THE PERSPECTIVE OF NEW ERA SCIENCES
INTERNATIONAL SCIENTIFIC JOURNAL
www.global-science-review.com
editor@global-science-review.com

PRIMARY IMMUNE THROMBOCYTOPENIA: CURRENT ASPECTS OF DIAGNOSIS AND TREATMENT

Juraeva Nodira Tukhtapulatovna, Radjabova Selen Olimovna

EMU University

Radjabova Komila Olimovna

KIUT University

Keywords: thrombocytopenia, hemorrhagic syndrome, immune response, thrombopoietin, megakaryocytes.

Abstract. The aim of this paper is to present current approaches to the diagnosis and treatment of primary immune thrombocytopenia, including contemporary concepts of its pathogenesis, diagnostic criteria, assessment of bleeding risk, indications for initiating therapy, and the main approaches to pharmacological treatment. Particular attention is paid to modern therapeutic strategies for immune thrombocytopenia, including the use of thrombopoietin receptor agonists (TPO-RAs), which stimulate thrombopoiesis and increase platelet counts by acting on the megakaryocytic lineage of hematopoiesis.

Introduction. Primary immune thrombocytopenia (ITP) is an acquired autoimmune disorder characterized by an isolated decrease in the peripheral blood platelet count to less than 100 × 10^9/L in the absence of other causes of thrombocytopenia. The disease may be accompanied by hemorrhagic manifestations of varying severity, ranging from an absence of clinical symptoms to severe, potentially life-threatening bleeding. The pathogenesis of ITP is based on a loss of immune tolerance to autologous platelets. Activation of B lymphocytes leads to the production of autoantibodies, predominantly immunoglobulin G (IgG), directed against platelet membrane glycoproteins, most commonly glycoprotein complexes GPIIb/IIIa and GPIb/IX. Antibody-coated platelets are recognized by cells of the mononuclear phagocytic system and are predominantly destroyed in the spleen.

However, the pathogenesis of ITP is not limited to increased peripheral platelet destruction. Impaired platelet production in the bone marrow also plays an important role. Autoimmune mechanisms may affect megakaryocytes, the precursor cells responsible for platelet production, thereby impairing their maturation and platelet release. In addition, abnormalities in T-cell regulation, altered activity of cytotoxic T lymphocytes, and an imbalance among different immune cell subsets contribute to the development and persistence of the disease. The clinical manifestations of ITP are primarily associated with impaired primary hemostasis. The most common manifestations include petechiae, ecchymoses, spontaneous bruising, gingival bleeding, epistaxis, and heavy menstrual bleeding. In severe cases, gastrointestinal, genitourinary, and intracranial hemorrhages may occur. Importantly, the severity of hemorrhagic manifestations does not always correlate directly with the platelet count. ITP can occur at any age. The clinical course of the disease is highly variable: some patients experience spontaneous recovery of the platelet count, whereas in others the disease becomes persistent or chronic and requires long-term treatment.

Diagnosis and Research Methods. The diagnosis of primary immune thrombocytopenia (ITP) is one of exclusion. Currently, there is no specific laboratory test that can independently confirm the diagnosis of ITP. Therefore, the diagnostic process is primarily aimed at confirming isolated thrombocytopenia and excluding other diseases and conditions that may cause a reduced platelet count. The initial assessment includes a complete blood count with platelet count and evaluation of other blood cell lineages, examination of a peripheral blood smear, collection of a detailed medical history, and physical examination. Particular attention should be paid to excluding drug-induced thrombocytopenia, infectious diseases, liver disorders, systemic autoimmune diseases, inherited forms of thrombocytopenia, and bone marrow disorders. Depending on the clinical situation, additional laboratory

investigations may be performed to identify underlying or associated conditions. These may include testing for infections such as hepatitis B and C viruses and human immunodeficiency virus (HIV), as well as other investigations based on the patient's clinical presentation and risk factors. Bone marrow examination is not routinely required in every patient with a typical clinical and laboratory presentation of ITP. It is primarily indicated when there are diagnostic uncertainties, atypical findings in the complete blood count or peripheral blood smear, unexplained abnormalities in other blood cell lineages, or a need to exclude other hematological disorders. Thus, the diagnosis of primary ITP requires a comprehensive assessment of clinical, laboratory, and, when indicated, instrumental findings. A systematic diagnostic approach is essential for distinguishing primary ITP from secondary thrombocytopenia and other hematological conditions and for selecting an appropriate treatment strategy.

Treatment. The primary goal of ITP treatment is not necessarily to normalize the platelet count, but rather to prevent clinically significant bleeding and maintain a safe platelet level while minimizing treatment-related toxicity. The therapeutic strategy should be individualized according to the patient's clinical condition, bleeding risk, platelet count, disease duration, comorbidities, previous treatment, and response to therapy. In patients with a low risk of bleeding and no significant hemorrhagic manifestations, close observation without immediate specific treatment may be appropriate in selected cases. Such patients require regular clinical assessment and monitoring of platelet counts to detect changes in disease activity and determine whether treatment should be initiated. When treatment is indicated, glucocorticosteroids are generally used as first-line therapy. They exert immunomodulatory and immunosuppressive effects, reducing immune-mediated platelet destruction and, consequently, increasing the platelet count. Intravenous immunoglobulins (IVIG) may also be used in specific clinical situations, particularly

when a rapid increase in the platelet count is required, such as in patients with significant bleeding or before urgent invasive procedures. Patients who have an inadequate response to first-line therapy, lose their response, or develop persistent or chronic ITP may require second-line treatment. Available therapeutic options include thrombopoietin receptor agonists (TPO-RAs), rituximab, and other approaches. The choice of treatment should be individualized and based on the patient's clinical characteristics, disease course, previous treatment, treatment goals, and potential risks and benefits.

Thrombopoietin Receptor Agonists. One of the important advances in the treatment of ITP has been the introduction of thrombopoietin receptor agonists (TPO-RAs). This class includes eltrombopag and romiplostim, while other agents of this class are also available in certain countries. The mechanism of action of TPO-RAs differs fundamentally from that of immunosuppressive agents. These drugs stimulate the thrombopoietin receptor on megakaryocytes and their progenitor cells, promoting megakaryocyte proliferation and maturation and consequently increasing platelet production in the bone marrow. Thus, TPO-RAs act primarily by correcting the impaired platelet production that contributes to the pathogenesis of ITP. Treatment with TPO-RAs can result in a clinically significant increase in platelet counts in a substantial proportion of patients with persistent or chronic ITP. The therapeutic objective is generally to maintain the platelet count at a level sufficient to prevent clinically relevant bleeding rather than to achieve complete normalization of the platelet count. The choice of a specific TPO-RA depends on the clinical circumstances, availability of the medication, comorbidities, potential adverse effects, patient preferences, route and frequency of administration, and previous treatment history. Treatment should be accompanied by regular monitoring of the complete blood count and platelet count. The dose is adjusted according to the patient's response and platelet levels. Particular attention should also be paid to the potential risk of thrombotic complications and other adverse events associated with

treatment. Therefore, the use of TPO-RAs requires an individualized assessment of the expected benefits and potential risks, as well as regular clinical and laboratory monitoring.

Individualized Treatment Strategy. The modern approach to the management of ITP is based on individualized treatment. The same platelet count may have different clinical significance in different patients, and the decision to initiate treatment should therefore be based not solely on the laboratory value but also on the overall clinical presentation. When selecting treatment, clinicians should consider the patient's age, history of previous bleeding, comorbid conditions, concomitant use of anticoagulants or antiplatelet agents, lifestyle and risk of trauma, reproductive plans, and the impact of ITP on quality of life. The duration of the disease and the patient's previous response to treatment are also important factors in determining the optimal therapeutic strategy.

Thus, modern treatment of ITP is aimed at achieving sustained disease control while minimizing treatment-related complications. The development of targeted therapeutic approaches, particularly the use of thrombopoietin receptor agonists, has substantially expanded the treatment options for patients with persistent and chronic ITP. These agents have contributed to a shift from predominantly immunosuppressive strategies toward a more pathophysiologically oriented approach aimed at stimulating impaired platelet production and maintaining a clinically safe platelet count.

References

1. Provan D., Arnold D.M., Bussel J.B. et al. Updated international consensus report on the investigation and management of primary immune thrombocytopenia 2019.
2. Neunert C., Terrell D.R., Arnold D.M. et al. American Society of Hematology 2019 guidelines for immune thrombocytopenia 2019.

3. Cooper N., Kruse A., Kruse C. et al. Immune thrombocytopenia (ITP) world impact survey (iWISh): patient and physician perceptions of diagnosis, signs and symptoms, and treatment 2021. Vol. 96, № 2. P. 188–198.
4.Matzdorff A., Alesci S.R., Gebhart J. et al. Expert report on immune thrombocytopenia: current diagnostics and treatment—recommendations from an expert group from Austria, Germany, and Switzerland 2023.