

Study on Causes of Thrombocytopenia in Pregnancy in Tertiary Care Hospital

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Abstract: ***Introduction:** Thrombocytopenia is a common haematological disorder. It complicates 7 to 8% of all pregnancies. **Aims and objectives:** A) Causes of thrombocytopenia in pregnancy, B) To study the severity of thrombocytopenia in pregnancy as: mild, moderate or severe. **Materials and methods:** This was a retrospective study of pregnant patients with thrombocytopenia in Kempegowda Institute of Medical Sciences in November 2018 to October 2019. **Results:** During the study period, 168 pregnancies complicated with thrombocytopenia were identified. 112 cases (66.6%) were caused by gestational thrombocytopenia, 3 cases (1.78%) by ITP, 29 cases of hypertensive disorders of pregnancy (17.2%) and 24 cases of dengue fever in pregnancy (14.2%).*

Keywords: Thrombocytopenia, Gestational thrombocytopenia, pregnancy, ITP, TTP

1. Introduction

Thrombocytopenia is a common haematological disorder. It complicates 7 to 8% of all pregnancies. Thrombocytopenia can result in bleeding into mucus membranes presenting as petechiae, ecchymoses, epistaxis, gingival bleeding etc. The most common type is gestational thrombocytopenia, which accounts for 65% to 80% of the cases, followed by idiopathic thrombocytopenia (ITP) and hypertensive disorder in pregnancy. There is a physiological decrease in platelet count during normal pregnancy due to haemodilution, increased consumption in peripheral tissue and increased aggregation (higher levels of thromboxane A₂).

From a practical standpoint, the current guidelines consider that vaginal delivery is safe when platelet count is higher than 30,000/ μ L. For operative vaginal or cesarean deliveries the safe platelet count should be at least 50,000 platelets/ μ L. The exact platelet number needed to achieve a safe epidural anesthesia is debated, but in most guidelines, the reference value is around 75,000-80,000/ μ L⁽¹⁾.

Spontaneous bleeding may occur with less than 20,000 platelets/ μ L and the risk of internal bleeding is increased if the platelet count falls below 10,000/ μ L⁽²⁾.

Gestational hypertension

Gestational thrombocytopenia is not associated with maternal or fetal risks and does not require further investigation, except for a periodical monitoring of the blood count. In these cases, a platelet count should be obtained before epidural anesthesia⁽³⁾. When GT is suspected but platelet count falls between 50,000-80,000/ μ L, a diagnosis of immune thrombocytopenic purpura cannot be excluded. Prednisone in a daily dose for 10 days before birth should be administered in such cases in order to increase platelet count and avoid possible anesthetic and obstetrical risks⁽²⁾. In Gestational thrombocytopenia there is no therapeutic answer to steroids and the lack of response is an additional argument for the diagnosis.

ITP

A more rare cause of thrombocytopenia in pregnancy is the immune thrombocytopenic purpura (ITP), an autoimmune disorder characterized by the anti-platelet glycoprotein antibodies that stimulate the platelet destruction in the spleen⁽⁴⁾. There are two types of ITP: the acute form that is common in children, is associated with viral infections and is self-limiting and the chronic form which predominantly affects women. The diagnosis is clinical. Thrombocytopenia in ITP is generally moderate but with platelet count usually below 100,000/ μ L and the symptoms are in direct relation to the platelet levels. Patients could be completely asymptomatic or present ecchymosis, petechiae, purpura, gums bleeding or menorrhagia⁽⁵⁾. Unlike gestational thrombocytopenia, ITP can occur anytime during pregnancy.

Acute fatty liver of pregnancy (AFLP)

It is a rare (1:7000 - 1:20,000 pregnancies), but severe condition of the third trimester of pregnancy. Clinical manifestations such as abdominal pain, nausea, vomiting, anorexia, in conjunction with several specific laboratory changes such as severe hypoglycemia, hyperuricemia, markedly elevated transaminases, renal impairment with elevated creatinine, blood pressures in the normal range, may lead to the diagnosis of acute fatty liver of pregnancy⁽⁶⁾. Thrombocytopenia associated with this pathology is sometimes severe, with a platelet count under 20,000/ μ L⁽³⁾.

TTP

TTP is defined by a pentad of microangiopathic hemolytic anemia, thrombocytopenia, fever, neurological manifestations, renal impairment. Creatinine levels in TTP are not increased and the median platelet count is typically 10-30,000/ML.

HUS:

HUS has a common mechanism with TTP, but the distinctive feature is the more severe kidney impairment with HUS. There are two types of HUS: the typical form, represents 90% of cases of HUS, is common in children and is caused by E. coli O157:H7 which produces the Shiga-toxin and the atypical form which is usually

associated with pregnancy and is related to a congenital defect of the alternative pathway of the complement system. It occurs in most cases postpartum.

2. Aims and Objectives

- Causes of thrombocytopenia in pregnancy
- To study the severity of thrombocytopenia in pregnancy as: mild, moderate or severe

3. Materials and Methods

This was a retrospective study of pregnant patients with thrombocytopenia attending in Kempegowda Institute of Medical Sciences in November 2018 to October 2019. This study was approved by institutional ethical committee. All patients provided written informed consent before enrolment in this study.

Women were eligible for the study if they had 2 platelet counts lower than 1,50,000 during their pregnancy. Patients were excluded from the study if they had any of the following: multiple gestations. Ultimately, a total of 168 pregnant women were enrolled in our study. Data were extracted from patients' medical records, hospital computerized databases, or clinical charts by means of a questionnaire.

Data shall be collected by careful clinical history taken from all the cases particularly age, parity, gravidity, previous and present obstetric history and any obstetric complications

The platelet count will be noted and graded accordingly as follows:

Mild: 100,000 – 150,000/ mm³

Moderate: 50,000 – 100,000/ mm³

Severe: < 50,000/ mm³

4. Results

During the study period, 168 pregnancies complicated with thrombocytopenia were identified.

Gestational Age	Frequency	Percentage
<= 12 weeks	24	14.27%
13 to 28 weeks	78	46.40%
29 to 40 weeks	66	39.20%

Causes of Thrombocytopenia	Frequency	Percentage
Gestational thrombocytopenia	112	66.60%
Hypertensive disorders	29	17.20%
Dengue	24	14.20%
Idiopathic thrombocytopenic purpura	3	1.78%

Severity of Thrombocytopenia	Frequency	Percentage
100000 to 150000	109	64.80%
50000 to 99999	48	28.50%
<50000	11	6.50%

112 cases (66.6%) were caused by gestational thrombocytopenia, 3 cases (1.78%) by ITP, 29 cases of

hypertensive disorders of pregnancy (17.2%) and 24 cases of dengue fever in pregnancy (14.2%).

5. Discussion

In this retrospective study, 66.6% of the 168 cases had gestational thrombocytopenia, 1.78% had ITP, 14.2% had dengue and 17.2% had hypertension complicating pregnancy; no other etiologies were identified.

As a result, the clinical feature is mainly mild thrombocytopenia, which often occurs in the second or third trimester of pregnancy. In this study, 94 women (83.9%) in the gestational thrombocytopenia group had a platelet count greater than 100000/microlitre and thrombocytopenia was first detected in all gestational thrombocytopenia patients in their second or third trimester of pregnancy; these findings are consistent with the conclusions of other researchers^(7,8).

Obstetric patients with ITP usually have a history of prior thrombocytopenia, and most cases are identified in the first trimester of pregnancy⁽⁹⁻¹¹⁾. ITP is an autoimmune disease, and its pathogenesis is widely accepted to be the action of antiplatelet antibodies, which recognize specific platelet glycoproteins. These antibody-coated platelets are then cleared by the mononuclear phagocyte/phagocytic system, primarily the spleen⁽¹²⁾ and the severity of thrombocytopenia is associated with maternal antiplatelet antibodies. A history of prior thrombocytopenia, underlying autoimmune disease or severe thrombocytopenia improves the likelihood of a diagnosis of ITP.

In the present study, all obstetric patients were diagnosed with ITP before 12 weeks of pregnancy. Severity of thrombocytopenia was significantly higher among ITP patients than in gestational thrombocytopenia patients. Thrombocytopenia in hypertensive disorder of pregnancy is mainly due to vascular endothelial ischemia and hypoxia caused by vascular vasospasm; vascular viscosity increases with damaged endothelial cells, thereby increasing permeability and accelerating platelet aggregation and consumption⁽¹³⁾. The severity of thrombocytopenia is usually closely related to that of the underlying disease. Severe thrombocytopenia in hypertensive disorder of pregnancy should be distinguished from that due to ITP. Most women with PIH are primigravida and younger than 20 or older than 30 years old⁽⁷⁾.

6. Conclusion

The diversity of factors causing thrombocytopenia indicates variety of pathogenesis. The treatment options for thrombocytopenia in pregnancy are limited. Hence a knowledge of clinical features and management for the same is important for a clinician. Specific therapies if administered promptly may significantly improve the pregnancy outcome.

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