health outcomes [4,5].

Research Results

The analysis of current literature and clinical reports demonstrates that iron-deficiency anemia (IDA) in young women frequently progresses silently, leading to delayed diagnosis. Many patients remain asymptomatic in the early stages, with subtle signs such as mild fatigue, pallor, and decreased concentration often overlooked by both patients and clinicians [1].

Epidemiological studies indicate that menstrual blood loss is the leading cause of IDA in this population, followed by inadequate dietary iron intake, gastrointestinal blood loss, and increased requirements during adolescence or early pregnancy. Laboratory analysis consistently shows low hemoglobin and ferritin levels as the primary indicators of iron deficiency, with transferrin saturation and serum iron serving as supplementary diagnostic parameters [2].

Clinical reports highlight that the median delay between symptom onset and diagnosis can range from several months to over a year. Factors contributing to this delay include nonspecific symptom presentation, misattribution of fatigue and weakness to lifestyle or stress, and lack of routine screening in primary care settings. Women with chronic or severe IDA were more likely to present with complications such as impaired cognitive function, reduced physical performance, and in some cases, cardiovascular stress [6,7].

Overall, the results underscore that the silent progression of IDA in young women remains a significant public health concern. Early identification through routine laboratory screening, awareness of risk factors, and timely intervention is essential to prevent long-term health consequences and improve quality of life [7,8].

Literature Review

Iron-deficiency anemia (IDA) is widely recognized as a major public health concern, particularly in young women due to menstrual blood loss, dietary insufficiency, and increased physiological demands during adolescence and early adulthood. Numerous studies emphasize that IDA often progresses silently, with many patients remaining asymptomatic or displaying nonspecific signs such as fatigue, pallor, dizziness, and reduced concentration [9].

Epidemiological research consistently shows that the prevalence of IDA in women of reproductive age ranges from 20% to 40% in developing countries, with lower but significant rates in developed nations. Menstrual bleeding, inadequate dietary iron intake, and underlying gastrointestinal conditions are frequently cited as primary contributors to iron deficiency [2].

Clinical studies have highlighted that laboratory evaluation—hemoglobin concentration, serum ferritin, serum iron, and transferrin saturation—is crucial for early detection. However, delays in diagnosis remain common due to underreporting of subtle symptoms, lack of routine screening, and limited clinician awareness of early-stage IDA presentations. Case series and observational studies further reveal that delayed recognition may lead to cognitive impairment, decreased physical performance, and, in women of reproductive age, increased risk of pregnancy-related complications [1,2].

Recent reviews underscore the importance of patient education and proactive screening programs to identify asymptomatic or mildly symptomatic women at risk of IDA. Multidisciplinary approaches integrating dietetic counseling, gynecological evaluation, and

hematological assessment are recommended for early intervention and prevention of long-term complications [5,9].

In summary, the literature confirms that IDA in young women is frequently underdiagnosed due to its silent course, emphasizing the need for heightened awareness, routine screening, and timely management to improve health outcomes and prevent complications [1,2].

Conclusion

Iron-deficiency anemia (IDA) in young women is a prevalent and often underrecognized hematological disorder, characterized by a silent progression and nonspecific early symptoms. Delayed diagnosis is common due to the subtle nature of initial manifestations such as fatigue, pallor, dizziness, and decreased concentration, which are frequently misattributed to lifestyle factors, stress, or normal physiological variations [1].

The literature demonstrates that menstrual blood loss, inadequate dietary intake, gastrointestinal blood loss, and increased physiological demands during adolescence and early adulthood are the primary contributors to IDA in this population. Laboratory assessment of hemoglobin, ferritin, serum iron, and transferrin saturation remains critical for early detection, and routine screening is highly recommended for at-risk individuals [2].

Early recognition and intervention are essential to prevent complications, including impaired cognitive function, decreased physical performance, and adverse outcomes during pregnancy. Management strategies should combine dietary counseling, iron supplementation, treatment of underlying causes, and patient education to optimize health outcomes. Increased awareness among healthcare providers and young women themselves is crucial to reduce diagnostic delays and associated morbidity [9,2].

In conclusion, the silent course of IDA in young women presents significant diagnostic challenges, but proactive screening, timely laboratory evaluation, and multidisciplinary management can effectively improve patient outcomes, prevent long-term complications, and enhance quality of life. Awareness, early intervention, and comprehensive care remain the cornerstones of addressing this common yet often overlooked condition [10].

Iron-deficiency anemia (IDA) in young women is a condition that is often underdiagnosed, primarily due to its subtle and nonspecific clinical presentation. Many women with IDA present with common symptoms like fatigue, paleness, dizziness, and reduced exercise tolerance, which are frequently dismissed as benign or attributed to other factors such as stress, poor sleep, or emotional distress [3]. These delayed diagnoses can have profound impacts on the patients' health, affecting their physical and cognitive performance, as well as their overall quality of life.

The underdiagnosis of IDA highlights the need for systematic screening, particularly in young women who are at higher risk due to menstruation, pregnancy, and the increasing demand for iron during periods of rapid growth and development. Research suggests that early screening could significantly reduce the time between symptom onset and diagnosis, preventing the adverse effects associated with prolonged iron deficiency. Current guidelines recommend iron screening in adolescents and young women, especially those with known risk factors, such as heavy menstrual bleeding or dietary insufficiencies [8].

Furthermore, multidisciplinary care involving not only hematologists but also gynecologists, nutritionists, and primary care physicians is critical in managing IDA effectively. Iron supplementation is commonly prescribed as the first-line treatment, but dietary modifications, counseling on iron-rich foods, and addressing any underlying causes—such as gastrointestinal bleeding or absorption issues—are crucial components of a comprehensive treatment plan. In cases of severe or chronic IDA, intravenous iron therapy may be necessary, and long-term monitoring is essential to prevent recurrence.

Beyond the treatment of symptoms, patient education plays an integral role in managing iron deficiency. Young women should be informed about the importance of iron in their overall health, how to improve iron intake through diet, and the risks associated with untreated IDA. Increasing awareness about IDA through public health campaigns and educational programs targeted at both the general population and healthcare providers can aid in reducing diagnostic delays and improving early intervention.

In conclusion, while IDA remains a common condition among young women, its often silent course poses significant diagnostic challenges. Improved clinical awareness, systematic screening, timely intervention, and a comprehensive, patient-centered approach to treatment are key to preventing long-term health issues, improving quality of life, and ensuring better health outcomes. By enhancing the understanding of this condition and encouraging early detection, the healthcare system can mitigate the widespread impact of iron-deficiency anemia on young women's health [1,2].

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