IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, December 2025
Impact Factor: 7.67

# Review on Topic the Changing Landscape of Diagnosis and Treatment of ITP

**Miss. Shraddha Chandrakant Kewate, Dr. Avinash S. Jiddewar, Miss. Urvashi Sunil Jadhav**
**Miss. Ayesha Mirza Tarique Baig, Miss. Ishwari Bhauji Gate**
NSPM College of Pharmacy, Darwha, Yavatmal

**Abstract:** *Immune Thrombocytopenic Purpura (ITP) is an autoimmune hematologic disorder characterized by immune-mediated platelet destruction and resultant thrombocytopenia, which collectively contribute to an elevated risk of hemorrhage. The condition is broadly categorized into acute ITP—most frequently observed in pediatric populations, often following viral infections—and chronic ITP, which predominates in adult patients. The underlying pathophysiology involves the production of autoantibodies directed against platelet surface antigens, leading to accelerated platelet clearance and, in some cases, impaired megakaryocyte function with reduced platelet synthesis in the bone marrow.*
*Therapeutic approaches include corticosteroids, intravenous immunoglobulin (IVIg), rituximab, thrombopoietin receptor agonists, and splenectomy, each targeting different aspects of the disease mechanism. Despite substantial advances in treatment modalities, ITP continues to pose significant clinical challenges. Ongoing research efforts are focused on optimizing therapeutic algorithms and improving long-term outcomes for affected individuals..*

**Keywords**: ITP, Platelet destruction, Bone marrow examination, Purpura, Corticosteroid, Elroma

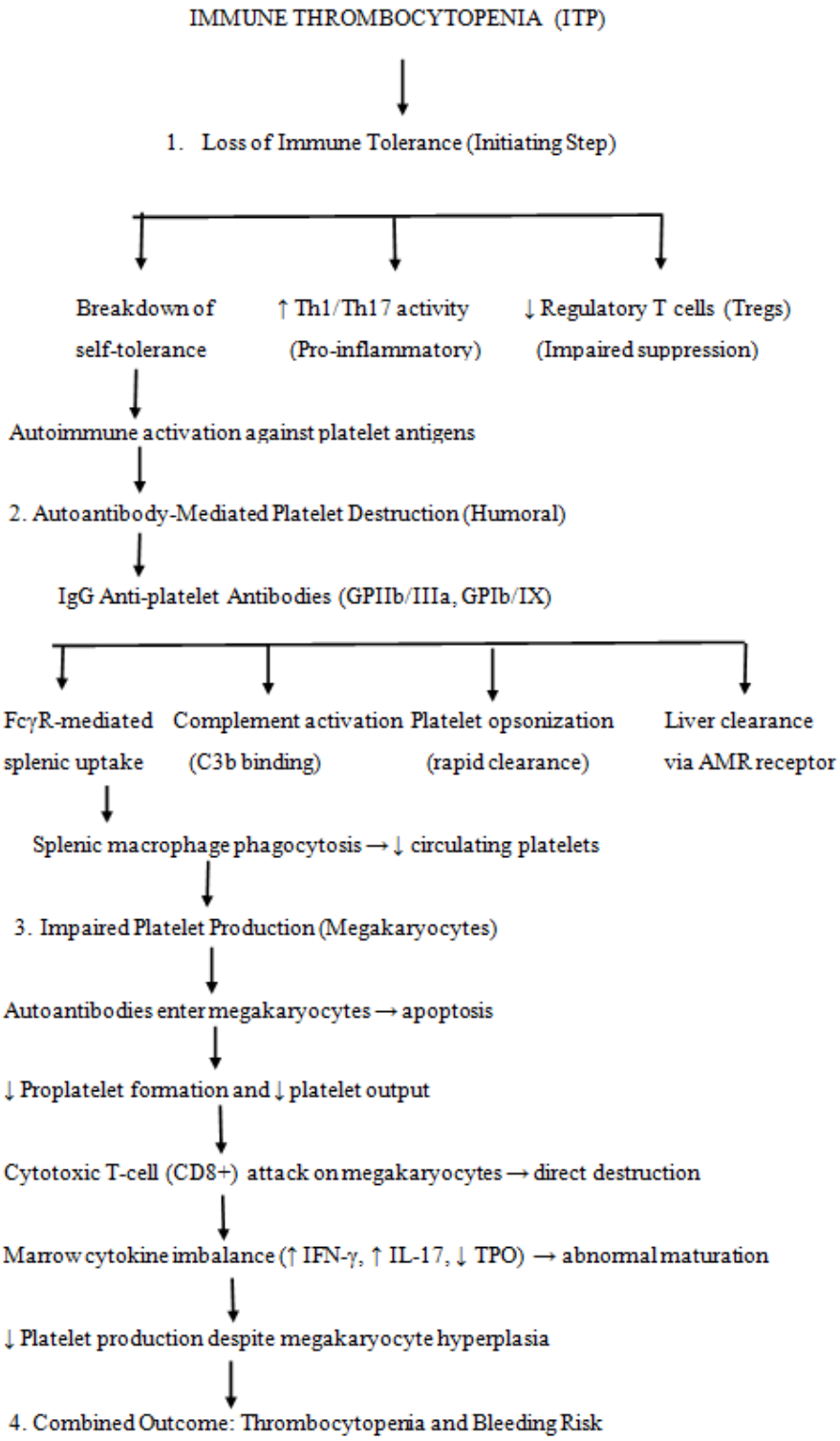
## I. INTRODUCTION

Immune Thrombocytopenic Purpura (ITP) is an acquired autoimmune hematologic disorder characterized by isolated thrombocytopenia arising from both enhanced peripheral platelet destruction and impaired platelet production[1,2]. Once regarded as a relatively benign condition, ITP is now recognized as a multifaceted and heterogeneous disease involving complex interactions among dysregulated immune pathways, autoreactive lymphocytes, and abnormalities in megakaryocyte maturation and function[1,3]. Clinically, the disorder encompasses a broad spectrum of presentations, ranging from incidental thrombocytopenia to life-threatening hemorrhage[4]. Moreover, its classification into acute and chronic forms underscores distinct epidemiologic and pathophysiologic patterns, particularly differentiating pediatric from adult populations in terms of triggers, natural history, and therapeutic responsiveness[2].

Advances over recent decades have substantially deepened the understanding of ITP immunopathogenesis, elucidating the contributions of B-cell autoreactivity, T-cell subset imbalance, antigen-driven autoantibody formation, and platelet-specific immune targeting[1,3,5]. These developments have catalyzed a shift from reliance on traditional therapies—such as corticosteroids and splenectomy—to the integration of targeted treatments, including thrombopoietin receptor agonists (TPO-RAs), B-cell–directed agents, and emerging immunomodulatory interventions[1,4]. Nevertheless, management remains challenging due to heterogeneity in disease trajectory, variability in therapeutic response, and uncertainties regarding long-term outcomes[2].


DOI: 10.48175/568

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, December 2025
Impact Factor: 7.67





DOI: 10.48175/568

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, December 2025 Impact Factor: 7.67

**Pathophysiology of Immune Thrombocytopenia (ITP):**

Immune Thrombocytopenia (ITP) is a heterogeneous autoimmune disorder characterized by immune-mediated destruction of platelets and impaired platelet production. The disease arises from a breakdown of self-tolerance involving humoral, cellular, and innate immune pathways, ultimately leading to decreased circulating platelet mass despite compensatory megakaryocyte hyperplasia [6,7].

**1. Autoantibody-Mediated Platelet Destruction**

Autoantibodies Against Platelet Glycoproteins

• The central mechanism in ITP is the production of IgG autoantibodies targeting platelet surface antigens, primarily GPIIb/IIIa and GPIb/IX complexes [6,8].
• These autoantibodies promote platelet clearance by:
• Fcγ receptor–mediated phagocytosis by splenic macrophages
• Complement activation
• Reduced platelet lifespan (from 7–10 days to hours)

**Splenic Phagocytosis**

• Opsonized platelets are sequestered and phagocytosed in the spleen through FcγRI, FcγRIIA, and FcγRIIIA receptors expressed on macrophages [8].
• This mechanism is supported by clinical response to:
• IVIG, which blocks Fc receptors
• Splenectomy, which removes the major site of destruction [7,9]

**2. T-Cell–Mediated Immune Dysregulation**

Loss of Immune Tolerance

A shift toward a Th1 and Th17 dominant environment promotes autoantibody formation and cytotoxic activity [10].

Cytotoxic T-Lymphocyte (CTL)–Induced Platelet Killing

Beyond antibody-mediated mechanisms, $CD8^+$ T cells directly lyse platelets and megakaryocytes, contributing to thrombocytopenia even in patients without detectable autoantibodies [11].

Regulatory T Cell (Treg) Dysfunction

• Patients exhibit:
• Reduced Treg number
• Impaired suppressive function
• This contributes to ongoing autoimmunity and loss of self-tolerance [11].

**3. Impaired Platelet Production**

Historically, ITP was considered a disease of excessive destruction, but current evidence shows primary defects in megakaryocyte maturation and platelet production.

Megakaryocyte Apoptosis

• Autoantibodies enter megakaryocytes and trigger:
• Apoptosis
• Impaired proplatelet formation
• Diminished production of functional platelets
• These abnormalities are especially noted with anti-GPIb/IX and anti-GPIIb/IIIa antibodies [8,13].

T-cell–Mediated Megakaryocyte Damage

Cytotoxic T cells infiltrate marrow and induce death of megakaryocytes through perforin/granzyme pathways [12].

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, December 2025 Impact Factor: 7.67

Bone Marrow Microenvironment Defects
Alterations in cytokines such as TPO, IL-2, IL-17, and IFN-γ disrupt megakaryopoiesis and contribute to reduced platelet yield [11].

**4. Role of the Fcγ Receptor and Complement Pathways**

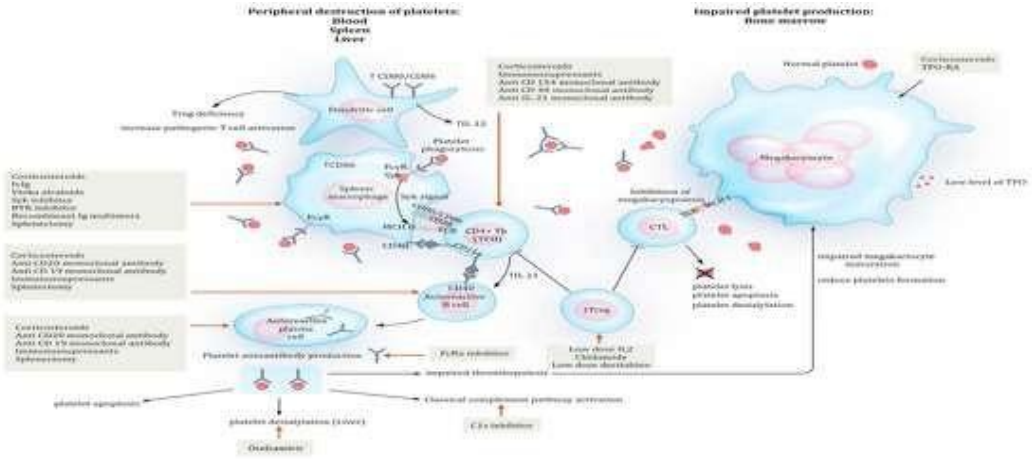
- Autoantibody-opsonized platelets engage FcγR-dependent pathways leading to macrophage activation and platelet clearance.
- Complement activation enhances opsonization and destruction through C3b deposition [8,12].
- New therapies like fostamatinib (Syk inhibitor) target these pathways by blocking Fc receptor signaling [13].

**5. B-Cell Abnormalities**

- Increased autoreactive B-cell clones
- Defective central and peripheral tolerance
- Expanded plasma cells producing anti-platelet antibodies
- Response to B-cell–depleting therapy (e.g., rituximab) confirms B-cell contribution to ITP
- pathogenesis [6,7].

**6. Emerging Concepts in ITP Pathophysiology**

Platelet Desialylation
Antibody-mediated desialylation marks platelets for removal by the Ashwell–Morell receptor in the liver, providing a spleen-independent clearance route [12].
Microbiome and Environmental Triggers
Infections (e.g., H. pylori) may induce molecular mimicry and trigger antibody formation in susceptible individuals [9].
Genetic and Epigenetic Factors
Polymorphisms affecting Fc receptors, cytokine genes, and immune signaling pathways have been linked to ITP susceptibility and chronicity [10].



IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, December 2025
Impact Factor: 7.67

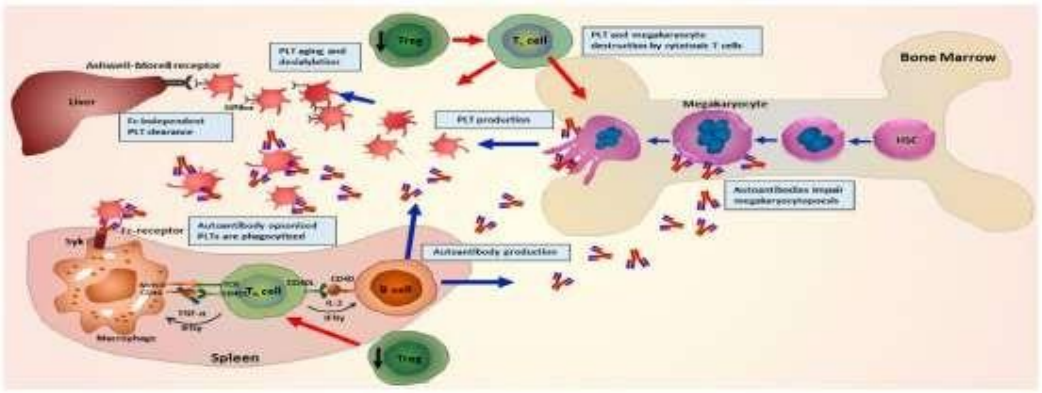



Fig.1,2 Pathophysiology of ITP

**Types of ITP:**

ITP can be classified based on the duration of the disease and the underlying cause. The two main categories are:

**1. Acute ITP:**

• Epidemiology: Acute ITP is most commonly seen in children, typically between the ages of 2 and 5 years. It often follows a viral infection, such as mumps, rubella, or Epstein-Barr virus, though the exact role of viral infections in the development of ITP is not fully understood.

• Clinical Course: Acute ITP generally has a self-limiting course, with many children recovering spontaneously within 6 months without the need for significant medical intervention. The platelet count in these patients usually returns to normal within weeks to months.

• Prognosis: The prognosis is generally favorable, with very few children experiencing chronic ITP after the acute episode resolves.

**2. Chronic ITP:**

• Epidemiology: Chronic ITP is more common in adults, particularly in women, and often persists for more than 12 months. It may also develop after an episode of acute ITP.

• Clinical Course: Chronic ITP is characterized by persistent low platelet counts and may have episodes of exacerbation or remission. In some patients, chronic ITP is secondary to other conditions, such as systemic lupus erythematosus (SLE) or HIV.

• Prognosis: Although chronic ITP can be challenging to manage, many patients can maintain an acceptable quality of life with appropriate treatment. However, the disease can be associated with significant morbidity, particularly due to bleeding complications and the side effects of long-term treatments.

**Clinical Representation of Immune Thrombocytopenia (ITP):**

Immune Thrombocytopenia (ITP) is an acquired autoimmune disorder characterized by isolated thrombocytopenia (platelet count $<100 \times 10^9$/L) resulting from increased platelet destruction and impaired platelet production due to autoantibodies and T- cell–mediated mechanisms that target platelet antigens and megakaryocytes [14,15].

Clinically, ITP presents with a wide spectrum of bleeding manifestations, ranging from asymptomatic thrombocytopenia to life-threatening hemorrhage. The severity of symptoms frequently correlates with platelet count, though interindividual variability exists [16].

**1. Mucocutaneous Bleeding**

• Mucocutaneous bleeding is the hallmark of ITP and includes:

• Petechiae and purpura: Non-palpable, non-blanching lesions predominantly on lower limbs [16].

• Ecchymoses: Spontaneous or minimal-trauma-related bruising.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, December 2025 Impact Factor: 7.67

• Epistaxis, gingival bleeding, and menorrhagia are common in moderate thrombocytopenia [17].
• Oral wet purpura indicates heightened risk of severe hemorrhage [14].
• These manifestations result from platelet dysfunction in primary hemostasis rather than coagulation abnormalities.

**2. Systemic and Non-Bleeding Symptoms**

• Although historically considered a bleeding disorder alone, recent evidence highlights that many patients experience non-bleeding symptoms, including:
• Fatigue: Reported in up to 50–70% of adult patients, significantly affecting quality of life (QoL) [18].
• Psychological distress and anxiety related to chronic disease burden [19].
• Such symptoms may persist despite adequate platelet counts, underscoring the immune-mediated systemic nature of ITP.

**3. Severe and Life-Threatening Bleeding**

• Severe hemorrhage is uncommon but clinically significant:
• Gastrointestinal bleeding
• Hematuria
• Intra-cranial hemorrhage (ICH): Occurs in <1% of adult and pediatric patients but is the major cause of mortality in ITP [14,20].
• Risk factors include very low platelet counts ($<10 \times 10^9$/L), advanced age, anticoagulant use, and comorbidities [20].

**4. Acute vs Chronic Clinical Course**

• The clinical presentation varies based on disease duration:
• Acute ITP (more common in children)
• Often post-infectious
• Sudden onset petechiae/purpura
• Self-resolving in >70% cases [21]
• Chronic ITP (more common in adults)
• Insidious onset
• Recurrent mucocutaneous bleeding
• Persistent fatigue
• Variable need for long-term therapy [14]

**5. Physical Examination Findings**

• Physical examination in ITP typically shows isolated thrombocytopenic bleeding without systemic features:
• No organomegaly
• No lymphadenopathy
• Normal vital signs unless acute bleeding
• Presence of splenomegaly or lymphadenopathy should prompt evaluation for secondary causes (e.g., leukemia, lymphoma, infections) [15].

**6. Laboratory Representation**

• Although not clinical features, key findings support diagnosis:
• Isolated thrombocytopenia
• Normal hemoglobin and white cell counts unless bleeding-related anemia
• Peripheral smear: large platelets, absence of dysplasia [16]

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, December 2025 Impact Factor: 7.67

**Diagnosis of Immune Thrombocytopenia (ITP) :**

The diagnosis of Immune Thrombocytopenia (ITP) is clinical and exclusion-based, requiring confirmation of isolated thrombocytopenia and ruling out secondary causes of low platelet count. According to international consensus guidelines, ITP is defined as a platelet count $<100 \times 10^9$/L in the absence of other causes of thrombocytopenia [22,23].

**1. Clinical Evaluation**

1. History and Physical Examination
2. Diagnosis begins with thorough clinical assessment:
3. Bleeding symptoms: petechiae, purpura, mucosal bleeding
4. Onset and duration of thrombocytopenia
5. Drug exposure, alcohol intake, recent infections or vaccinations
6. Autoimmune, hepatic, or thyroid diseases
7. Absence of lymphadenopathy, splenomegaly, and systemic symptoms supports primary ITP rather than secondary disorders [22,24].
8. Red-flag findings (e.g., bone pain, B-symptoms, organomegaly) suggest alternative diagnoses such as leukemia, aplastic anemia, or lymphoma [24].

**2. Laboratory Diagnosis**

ITP has no single definitive test; instead, routine laboratory studies aim to confirm isolated thrombocytopenia and exclude mimicking conditions.

**Complete Blood Count (CBC)**

- Isolated thrombocytopenia ($<100 \times 10^9$/L) is characteristic.
- Hemoglobin and leukocyte counts are typically normal unless there is bleeding- induced anemia [23].

**Peripheral Blood Smear**

- Review of the smear is essential to exclude pseudothrombocytopenia and other hematologic disorders:
- Large/giant platelets may be seen due to increased megakaryocytic activity
- Absence of schistocytes helps exclude TTP/HUS
- Lack of blasts helps rule out leukemia [22,24].

**Additional Laboratory Tests**

- Although no specific biomarker confirms ITP, selective testing is recommended based on clinical context:
- HIV and hepatitis C virus (HCV) screening in all adults [22,26]
- Thyroid function tests in selected patients
- Helicobacter pylori testing in regions with high prevalence
- Tests for autoimmune disorders, liver disease, or nutritional deficiencies when indicated [26]
- Routine anti-platelet antibody testing is not recommended due to low sensitivity and specificity [26].

**3. Bone Marrow Examination**

1. Bone marrow biopsy is not routinely required for typical ITP presentations.
2. It is indicated only when:
3. Age >60 years
4. Atypical blood counts
5. Systemic symptoms
6. Lack of response to first-line therapy
7. Suspicion of malignancy, marrow failure, or myelodysplasia [22,24]
8. Findings typically show:


DOI: 10.48175/568

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, December 2025 Impact Factor: 7.67

9. Normal or increased megakaryocytes
10. No dysplasia or infiltration [25]

**4. Diagnostic Criteria**

1. International consensus defines the diagnosis of ITP based on:
2. Platelet count <100 × $10^9$/L
3. Exclusion of other causes of thrombocytopenia
4. Clinical features compatible with platelet destruction or impaired production [23]
5. ITP is further classified as:
6. Newly diagnosed: <3 months
7. Persistent: 3–12 months
8. Chronic: >12 months [23]

**5. Differential Diagnosis**

1. ITP must be distinguished from multiple other causes of thrombocytopenia:
2. Pseudothrombocytopenia
3. Drug-induced immune thrombocytopenia (DITP)
4. Bone marrow failure syndromes (e.g., aplastic anemia, MDS)
5. Thrombotic microangiopathies (TTP, HUS)
6. Liver disease, hypersplenism
7. Infections (HIV, HCV, EBV, CMV)
8. Autoimmune disorders (SLE)
9. Congenital thrombocytopenias [24,26]
10. Evaluation is guided by clinical context rather than a fixed algorithm.

**Treatment of Immune Thrombocytopenia (ITP):**

The management of Immune Thrombocytopenia (ITP) focuses on preventing bleeding, improving platelet counts, minimizing treatment toxicity, and enhancing quality of life. Therapeutic decisions depend on patient age, platelet count, bleeding severity, disease duration (newly diagnosed, persistent, chronic), and response to prior treatment modalities [27,28].

**1. First-Line Therapy**

Corticosteroids

• Corticosteroids remain the standard first-line treatment for newly diagnosed ITP.
• Prednisone (0.5–2 mg/kg/day for 1–2 weeks) or
• Dexamethasone (40 mg daily for 4 days)
• are commonly used, with dexamethasone offering a more rapid platelet increase and fewer long-term adverse effects .
• Rapid responses occur in 60–80% of patients, although relapse is common after tapering [27,29].

Intravenous Immunoglobulin (IVIG)

IVIG (1 g/kg for 1–2 days) is indicated for patients requiring rapid platelet elevation, such as those with active bleeding or before surgery . IVIG works by saturating Fc receptors and reducing macrophage-mediated platelet clearance [30].

Anti-D Immunoglobulin

Used in Rh-positive, non-splenectomized patients, anti-D causes transient hemolysis but may induce platelets quickly . Use has declined due to safety concerns regarding intravascular hemolysis[31].

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, December 2025 Impact Factor: 7.67

**2. Second-Line Therapy**

Patients with persistent or chronic ITP or those who relapse after corticosteroids may require second-line treatment.

Thrombopoietin Receptor Agonists (TPO-RAs)

• Eltrombopag, romiplostim, and avatrombopag are highly effective, promoting platelet production by stimulating c-Mpl receptors.
• Response rates: 70–90%
• Reduced bleeding risk and improved quality of life
• Considered preferred second-line therapy in many guidelines [27,28]
• TPO-RAs may allow durable remission even after discontinuation in some cases.

Rituximab

• Rituximab (375 mg/m² weekly × 4 weeks) targets CD20+ B cells, reducing autoantibody production.
• Overall response rate: 50–60%
• Long-term remission: 20–25%
• It is particularly useful in younger patients or those wishing to avoid long-term medication [29].

Splenectomy

• Once considered the definitive therapy for chronic ITP, splenectomy is now delayed for at least 12 months after diagnosis due to possible spontaneous remission and effective medical alternatives [27,28].
• Durable remission rate: 60–70%
• Risks include infections, thrombosis, and surgical morbidity [30]

Immunosuppressive Agents

For refractory ITP, agents such as azathioprine, mycophenolate mofetil, cyclosporine, and cyclophosphamide may be used. These are generally reserved for patients who fail first- and second-line therapies [31].

**3. Management of Severe or Life-Threatening Bleeding**

• Life-threatening bleeding requires aggressive combination therapy, including:
• High-dose IV steroids (e.g., dexamethasone 40 mg × 4 days)
• IVIG (1–2 g/kg)
• Platelet transfusion (temporary effect)
• Antifibrinolytics (e.g., tranexamic acid)
• Recombinant factor VIIa in refractory cases [27,29]

**4. Treatment Considerations in Special Populations**

Pregnant Women

Safe options include steroids and IVIG. TPO-RAs are generally avoided except in refractory cases. Splenectomy may be considered in second trimester .

Children

Most pediatric cases are self-limiting. Observation is preferred unless bleeding is significant; IVIG or steroids may be used when treatment is needed .

• Eltrombopag:

**1. Introduction**

Eltrombopag is an orally bioavailable, small-molecule thrombopoietin receptor agonist (TPO-RA) indicated for the treatment of Immune Thrombocytopenia (ITP), severe aplastic anemia (SAA), and thrombocytopenia associated with chronic hepatitis C infection. By stimulating megakaryocyte proliferation and differentiation, it enhances platelet

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, December 2025 Impact Factor: 7.67

production and reduces bleeding risk [32]. Its development has shifted ITP management toward targeted therapies that correct impaired thrombopoiesis rather than solely suppressing immune-mediated platelet destruction.

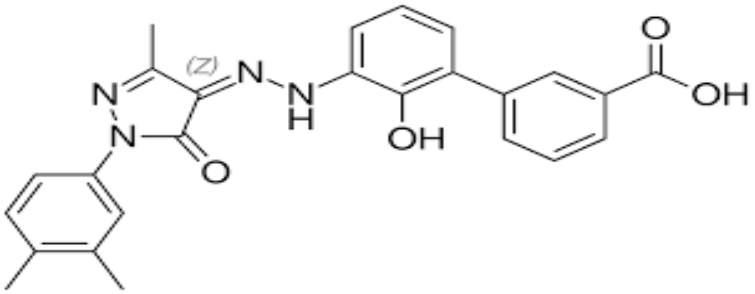



Fig.3.Elrombopag Drug

**2. Mechanism of Action**

Eltrombopag is a non-peptide TPO-RA that binds to the transmembrane domain of the c-Mpl receptor (distinct from endogenous thrombopoietin's binding site).

This unique binding induces signaling through JAK/STAT and MAPK pathways, promoting:

• Megakaryocyte maturation

• Increased platelet production

• Enhanced bone marrow megakaryopoiesis [33]

Because it binds to a different site on the receptor, eltrombopag does not compete with endogenous TPO, allowing additive effects [34].

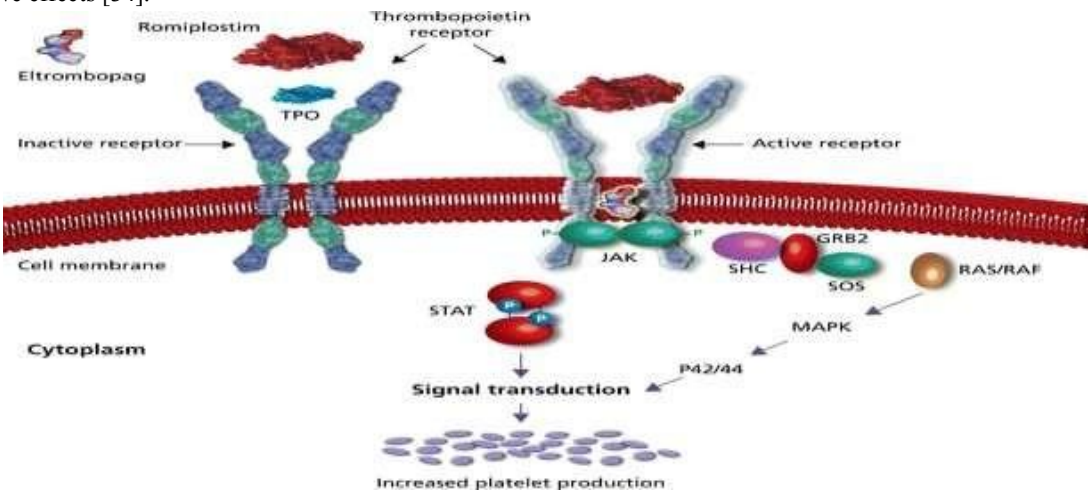



Fig.4. MOA of Elrombopag Drug

**3. Pharmacokinetics and Pharmacodynamics**

• Absorption & Bioavailability

Eltrombopag is well absorbed but shows reduced bioavailability when taken with polyvalent cations (e.g., calcium, iron, aluminum). It must be administered on an empty stomach or separated from dairy, minerals, or antacids by at least 2–4 hours [35].

• Distribution

1. High plasma protein binding (>99%)
2. Volume of distribution: moderate, allowing once-daily dosing [35]

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, December 2025 Impact Factor: 7.67

• Metabolism & Excretion
1. Primarily metabolized in the liver (CYP1A2, CYP2C8, UGT1A1, UGT1A3)
2. Half-life: 26–35 hours
3. Excreted via feces (major) and urine (minor) [35]

**4. Clinical Efficacy in ITP**

RAISE Trial

The pivotal RAISE randomized phase III trial demonstrated that eltrombopag (50 mg/day) significantly increased platelet counts and reduced bleeding episodes in chronic ITP patients refractory to previous therapies [36].
• Response rate: ~59% vs. 16% in placebo
• Significant reduction in rescue medication use

**Long-term Studies**

Long-term extension studies show sustained platelet response in 70–80% of patients with continued use, with many maintaining durable platelet counts, reducing bleeding, and improving quality of life [37].

**Durable Remission After Discontinuation**

Some patients achieve treatment-free remission, suggesting immune modulation over time. The exact mechanism remains unclear but could relate to restoration of immune tolerance or correction of thrombopoietic defects [38].

**5. Indications**

Eltrombopag is FDA-approved for:
1. Chronic immune thrombocytopenia (ITP) unresponsive to first-line therapy
2. Severe aplastic anemia (SAA) refractory or relapsed
3. Thrombocytopenia in chronic hepatitis C infection, to maintain interferon therapy dose intensity [39]

**6. Dosage and Administration**

• Adults with ITP
1. Starting dose: 50 mg once daily
2. Asians (including Indians): 25 mg once daily (higher exposure due to pharmacogenomic differences) [35]
3. Titration: Adjust every 2 weeks to maintain platelet count 50,000– 200,000/μL
4. Maximum dose: 75 mg/day
• Pediatric Dosing
1. Age >6 years: 50 mg/day
2. Age 1–5 years: 25 mg/day [39]
• Food/Cations Interactions

Avoid concomitant intake with calcium-rich foods, supplements, or antacids to ensure optimal absorption.

**7. Safety Profile and Adverse Effects**

• Common Adverse Effects
1. Headache, fatigue
2. Nausea, diarrhea
3. Elevated liver enzymes (ALT/AST)
4. Upper respiratory tract infections [40]
• Serious Risks

Hepatotoxicity

Monitoring of liver function is mandatory due to risk of transaminitis or more serious hepatic injury [40].

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429 Volume 5, Issue 2, December 2025 Impact Factor: 7.67

Thromboembolic Events

Excessive platelet production may increase risk of venous or arterial thrombosis. Platelet counts should not exceed 200,000/μL [41].

Bone Marrow Fibrosis

Reversible reticulin fiber deposition has been reported; periodic bone marrow evaluation is recommended in long-term therapy [42].

Cataracts

Animal models showed cataract formation; rare cases reported in humans. Regular ophthalmologic exams may be considered [43].

**8. Use in Special Populations**

• Pregnancy & Lactation

Limited human data exist; generally avoided unless benefits outweigh risks [8].

• Hepatic Impairment

Exposure increases; lower starting doses recommended for Child-Pugh class A–C [35].

• Renal Impairment

No major dose adjustments needed, but close monitoring required.

**9. Comparison with Other TPO-Ras**

| Feature | Eltrombopag | Romiplostim | Avatrombopag |
|---|---|---|---|
| Route | Oral | Subcutaneous | Oral |
| Cation interaction | Yes | No | No |
| Half-life | 26–35 h | 3–4 days | 19 h |
| Liver toxicity | Higher | Low | Low |
| Durable remission | Moderate | Moderate | Good |

Eltrombopag remains favored for its oral availability but requires attention to food interactions and liver monitoring.

## II. CONCLUSION

Immune Thrombocytopenic Purpura (ITP) remains a complex autoimmune hematologic disorder characterized by heterogeneous clinical presentations and multifactorial pathophysiology involving both enhanced platelet destruction and impaired platelet production. Although substantial progress has been made in elucidating immune-mediated mechanisms and developing targeted therapies, including corticosteroids, IVIg, rituximab, thrombopoietin receptor agonists, and splenectomy, the management of ITP continues to challenge clinicians due to variable treatment responses and risks of relapse. Emerging research is increasingly focused on individualized therapeutic strategies, identification of reliable prognostic markers, and long-term safety of newer immunomodulatory agents. As the understanding of disease biology evolves, future therapeutic algorithms are expected to shift toward more precise, patient-centered approaches aimed at durable remission, minimization of adverse effects, and improvement of overall quality of life in individuals living with ITP.

## REFERENCES

**[1].** Provan D, Arnold DM, Bussel JB, et al. Updated international consensus report on the investigation and management of primary immune thrombocytopenia. Blood Adv. 2019;3(22):3780–3817.

**[2].** Rodeghiero F, Stasi R, Gernsheimer T, et al. Standardization of terminology, definitions and outcome criteria in immune thrombocytopenic purpura of adults and children. Blood. 2009;113(11):2386–2393.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, December 2025
Impact Factor: 7.67

**[3].** McMillan R. The pathogenesis of immune thrombocytopenia: evidence for heterogeneity. Semin Hematol. 2007;44:S3–S11.
**[4].** Cines DB, Blanchette VS. Immune thrombocytopenic purpura. N Engl J Med. 2002;346:995–1008.
**[5].** Stasi R, Evangelista ML, Stipa E, et al. Idiopathic thrombocytopenic purpura: current concepts in pathophysiology and management. Thromb Haemost. 2008;99(1):4–13.
**[6].** Provan D, Arnold DM, Bussel JB, et al. Updated international consensus report on the investigation and management of primary immune thrombocytopenia. Blood Adv. 2019;3(22):3780–3817.
**[7].** Neunert C, Terrell DR, Arnold DM, et al. American Society of Hematology 2019 guidelines for immune thrombocytopenia. Blood Adv. 2019;3(23):3829–3866.
**[8].** Cines DB, Blanchette VS. Immune thrombocytopenic purpura. N Engl J Med. 2002;346:995–1008.
**[9].** Stasi R, Provan D. Helicobacter pylori and chronic ITP: the role of molecular mimicry. Haematologica. 2008;93(8):1195–1197.
**[10].** Audia S, Mahévas M, Samson M, Godeau B, Bonnotte B. Pathogenesis of immune thrombocytopenia. Autoimmun Rev. 2017;16(6):620–632.
**[11].** Olsson B, Andersson PO, Jernås M, et al. T-cell–mediated cytotoxicity toward platelets in chronic ITP. Nat Med. 2003;9(9):1123–1124.
**[12].** Li J, van der Wal DE, Zhu G, et al. Desialylation is a mechanism of platelet clearance in ITP. Blood. 2015;125(19):2824–2834.
**[13].** Deng Y, Yang J, Qian M, et al. Fostamatinib inhibits Fc receptor–mediated phagocytosis in immune thrombocytopenia. J Thromb Haemost. 2020;18(1):58–68.
**[14].** Neunert C, Terrell DR, Arnold DM, et al. American Society of Hematology 2019 guidelines for immune thrombocytopenia. Blood Advances. 2019;3(23):3829–3866.
**[15].** Provan D, Arnold DM, Bussel JB, et al. Updated international consensus report on the investigation and management of primary immune thrombocytopenia. Blood Advances. 2019;3(22):3780–3817.
**[16].** Rodeghiero F, Stasi R, Gernsheimer T, et al. Standardization of terminology, definitions and outcome criteria in immune thrombocytopenic purpura. Blood. 2009;113(11):2386– 2393.
**[17].** Cines DB, Blanchette VS. Immune thrombocytopenic purpura. N Engl J Med. 2002;346:995–1008.
**[18].** McMillan R. The pathogenesis of chronic immune thrombocytopenia. Semin Hematol. 2007;44(4 Suppl 5):S3–S11.
**[19].** Mathias SD, Gao SK, Miller KL, et al. Health-related quality of life and fatigue in ITP patients. Health Qual Life Outcomes. 2008;6:13.
**[20].** Cohen YC, Djulbegovic B, Shamai-Lubovitz O, et al. The bleeding risk and natural history of ITP in adults. Ann Intern Med. 2000;132(11):797–800.
**[21].** Kühne T, Buchanan GR, Zimmerman S, et al. A prospective registry of newly diagnosed childhood ITP. Lancet. 2001;358(9299):2122–2125.
**[22].** Provan D, Arnold DM, Bussel JB, et al. Updated international consensus report on the investigation and management of primary immune thrombocytopenia. Blood Adv. 2019;3(22):3780–3817.
**[23].** Neunert C, Terrell DR, Arnold DM, et al. American Society of Hematology 2019 guidelines for immune thrombocytopenia. Blood Adv. 2019;3(23):3829–3866.
**[24].** Rodeghiero F, Stasi R, Gernsheimer T, et al. Standardization of terminology, definitions and outcome criteria in immune thrombocytopenic purpura. Blood. 2009;113(11):2386–2393.
**[25].** Cines DB, Blanchette VS. Immune thrombocytopenic purpura. N Engl J Med. 2002;346:995–1008.
**[26].** Audia S, Mahévas M, Samson M, Godeau B, Bonnotte B. Pathogenesis of immune thrombocytopenia. Autoimmun Rev. 2017;16(6):620–632.
**[27].** Neunert C, Terrell DR, Arnold DM, et al. American Society of Hematology 2019 guidelines for immune thrombocytopenia. Blood Adv. 2019;3(23):3829–3866.
**[28].** Provan D, Arnold DM, Bussel JB, et al. Updated international consensus report on the investigation and management of primary immune thrombocytopenia. Blood Adv. 2019;3(22):3780–3817.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, December 2025
Impact Factor: 7.67

**[29].** Cines DB, Blanchette VS. Immune thrombocytopenic purpura. N Engl J Med. 2002;346:995–1008.
**[30].** McMillan R. The pathogenesis and treatment of chronic immune thrombocytopenia. Semin Hematol. 2007;44(4 Suppl 5):S3–S11.
**[31].** Neunert CE, et al. Use of anti-D immunoglobulin in ITP. Blood Rev. 2013;27(4):185– 192.
**[32].** Kuter DJ. Eltrombopag in ITP: mechanisms and clinical use. Blood. 2009;114:935–943.
**[33].** Bussel JB, Cheng G, Saleh MN, et al. Eltrombopag for ITP: phase III randomized trial. N Engl J Med. 2007;357:2237–2247.
**[34].** Wong RSM, Saleh MN, Khelif A, et al. Long-term efficacy and safety of eltrombopag in chronic ITP. Br J Haematol. 2010;148:573–582.
**[35].** Kuter DJ. Pharmacokinetics and pharmacodynamics of eltrombopag. Br J Haematol. 2013;162:756–765.
**[36].** Bussel JB, Kuter DJ, Pullarkat V, et al. RAISE trial: eltrombopag in chronic ITP. Blood. 2009;114:935–943.
**[37].** Cheng G, Saleh MN, Marcher C, et al. Long-term safety and efficacy of eltrombopag in chronic ITP. Haematologica. 2011;96:1013–1020.
**[38].** Desmond R, et al. Treatment-free remission after eltrombopag in ITP. Blood Adv. 2017;1:1586–1594.
**[39].** FDA. Eltrombopag prescribing information. 2021.
**[40].** Kuter DJ, Bussel JB. Safety profile of eltrombopag in ITP. Br J Haematol. 2008;143:521– 529.
**[41].** Wong RSM, et al. Thromboembolic events with eltrombopag. Haematologica. 2010;95:1362–1369.
**[42].** Kuter DJ, et al. Bone marrow fibrosis in eltrombopag therapy. Blood. 2009;114:3748– 3755.
**[43].** Bussel JB, et al. Ophthalmologic safety of eltrombopag. Br J Haematol. 2011;153:609– 616.