ISSN: 2309-5288 (Print)
ISSN: 2309-6152 (Online)
CODEN: JCLMC4

Journal of Coastal Life Medicine

Thrombocytopenia in Pregnancy: Etiology, Maternal and Fetal Outcome: A Prospective Study

Received: 22 October 2022, **Revised:** 14 November 2022, **Accepted:** 25 December 2022

[1]Mercy Rodrigo R, [2]Arumugaselvi.B, [3]Sumathi R

[1]Associate Professor, Department of obstetrics and gynecology, Thoothukudi government medical college hospital, Thoothukudi, Tamil Nadu, India

[2]Associate Professor, Department of obstetrics and gynecology, Thoothukudi government medical college hospital, Thoothukudi, Tamil Nadu, India

[3]Assistant Professor, Department of obstetrics and gynecology, Thoothukudi government medical college hospital, Thoothukudi, Tamil Nadu, India

Corresponding Author: Dr. Sumathi. R

sumathiramasamy14@gmail.com

Keywords:

Thrombocytopenia, platelet count, feto-maternal outcome.

Abstract

The purpose of this study is to determine the causes of thrombocytopenia in pregnant women and to examine the effects of thrombocytopenia on the mother and the foetus. Method: This prospective study was carried out from December 2019 to December 2020 over a one-year span. All pregnant women with thrombocytopenia discovered after 28 weeks of gestation were included. All mothers were monitored for any difficulties that emerged because of low platelet count throughout the prenatal period and up to delivery. Neonatal and maternal outcomes were recorded. Results : Gestational thrombocytopenia, which accounts for 73.75% of cases of thrombocytopenia in mothers, had the least impact on the health of the fetus and the mother. In our study, PPH occurred in 23.75% of cases and antepartum hemorrhage in 5% of cases. 2 neonatal deaths were recorded. Conclusion: As compared to preeclampsia and HELLP syndrome, which are linked to poor feto-maternal outcomes, patients with GT and ITP had improved maternal and perinatal outcomes in patients with thrombocytopenia during pregnacy. The likelihood of a positive feto-maternal outcome increases with early diagnosis, accurate evaluation, and vigilant surveillance.

1. Introduction

Megakaryocyte , non-nucleated cellular pieces known as platelets are in charge of preserving hemostasis. In women who are not pregnant, the usual reference range for platelets is 150-400x 109/L. Although absolute platelet count generally remains within normal reference range in most individuals, platelet count may decrease during third trimester due to hemodilution. Accelerated platelet breakdown or decreased production are typically to blame for a drop in platelet count. The typical increased splenic mass characteristic of pregnancy may potentially have a contributory effect. the vast majority of data indicates that the life span of platelets remains unchanged in normal pregnancy.

At the time of delivery, thrombocytopenia, which is defined as a platelet count less than 150 x 10^9/L, affects 7–12% of pregnancies. [1] Platelet count of 100 to 150 x 10^9/L are considered mild, 50 to 100 x 10^9/L are considered moderate, and less than 50 x 10^9/L are considered severe for thrombocytopenia.

Pregnancy-related thrombocytopenia can occur alone or in conjunction with other systemic conditions such as severe preeclampsia, HELLP syndrome (hemolysis, high liver enzymes, low platelets), or AFLP (acute fatty liver of pregnancy).

ISSN: 2309-5288 (Print)
ISSN: 2309-6152 (Online)
CODEN: JCLMC4
Journal of Coastal Life Medicine

Additionally, autoimmune conditions such systemic lupus erythematosus, immune thrombocytopenia (ITP), antiphospholipid syndrome, thrombotic thrombocytopenic purpura, hemolytic uremic syndrome, and thrombotic thrombocytopenic purpura may return or be discovered for the first time during pregnancy.

The majority of cases of thrombocytopenia—roughly 75%—are thought to be caused by gestational thrombocytopenia. A slight to moderate fall in platelet count during pregnancy in healthy women without a history of thrombocytopenia or other illnesses known to be linked to thrombocytopenia is what defines it. The great majority of patients' platelet counts reach a number within the normal range postpartum and there are no severe fetal or maternal morbidities in this condition.

Pre-eclampsia/HELLP syndrome, immune thrombocytopenic purpura, infections including malaria and dengue, obstetric DIVC, hemolytic anaemia, thrombotic angiopathies (TTP), and SLE make up the remaining 25% of cases. Prior to being pregnant, confirming a normal platelet count reduces the possibility that immune thrombocytopenia purpura is underlying. In pregnant women, ITP needs to be distinguished from gestational thrombocytopenia. The platelet counts for the latter rarely drop below 70 X 10^9/L and often appear in the late second or third trimester of pregnancy. ITP, on the other hand, is an excluding diagnosis. ITP is the most likely cause of thrombocytopenia when there is a prior history of the illness, an underlying autoimmune disorder, and a platelet count under 50 X 10^9/L.

2. Materials and Methods

The objective of our study was to identify the various causes of thrombocytopenia in pregnant women and to analyze the maternal and fetal outcome of pregnancy with thrombocytopenia .

This prospective study was carried out from December 2019 to December 2020 over the course of a full year. After receiving approval from the institutional human ethical committee and receiving the pregnant women's informed consent, it included all pregnant women with thrombocytopenia discovered after 28 weeks of gestation who attended the outpatient clinic and were admitted as inpatients in the Department of Obstetrics and Gynecology, Government Thoothukudi Medical College Hospital. Patients taking aspirin, NSAIDS, cephalosporins, sulfonamides, vancomycin, antiepileptic medications, or steroids were also prohibited from participating in the trial.

When a low platelet count was found during the initial visit, pregnant women were enrolled in this trial. At the time of registration, a platelet count estimate was available for all women. To identify the cause of each incidence of thrombocytopenia, a thorough workup was conducted. Details regarding prior history of gestational, easy bruising, petechiae, viral illness, medicine use, and bleeding gums were obtained. A complete blood count, including tests for haemoglobin, TLC, DLC, peripheral smear with manual platelet counting, blood sugar, urea, creatinine, LFT, coagulation profile, HIV, VDRL, and HBsAg, as well as urine analysis, were performed on all of the women. Dengue IgM testing was performed on women who had a fever.

All mothers were monitored for any difficulties that emerged because of low platelet count throughout the prenatal period and up to delivery. Intra partum events (mode of delivery, APH, associated GHT, fever) and post partum events (PPH, wound infection ,subinvolution of uterus) were documented . The neonatal characteristics such as gestational age at birth, viability of baby, APGAR score, birth weight at birth, IUGR, neonatal thrombocytopenia and bleeding tendencies in neonates were documented

3. Results

Table – 1 Causes Of Thrombocytopenia

CAUSES	NO OF CASES	PERCENTAGE
GESTATIONAL	59	73.75%

ISSN: 2309-5288 (Print)
ISSN: 2309-6152 (Online)
CODEN: JCLMC4
Journal of Coastal Life Medicine

PET	6	7.50%
HELLP	5	6.25%
PARTIAL HELLP	3	3.75%
ITP	2	2.50%
DIC	1	1.25%
DENGUE	2	2.50%
OTHERS	2	2.50%

80 cases of thrombocytopenia out of the 4485 births made between December 2019 and December 2020 were fully examined in our study. Six of the 90 instances included in our study had a normal platelet count when the cases were manually counted. Hence, removed from the research. In the peripheral smear, 2 had platelet clusters. They were also removed and given the diagnosis of pseudothrombocytopenia. The COVID outbreak resulted in the loss of 2 cases for follow-up. Out of the 80 cases of thrombocytopenia in this study, 59 cases (73.75%) were attributable to gestational thrombocytopenia, with the other cases being caused by pre-eclampsia and its complications, ITP, DIC, and dengue. ITP affects 1-2 pregnant women per 10,000 pregnancies in our country .There are very few studies on the outcome of pregnancy in Indian women with ITP[2]. ITP is the second most frequent cause of thrombocytopenia in pregnancy after gestational thrombocytopenia.

Table -2 Maternal Thrombocytopenia And Its Outcome

MATERNAL OUTCOME	NO OF CASES	PERCENTAGE
MODE OF DELIVERY		
NORMAL DELIVERY	30	37.50%
LSCS	49	61.25%
INSTRUMENTAL DELIVERY	1	1.25%
ANAESTHESIA USED		
REGIONAL	40	81.63%
GENERAL	9	18.37%
OTHERS		
ANTEPARTUM HAEMORRHAGE	4	5%
PRIMARY PPH	15	18.75%
SECONDARY PPH	3	3.75%
PRIMARY AND SECONDARY PPH	1	1.25%
PLATELET TRANSFUSION	21	26.25%
WOUND INFECTION	4	5%
> 7 DAYS HOSPITAL STAY	53	66.25%
MATERNAL MORTALITY	0	0

The above table summerises the maternal charecteristics such as mode of delivery , bleeding manifestations , blood and component transfusions, maternal morbidity and mortality.

ISSN: 2309-5288 (Print)
ISSN: 2309-6152 (Online)
CODEN: JCLMC4
Journal of Coastal Life Medicine

In our study, LSCS was used to deliver 61.25% of thrombocytopenic pregnant women (maternal indication – 33 cases and foetal indication – 16 cases). Given the severity of the thrombocytopenia, 18.37 % of LSCS mothers required general anaesthesia. Researchers looked at bleeding symptoms like antepartum and postpartum haemorrhage. Four mothers (5%) experienced antepartum bleeding. Our study's incidence of APH (6.6%) and that of Arora et al study .'s are in agreement. [2]

One of them had DIC for which she required blood and component therapy. In our study 23.75 % (19 cases) of thrombocytopenia mothers had PPH . Primary PPH affected 15 mothers, while secondary PPH affected 3 mothers. A mother who experienced HELLP syndrome-complicated twin gestation developed both primary PPH in the immediate postpartum period and secondary PPH on 19th postpartum day and was treated with blood and component therapy. Of the 80 mothers, nearly 71 of them required steroids in one form or the other.. A platelet concentrate transfusion was necessary for 21 mothers (26.25%). FFP was required in 5 cases, 2 of which required all the blood components included in our study.

Maternal morbidity took the form of secondary suturing and surgical site wound infection in 4 cases (5%). 53 of the 80 mothers were hospitalised for more than 7 days. 3 patients required a stay of more than 28 days. There was a mother who had both main PPH and secondary PPH, as well as severe pre eclampsia with LSCS wound site hematoma and gaping LSCS wounds. In our study, no maternal deaths occurred.

Table -3 Platelet Count At Delivery And Pph Incidence

PPH	1-1.5 L	50,000-1 L	<50,000	P-VALUE
PRIMARY (15)	8(53%)	4(27%)	3(20%)	
SECONDARY (3)	0	3(100%)	0	0.024
NO PPH (41)	41 (67%)	18(29%)	2 (3%)	
BOTH (1)	0	1(100%)	0	
TOTAL	49	26	5	

53% of the moms who had PPH cases had platelet counts between 1 and 1.5 lakh. A 50000–1 lakh platelet count was present in 27% of mothers. 20% of patients had a platelet count below 50,000. Seven of the 17 patients with hypertension who also had thrombocytopenia developed PPH.

In our study population there were 7 sets of twins. Hence the total number of newborns in our study is 87. Of them , 1 was an intrauterine death and there were 2 cases of early neonatal deaths.

Table 4 Maternal Thrombocytopenia and Fetal Outcome

NEONATAL OUTCOME	NO OF CASES	PERCENTAGE
GESTATIONAL AGE AT BIRTH		
TERM	64	73.6%
PRETERM	19	21.84%
LATE PRETERM	4	4.6%

ISSN: 2309-5288 (Print)
ISSN: 2309-6152 (Online)
CODEN: JCLMC4
Journal of Coastal Life Medicine

VIABILITY		
ALIVE	84	97.7%
DEAD	3	3.4%
APGAR		
< 7	1	1.19%
>7	83	98.8%
BIRTH WEIGHT		
< 2.5 KG	12	13.8%
>2.5 KG	75	86.2%
OTHERS		
IUGR	15	17.2%
THROMBOCYTOPENIA	2	2.4%
BLEEDING TENDENCY	3	3.4%
COMPONENT TRANSFUSION	2	2.3%
PERINATAL MORTALITY	4	4.59%

N= 87

The neonatal features such as gestational age at birth, viability of baby, APGAR score, birth weight at birth, IUGR, neonatal thrombocytopenia and bleeding tendencies are given in the table above.

In our study, 23 neonates, or 26.44% of the total, were born prematurely. Hence gestational age at delivery also has an influence on the neonatal outcome.

84 newborn required NICU admission. None stayed in NICU for more than1 month. There were 2 neonatal deaths. Newborns of mothers with HELLP and ITP were in NICU little longer. Neonates of hypertensive mothers were admitted for basic evaluation and were discharged on day 4. 10 % required NICU admission for more than 1 week. There were 15 IUGR babies. 13 of them were babies born to mothers with high blood pressure. Low platelet counts were reported in both babies. Of them one was < 1.5 lakh and the other was < 50,000. There were bleeding tendency in 3 babies (3.75%).Two infants experienced upper gastrointestinal bleeding, and one infant experienced oral mucosal bleeding. A platelet transfusion was necessary for 2 of the newborns. According to the Arora et al. study, 4.3% of newborns had thrombocytopenia. [3] Because our hospital is a tertiary care referral hospital and referral bias cannot be entirely ruled out, our study had several limitations and potential biases. Furthermore, the fetal prognosis in our study is confounded by the gestational age at birth.

Most of them required prompt termination due to obstetric reasons, which led to many preterm births. Maayan –Metzger et al conducted a retrospective study with 723 pregnant women and confirmed it.[4] The size of the present study is small, and a larger study is required to validate our findings.

4. Conclusion

According to our study's analysis, gestational thrombocytopenia, which affected feto-maternal outcomes the least was the most common cause of thrombocytopenia in women. Pre-eclampsia, together with its consequences was the second most common etiology.

The majority of the 26.43% of study participants developed bleeding symptoms, including APH and PPH, required platelet and other component transfusions. The inherent hazards of maternal complications like bleeding manifestations and neonatal thrombocytopenia make managing these patients challenging. Favorable feto-maternal outcome is possible with early diagnosis, proper evaluation and careful surveillance.

References:

[1] ACOG Practice Bulletin No. 207: Thrombocytopenia in Pregnancy. Obstet Gynecol 2019 Mar;133(3):e181-e193.

ISSN: 2309-5288 (Print)
ISSN: 2309-6152 (Online)
CODEN: JCLMC4
Journal of Coastal Life Medicine

[2] Rajesh Kashyap1., Akanksha G., Mandakini P .Maternal and Fetal Outcomes of Pregnancy in Patients with Immune Thrombocytopenia. The Journal of Obstetrics and Gynecology of India (March–April 2021) 71(2):124–130.

[3] Arora M, Goyal L, Khutan H. Prevalence of Thrombocytopenia during Pregnancy & Its Effect on Pregnancy & Neonatal Outcome . Ann. Int. Med. Den. Res. 2017; 3(2):ME04-ME06.

[4] Maayan-Metzger A, Leibovitch L, Schushan-Eisen I, et al. Predictors for neonatal thrombocytopenia in infants of thrombocytopenic mothers during pregnancy. Pediatr Blood Cancer 2010;55:145–8.