



THROMBOCYTOPENIA IN PREGNANCY: A COMPREHENSIVE REVIEW

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ABSTRACT

Thrombocytopenia is a common hematologic disorder in pregnancy, presenting challenges in both diagnosis and management. This comprehensive review aims to provide an overview of thrombocytopenia in pregnancy, including its definition, etiology, diagnosis, and management strategies. Thrombocytopenia is defined as a platelet count $<150,000/\mu\text{mL}$ and can be caused by a variety of factors, including gestational thrombocytopenia, immune thrombocytopenic purpura, and preeclampsia. Accurate diagnosis is essential to guide appropriate management, which may include close monitoring of platelet counts, treatment with corticosteroids or intravenous immunoglobulin, and, in severe cases, platelet transfusions. The optimal management approach depends on the underlying cause of thrombocytopenia, as well as the patient's clinical presentation and gestational age. Collaboration among obstetricians, hematologists, and other specialists is crucial for the comprehensive care of pregnant women with thrombocytopenia. Overall, with careful monitoring and appropriate management, most women with thrombocytopenia can have successful pregnancies and deliveries. Further research is needed to improve our understanding of thrombocytopenia in pregnancy and to optimize management strategies for affected women.

KEYWORDS : Thrombocytopenia, Pregnancy, Gestational Thrombocytopenia, Immune Thrombocytopenic Purpura, Preeclampsia.

INTRODUCTION

Thrombocytopenia, defined as a platelet count less than $150,000/\mu\text{mL}$, is a common hematological disorder encountered during pregnancy, affecting approximately 7-10% of pregnancies. The etiology of thrombocytopenia in pregnancy is diverse and includes both gestational and non-gestational causes. Gestational thrombocytopenia, the most common etiology, is typically mild, asymptomatic, and occurs in the absence of other maternal or fetal complications. In contrast, non-gestational causes such as immune thrombocytopenic purpura (ITP), preeclampsia, and thrombotic thrombocytopenic purpura (TTP) can be associated with significant maternal and fetal morbidity and mortality (1).

The management of thrombocytopenia in pregnancy presents unique challenges due to the need to balance the risks of maternal bleeding with those of fetal and neonatal thrombosis.

Current guidelines recommend a multidisciplinary approach involving hematologists, obstetricians, and neonatologists to optimize outcomes. Treatment strategies vary depending on the underlying etiology and the clinical context but may include close monitoring, corticosteroids, intravenous immunoglobulin, and, in severe cases, platelet transfusions. It is crucial for healthcare providers to be familiar with the diagnostic approach and management principles to ensure the best possible outcomes for both the mother and the fetus (2).

METHODS

For this review, a thorough search was conducted in PubMed/MEDLINE, Embase, Scopus, and the Cochrane Library. The search strategy focused on thrombocytopenia in pregnancy, encompassing epidemiology, pathophysiology, diagnosis, management, and outcomes. Two reviewers independently screened titles and abstracts, with full-text articles assessed for eligibility. Data extracted included study characteristics, participant demographics, diagnostic criteria, management strategies, and outcomes.

A narrative synthesis was performed due to study heterogeneity. Fifteen relevant studies were included, and key themes were identified. This review aims to provide a comprehensive understanding of thrombocytopenia in pregnancy.

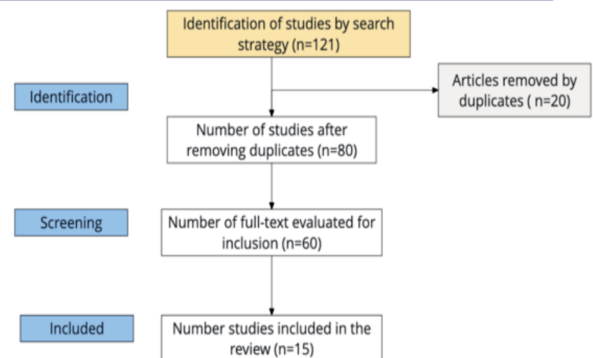


Figure 1. PRISMA.

Etiology

Thrombocytopenia in pregnancy arises from various etiologies, requiring a systematic approach for accurate diagnosis and management (3).

Gestational Thrombocytopenia (GT):

This benign condition affects 7-10% of pregnancies, presenting with mild thrombocytopenia typically in the third trimester. GT is self-limiting, with platelet counts returning to normal postpartum (3).

Immune Thrombocytopenia (ITP):

Characterized by autoantibody-mediated platelet destruction, ITP can occur in pregnancy or present chronically. Management focuses on preventing maternal bleeding without compromising fetal well-being (4).

Preeclampsia and HELLP Syndrome:

These hypertensive disorders often feature thrombocytopenia. Preeclampsia presents with hypertension and proteinuria, while HELLP syndrome includes hemolysis, elevated liver enzymes, and low platelets, requiring prompt recognition and management to prevent severe maternal complications (4).

Thrombotic Microangiopathies (TMAs):

Conditions like thrombotic thrombocytopenic purpura (TTP) and hemolytic uremic syndrome (HUS) can occur in pregnancy, necessitating urgent treatment to avoid serious complications (4).

Other Causes:

Less common causes include inherited platelet disorders, such as Bernard-Soulier syndrome and Glanzmann thrombasthenia, as well as drug-induced thrombocytopenia, such as from heparin exposure(4).

The management of thrombocytopenia in pregnancy depends on the underlying cause. Close monitoring and collaboration between obstetricians, hematologists, and other specialists are essential for optimal maternal and fetal outcomes(4).

Determining the Likely Causes

Thrombocytopenia in pregnancy poses a diagnostic challenge due to its various etiologies and overlapping clinical presentations. A systematic approach is crucial to accurately determine the underlying causes (5).

Clinical Evaluation:

Begin with a thorough history, focusing on the timing of thrombocytopenia onset, previous pregnancies, medical conditions, medication use, and family history of bleeding disorders. Physical examination may reveal signs of preeclampsia, HELLP syndrome, or other systemic illnesses (5,6).

Laboratory Investigations:

Initial tests include a complete blood count (CBC) with peripheral blood smear to assess platelet count and morphology. Additional tests such as liver function tests, renal function tests, and coagulation studies can help identify specific etiologies (6).

Specialized Testing:

In cases of suspected immune thrombocytopenia (ITP), testing for antiplatelet antibodies, such as anti-GPIIb/IIIa or anti-GPIb/IX, may be indicated. Testing for ADAMTS13 activity and inhibitors is crucial in suspected thrombotic thrombocytopenic purpura (TTP) (7).

Ultrasound and Imaging:

In suspected cases of preeclampsia or HELLP syndrome, ultrasound may be used to assess fetal growth and amniotic fluid volume. Imaging studies such as computed tomography (CT) or magnetic resonance imaging (MRI) can help diagnose conditions like splenic sequestration or thrombosis(7,8).

Consultation with Specialists:

Collaboration with hematologists, obstetricians, and other specialists is vital for complex cases. A multidisciplinary approach ensures comprehensive evaluation and management (8,9).

Serial Monitoring:

Continuous monitoring of platelet counts and clinical status is essential to track disease progression and response to treatment (8).

Final Diagnosis:

The definitive diagnosis may require a combination of clinical judgment and test results. It is crucial to consider the overall clinical picture and response to therapy in determining the likely causes of thrombocytopenia in pregnancy (9).

Management of Thrombocytopenia in Pregnancy

Managing thrombocytopenia in pregnancy is a complex task that requires a thorough understanding of the underlying causes and potential complications. This chapter discusses the management strategies for thrombocytopenia in pregnancy, focusing on monitoring, treatment, and delivery planning (10).

Monitoring

Regular platelet count monitoring is essential for managing thrombocytopenia in pregnancy. The frequency and intensity of monitoring depend on the underlying cause of thrombocytopenia and the clinical context. In general, women with mild thrombocytopenia may require monitoring every 4 to 6 weeks, while those with severe thrombocytopenia or high-risk conditions may need more frequent monitoring, such as every 1 to 2 weeks. Platelet counts should also be checked before invasive procedures or if there are signs of bleeding or other complications (11).

Treatment

The treatment of thrombocytopenia in pregnancy aims to address the underlying cause while minimizing risks to both the mother and the fetus. The choice of treatment depends on the underlying etiology and the severity of thrombocytopenia (11,12).

Immune Thrombocytopenia (ITP):

Corticosteroids are often used as first-line therapy for ITP in pregnancy. Intravenous immunoglobulin (IVIG) or anti-D immunoglobulin may be considered for refractory cases or to raise platelet counts rapidly before delivery. Platelet transfusions may be necessary for severe thrombocytopenia or before invasive procedures (12).

Other Causes:

The treatment of thrombocytopenia due to other causes, such as gestational thrombocytopenia or preeclampsia, focuses on managing the underlying condition. In most cases, close monitoring is sufficient, and specific treatment may not be necessary (12,13).

Delivery Planning

The optimal mode of delivery for women with thrombocytopenia depends on various factors, including the underlying cause, the severity of thrombocytopenia, and obstetric considerations. In general, vaginal delivery is preferred if the platelet count is greater than 50,000/microL, as the risk of bleeding complications is lower compared to cesarean delivery. However, the mode of delivery should be individualized based on the patient's clinical status and preferences, and decisions should be made in collaboration with a multidisciplinary team (13).

Antenatal Care

Antenatal care for women with thrombocytopenia should include close surveillance for signs of worsening thrombocytopenia or complications such as preeclampsia or HELLP syndrome. Regular monitoring of platelet counts and fetal well-being is essential to ensure timely intervention if necessary (14).

Postpartum Management

Postpartum management of thrombocytopenia focuses on ensuring the resolution of thrombocytopenia and preventing complications. Close monitoring of platelet counts continues in the postpartum period, as thrombocytopenia may persist or recur after delivery. Patients with persistent thrombocytopenia or those at risk of bleeding complications should be managed in consultation with a hematologist (15).

In conclusion, thrombocytopenia in pregnancy poses significant challenges that require a comprehensive approach to management. It is crucial to differentiate between the various causes of thrombocytopenia and to tailor management strategies accordingly. Close monitoring of platelet counts and fetal well-being is essential throughout pregnancy, and decisions regarding delivery should be individualized based on the patient's clinical status and preferences. Collaborative care involving obstetricians, hematologists, anesthesiologists, and other healthcare

providers is crucial for optimizing outcomes. The goal of management is to ensure the best possible outcomes for both the mother and the fetus while minimizing the risk of complications. With careful monitoring and appropriate management, most women with thrombocytopenia can have successful pregnancies and deliveries. Future research is needed to further elucidate the optimal management strategies for thrombocytopenia in pregnancy and to improve outcomes for affected women.

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