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IMMUNE THROMBOCYTOPENIC PURPURA

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Abstract: Immune Thrombocytopenic Purpura (ITP) is an autoimmune hematological disorder characterized by a decreased platelet count due to immune-mediated destruction. This article explores the etiology, pathogenesis, clinical features, diagnostic approaches, and treatment strategies for ITP in children. The study emphasizes early diagnosis and individualized management to prevent hemorrhagic complications and improve patients' quality of life.

Keywords: Immune thrombocytopenic purpura, autoimmune disease, platelet destruction, hemorrhagic syndrome, pediatric hematology

Аннотация: Иммунная тромбоцитопеническая пурпура (ИТП) — это аутоиммунное гематологическое заболевание, характеризующееся снижением количества тромбоцитов вследствие их иммунного разрушения. В статье рассматриваются причины, патогенез, клинические проявления, методы диагностики и подходы к лечению ИТП у детей. Особое внимание уделено ранней диагностике и индивидуальной терапии для профилактики геморрагических осложнений и улучшения качества жизни пациентов.

Ключевые слова: иммунная тромбоцитопеническая пурпура, аутоиммунные заболевания, разрушение тромбоцитов, геморрагический синдром, детская гематология

Annotatsiya: Immun trombotsitopenik purpura (ITP) — bu trombotsitlar sonining kamayishi bilan kechuvchi autoimmun gematologik kasallik bo‘lib, ularning immun tizimi tomonidan parchalanishi natijasida rivojlanadi. Maqolada kasallikning kelib chiqish sabablari, patogenezi, klinik belgilari, diagnostik usullari va davolash strategiyalari tahlil qilinadi. Tadqiqotda bolalarda erta tashxis qo‘yish va individual davolash yondashuvining qon ketish asoratlarini kamaytirishdagi ahamiyati yoritilgan.

Kalit so‘zlar: immun trombotsitopenik purpura, autoimmun kasallik, trombotsitlar parchalanishi, gemorragik sindrom, bolalar gematologiyasi

Introduction

Immune Thrombocytopenic Purpura (ITP) is a chronic autoimmune hematological disorder characterized by isolated thrombocytopenia, resulting from increased platelet destruction and impaired platelet production. The condition is caused by the formation of autoantibodies directed against platelet surface antigens, primarily glycoproteins IIb/IIIa and Ib/IX. These antibodies lead to the premature destruction of platelets by the reticuloendothelial system, mainly in the spleen. ITP occurs in both adults and children; however, in pediatric patients, it often develops after viral infections and tends to have an acute and self-limiting course. In contrast, chronic ITP is more frequent in adults and may require long-term immunosuppressive therapy. In children,

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ITP is one of the most common acquired bleeding disorders and presents with clinical manifestations such as petechiae, ecchymoses, epistaxis, and, in rare cases, severe internal bleeding. Early recognition and appropriate management are crucial to prevent life-threatening hemorrhagic complications. The purpose of this study is to analyze the etiological factors, immunopathogenesis, clinical presentation, diagnostic methods, and modern treatment approaches of Immune Thrombocytopenic Purpura in pediatric patients. Furthermore, the study aims to emphasize the significance of early diagnosis and individualized therapy in improving prognosis and long-term outcomes.

Materials and Methods

This study was conducted on pediatric patients diagnosed with Immune Thrombocytopenic Purpura (ITP) based on clinical and laboratory criteria. The research included children aged 1 to 16 years who were observed in the pediatric hematology and infectious diseases departments. A retrospective and observational analysis was performed to evaluate clinical presentations, hematological findings, and treatment responses in patients with ITP. Medical records, laboratory data, and treatment histories were reviewed to assess the course and outcomes of the disease.

Diagnosis of ITP was based on the following parameters: Isolated thrombocytopenia (platelet count < 100 × 10^9/L), Normal or increased megakaryocytes in bone marrow aspirates. Absence of splenomegaly, lymphadenopathy, or other systemic diseases. Exclusion of secondary causes of thrombocytopenia (e.g., viral hepatitis, HIV, lupus). Laboratory tests included complete blood count (CBC), peripheral blood smear, bone marrow examination, and serological tests to detect viral infections (EBV, CMV, HIV, hepatitis B/C). Patients were treated following standard ITP management guidelines, including: Corticosteroids (prednisolone 1–2 mg/kg/day). Intravenous immunoglobulin (IVIG) for severe cases or steroid-resistant forms. Anti-D immunoglobulin for Rh-positive patients.

Results

The study included 48 pediatric patients aged 1 to 16 years who were diagnosed with Immune Thrombocytopenic Purpura (ITP). Among them, 28 (58.3%) were boys and 20 (41.7%) were girls. The mean age at diagnosis was 7.2 ± 3.1 years. Petechiae and ecchymosis were the most common symptoms (95.8% of cases). Epistaxis was observed in 31.2% of patients.Gingival bleeding occurred in 22.9%, while hematuria and menorrhagia were rare (4.1% and 2.0%, respectively). None of the patients had splenomegaly or lymphadenopathy, confirming the diagnosis of primary ITP. Average platelet count at admission: 28 × 10^9/L. Hemoglobin and leukocyte counts were within normal limits in 91.6% of cases. Bone marrow aspiration showed normal or increased megakaryocytes, consistent with peripheral platelet destruction.

A history of viral infection within 2–3 weeks before disease onset was reported in 56.2% of patients, suggesting a post-infectious autoimmune mechanism. Corticosteroid therapy resulted in a complete response (platelet count > 100 × 10^9/L within 7–10 days) in 64.5% of cases. IVIG therapy was administered to 14 patients with severe thrombocytopenia (< 10 × 10^9/L), with a rapid response in 85.7% of them.

Discussion

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The results of this study confirm that Immune Thrombocytopenic Purpura (ITP) remains one of the most common causes of acquired thrombocytopenia in children. The predominance of acute and self-limiting forms observed in our study aligns with previous reports by Neunert et al. (2019) and Provan et al. (2023), who emphasized that pediatric ITP typically follows a benign post-viral course. In our cohort, more than half of the patients reported a recent viral infection prior to disease onset, supporting the hypothesis that autoimmune platelet destruction is often triggered by molecular mimicry between viral antigens and platelet glycoproteins. This mechanism leads to the production of anti-platelet antibodies that accelerate splenic clearance of platelets. The clinical presentation in our study — characterized mainly by cutaneous and mucosal bleeding (petechiae, ecchymoses, epistaxis) — corresponds with findings from global pediatric ITP studies, where severe internal bleeding is rare but potentially life-threatening. Early detection of these symptoms plays a crucial role in preventing hemorrhagic complications. Therapeutic response analysis revealed that first-line corticosteroid therapy was effective in approximately two-thirds of patients, while IVIG provided rapid platelet recovery in severe or steroid-resistant cases. These outcomes are consistent with international treatment guidelines, which recommend individualized management based on disease severity, bleeding risk, and response to therapy. Importantly, only a small proportion (8.3%) of patients progressed to chronic ITP. This figure demonstrates that timely diagnosis and appropriate immunomodulatory therapy can significantly improve prognosis and reduce the need for aggressive treatments, such as splenectomy.

Conclusion

Immune Thrombocytopenic Purpura (ITP) in children is primarily an autoimmune disorder triggered by viral infections, leading to accelerated platelet destruction and bleeding manifestations of varying severity. Early recognition of clinical signs such as petechiae, bruising, and mucosal hemorrhages is essential for timely diagnosis and management. Our study demonstrates that corticosteroids remain an effective first-line treatment in most pediatric patients, while intravenous immunoglobulin (IVIG) serves as a valuable alternative for severe or corticosteroid-resistant cases. The low rate of chronic progression indicates that appropriate early therapy significantly improves clinical outcomes and reduces long-term complications. Further large-scale and multicenter studies are recommended to better understand regional differences in disease prevalence and to optimize treatment protocols for children with ITP.

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