International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Tiwari N et al. Int J Reprod Contracept Obstet Gynecol. 2023 May;12(5):1453-1458
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20231241

Case Series

Thrombocytopenia in pregnancy

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Received: 22 March 2023
Accepted: 14 April 2023

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ABSTRACT

Thrombocytopenia is defined as a platelet count of <150x109/l. It is the second most common hematological abnormality during pregnancy. We present a case series of thrombocytopenia in pregnancy. The aim of this study was to evaluate thrombocytopenia in pregnancy at tertiary care center, Bhopal and to identify, treat and assess the maternal complications and neonatal outcome. In a year, 10 cases were evaluated out of which the diagnosis of 3 cases was immune thrombocytopenic purpura, 3 cases of gestational thrombocytopenia, 3 cases of thrombocytopenia associated with hypertensive disorders of pregnancy and 1 case of HBV induced chronic liver disease associated with thrombocytopenia.

Keywords: Thrombocytopenia, Hypertension disorders in pregnancy, Gestational thrombocytopenia, Outcome of thrombocytopenia in pregnancy, Immune thrombocytopenic purpura, DIC

INTRODUCTION

Thrombocytopenia is defined as <1,50,000/mm^3 platelet count. It occurs in 6-15% of pregnant women and 75% of these are gestational thrombocytopenia.[1] It can be an incidental finding in pregnancy detected during prenatal screening test. After anemia, thrombocytopenia is the second most common hematological disorder in pregnancy.[2]

Patients could be completely asymptomatic or present with past history of ecchymosis, petechiae, purpura, bleeding gums or menorrhagia.[3] The management of thrombocytopenia is cause specific.[4,5] Thrombocytopenia is more common in twin and triplet gestations.[6]

Causes of thrombocytopenia in a pregnant woman.[7-10]

Gestational thrombocytopenia

Gestational thrombocytopenia (GT) is the most common cause of thrombocytopenia during pregnancy and its incidence ranges from 5% to 11% of all pregnancies.[4] There are no specific laboratory tests to diagnose GT, hence diagnosis of exclusion is made according to the time of onset, severity of thrombocytopenia, and variable clinical features that can be presented in other causes of thrombocytopenia in pregnancy. In a patient with thrombocytopenia, regular platelet count monitoring is required.[4] Gestational thrombocytopenia is not an indication of cesarean delivery.[11]

Immune thrombocytopenic purpura

Another rare cause of thrombocytopenia in pregnancy is the immune thrombocytopenic purpura (ITP) which is an autoimmune disorder characterized by the anti-platelet glycoprotein antibodies that stimulate the platelet destruction in the spleen.[12] Thrombocytopenia in ITP is generally moderate but with platelet count usually below 100.000/Ìl.

Steroids or IVIG are recommended before 36 weeks if platelet count is less than 30.000/ìl, patient is symptomatic

or C-section is planned.[13] Immune thrombocytopenic purpura is not an indication for caesarean delivery.[14] The aim is to maintain platelet count above 50.000/îl around delivery which is considered safe for both vaginal and caesarean delivery.

Table 1: Causes of thrombocytopenia.

Pregnancy related	Non pregnancy related
Gestational thrombocytopenia **Preeclampsia/eclampsia** **HELLP syndrome** **Acute fatty liver of pregnancy**	Pseudo thrombocytopenia Immune thrombocytopenia Thrombotic thrombocytopenic purpura Herediatry thrombocytopenia Hemolytic uremic syndrome Autoimmune diseases: lupus erythematosus, antiphospholipid syndrome Infections: HIV, HBV, HCV, sepsis Disseminated intravascular coagulation Drug related: heparin Von Willebrand disease Type IIb Bone marrow dysfunction Hypersplenism Nutritional deficiencies: Vitamin B12, folate

Thrombocytopenia associated with hypertensive disorders

Thrombocytopenia associated with hypertensive disorders (preeclampsia, eclampsia, HELLP syndrome, acute fatty liver of pregnancy) is the second leading cause of thrombocytopenia in pregnancy. Thrombocytopenia occurring in this condition is a sign of severity of hypertensive disorder. Platelets rarely fall below 20.000/µl.

Preeclampsia causes about 20% of cases of thrombocytopenia in pregnancy. Sometimes, thrombocytopenia is the only initial sign in hypertensive disorder of pregnancy.[14] HELLP syndrome (hemolysis, elevated liver function tests, low platelets) is another pregnancy specific disorder and it complicates 10-20% of cases of severe preeclampsia.[15] HELLP syndrome may present without proteinuria (25% of cases) or hypertension (40% of cases) and the diagnosis may then be missed.[16] About 70% of the cases develop before delivery, the majority between the 27th and 37th gestational week, but in some women the signs suggestive of HELLP syndrome may occur postpartum (30% of cases).[15]

CASE SERIES

Case 1

A 26 years old primigravida reported at 37 weeks period of gestation. On admission, her platelet count was 20,000/cumm. Her other blood parameters were within normal limits. She gave a significant past history of easy brusabilty on injury since childhood. On systemic examination, there was no organomegaly. Her liver and renal fuction tests were within normal limit. Her viral markers were non-reactive. Her LDH and Vitamin B-12 were within normal limit.

She underwent emergency LSCS ivo fetal distress and delivered a female baby with a birth weight of 2.2 kg, cried immediately at birth and her delivery was uneventful. She was diagnosed with immune thrombocytopenic purpura as there was a low increase in platelet count after repeated RDP transfusions and all other causes of thrombocytopenia were excluded. She was started on tablet omnacortil 60 mg once daily.

Baby was sent to NICU and had low platelet count for which IVIG was given and the baby was discharged with normal blood parameters.

Her postoperative period was uneventful and was discharged on post-operative day-5 with a platelet count of 1,20,000/cumm.

Case 2

A 25 years old primigravida presented in the emergency department at our tertiary care center with a period of gestation 36 weeks 2 days in labour. She was known case of HBV induced chronic liver disease with thrombocytopenia and was on antiviral therapy taking oral tenofovir 300 mg once daily. Her blood sample showed a platelet count of 62,000/cumm and slightly raised liver enzymes for which tablet Udiliv 300 mg once daily was started. Her coagulation study was normal.

She delivered a female was delivered vaginally with a birth weight of 2.5 kg and cried immediately at birth. Her delivery was uneventful.

Post-delivery, the baby received hepatitis-B immunoglobulin and hepatitis-B vaccine. Her blood parameters tested normal.

Rise in the platelet count was observed with the values of 50,000/cumm post-delivery, 75,000/cumm on day 2 post-delivery. She was discharged on platelet count of 1,60,000/cumm on day 5 and was advised to continue tablet tenofovir 300 mg once daily.

Case 3

A 34 years old primigravida at period of gestation 36 weeks 4 days with known case of thrombocytopenia (ITP). She had been taking tablet prednisolone 20 mg on and off since she was diagnosed with thrombocytopenia in the first trimester. Her platelet count on admission was 58,000/cumm with a serial platelet count which was repeated every 4th day with values of 56,000/cumm and 53,000/cumm.

She was taken for emergency LSCS Ivo oligohydramnios with Doppler changes and delivered a male with a birth weight of 2.15 kg. Her platelet count was 55,000/cumm on the date of delivery. Subsequent blood sample showed a platelet count of 1,10,000/cumm.

Baby for sent to NICU and was also diagnosed with a low platelet count for which 4RDP and IVIG was administered and was discharged with a normal platelet count.

Case 4

A 20 years old primigravida with a period of gestation of 39 weeks 1 day with severe thrombocytopenia with Rh negative pregnancy. On admission, her platelet count was 18,000/cumm, coagulation study and liver function test was normal. Patient had a significant past history of easy brusability and menorrhagia since childhood. Her viral markers were non-reactive and normal LDH and vitamin B12 levels.

She underwent emergency LSCS Ivo non-progression of labour and delivered a female with a birth weight of 2.64 kg, cried immediately at birth. She was transfused with 4 RDP, 2 SDP intraoperatively and postoperatively respectively. Her repeated platelet count was low-25,000/cumm and was diagnosed with immune thrombocytopenic purpura as a diagnosis of exclusion and was started on tablet omnacortil 60 mg once daily.

Post-delivery, the baby was diagnosed with a low platelet count and the baby was administered IVIG after which the baby was discharged with a normal platelet count.

Post-delivery, her platelet counts increased gradually with a count of 60,000/cumm, 75,000/cumm, 80,000/cumm, 90,000/cumm on post-operative day 2, 3, 4, 5 respectively.

Her post-operative period was uneventful and was discharged on day 8 with a platelet count of 1,82,000/cumm.

Case 5

A 24 years old, second gravid with previous LSCS presented at period of gestation 38 weeks 3 days with a platelet count of 99,000/cumm on admission. She was diagnosed with gestational thrombocytopenia, had no significant past medical history.

She underwent elective LSCS Ivo malpresentation with previous LSCS, she delivered a male of 2.98 kg with immediate cry at birth. Baby was sent to NICU and tested normal blood counts.

Her postoperative period was uneventful and was discharged on platelet count of 1,47,000/cumm.

Case 6

A 26 years old second gravid presented with period of gestation 34 weeks 1 day with twin pregnancy in active labour with known case of hypothyroidism with hypertension with Rh negative pregnancy. On admission, her platelet count was 69,000/cumm.

Patient was taking antihypertensive since second trimester. Her coagulation profile was normal. No features of hemolysis were present. Her bilirubin levels were normal and her serum viral markers were within normal limit. She was diagnosed with gestational thrombocytopenia.

She delivered preterm twins, both males with a birth weight of 2.2 kg and 1.8 kg, babies cried immediately at birth and were shifted to NICU for observation. PPH was present which was controlled by medical management. Babies had a normal platelet count.

Her platelet count was 1,50,000/cumm post-delivery and was discharged.

Case 7

A 24 years old, second gravida presented with a period of gestation of 40 weeks 4 days with post datism with Rh negative pregnancy in labour. On admission, her platelet count was 71,000/cumm. She also had history of low platelet count in second trimsester 76,000/cumm but was not taking any treatment. Her coagulation study and Liver enzymes were normal. Her viral markers were non-reactive.

She delivered a full term vaginally, with a female of birth weight 2.82 kg with immediate cry at birth. Her post delivery period was uneventful and 4 RDP were transfused post-delivery. She was diagnosed with gestational thrombocytopenia.

Baby had a normal blood count and was shifted to motherside.

Patient was discharged with a platelet count of 1,20,000/cumm.

Case 8

A 27 years old primigravida, presented at period of gestation 37 weeks 3 days with severe pre-eclampsia in labour. Patient presented with premonitory symptoms and thus was diagnosed with pre-eclampsia. Her previous platelet count was 90,000/cumm. She was also started on antihypertensives.

She delivered a full term female with a birth weight 2.3 kg, immediate cry at birth was present. Baby was sent to NICU for observation, counts were normal and baby was shifted to motherside. Her delivery was uneventful. Her post delivery period was uneventful and was discharged with a platelet count of 1,80,000/cumm.

Case 9

A 20 years old primigravida presented with period of gestation 36 weeks 4 days with severe pre-eclampsia with raised blood pressure and pre-monitory symptoms. She was on antihypertensive tablet lobet 100 mg TDS since second trimester. Her platelet count on admission was 95,000/cumm with normal coagulation study and liver and renal function tests.

She underwent emergency LSCS Ivo severe pre-eclampsia with fetal distress and delivered a female with birth weight of 2.27 kg. Baby was investigated normal.

Her post-operative period was uneventful and was discharged on day 7 with a normal blood count.

Case 10

A 29 years old third gravida at 28 weeks with previous LSCS with thrombocytopenia with hypertensive crisis with HELLP syndrome. She presented with raised blood pressure with end organ damage with oliguria since morning. Her platelet count was 56,000/cumm on admission with a deranged coagulation profile and liver and renal function tests with features of hemolysis on peripheral smear examination. LDH was >600U/l.

2 PRBC and 8 RDP were transfused post operatively.

She underwent emergency hysterotomy and delivered a female with a birth weight of 850 gms. Baby was ELBW and was admitted in NICU for long.

She was shifted to intensive care unit for further management. Further she had refractory hypertension which wasn't controlled on antihypertensive. She went in DIC and had neurological deficit. She underwent multidisciplinary approach after which she recovered and was discharged with a platelet count of 2,20,000/cumm.

On microscopic examination platelets appear markedly reduced on smear. No clumps or giant platelets seen.

Table 2: Summary of cases.

Cases	POG at presentation	Platelets on admission	Diagnosis	Platelets on discharge	Obstetric outcome	Complica-tion	Neonatal outcome
1	37 weeks	18,300	ITP	1,20,000	LSCS	-	Thrombocytopenia
2	36 weeks 2 days	62,000	CLD induced thrombo-cytopenia	1,60,000	PTVD	-	Healthy
3	36 weeks 4 days	58,000	ITP	1,10,000	LSCS	-	Thrombocytopenia
4	39 weeks 1 day	53,000	ITP	1,82,000	LSCS	-	Thrombocytopenia
5	38 weeks 3 days	99,000	GT	1,47,000	LSCS	-	Healthy
6	34 weeks 1 day	69,000	GT	1,50,000	PTVD	PPH	Healthy twins
7	40 weeks 4 days	71,000	GT	1,20,000	FTND	-	Healthy
8	37 weeks 3 days	90,000	Thrombo-cytopenia with HDP	1,80,000	FTND	-	Healthy
9	36 weeks 4 days	95,000	Thrombo-cytopenia with HDP	2,80,000	LSCS	-	Healthy

Continued.

Cases	POG at presentation	Platelets on admission	Diagnosis	Platelets on discharge	Obstetric outcome	Complica-tion	Neonatal outcome
10	28 weeks	56,000	Thrombo-cytopenia with HDP	2,20,000	Hysteroto-my	Refractory hyperten-sion, DIC	Healthy

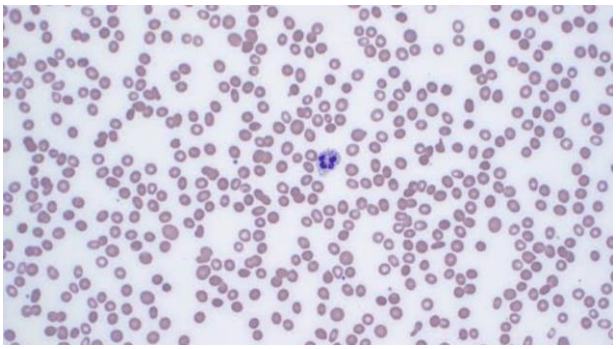

Figure 1: Peripheral smear.

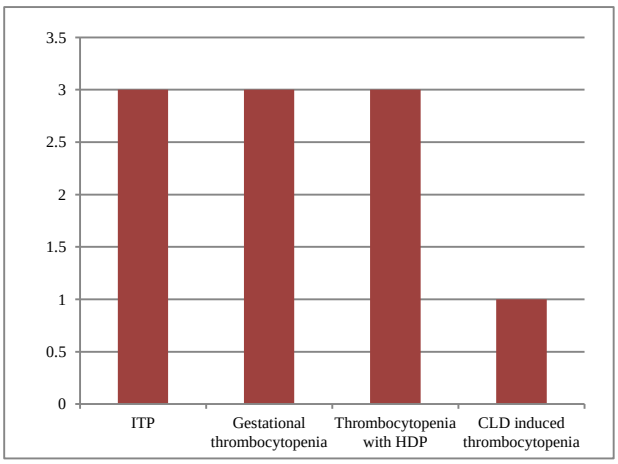

Figure 2: Graphical representation of cases.

DISCUSSION

In this case series, various causes of thrombocytopenia in pregnancy found were immune thrombocytopenic purpura, gestational thrombocytopenia, thrombocytopenia associated with hypertensive disorders of pregnancy and its complications and HBV-induced chronic liver disease associated with thrombocytopenia. Immune thrombocytopenic purpura and gestational thrombocytopenia accounted for 30% each. Another cause of thrombocytopenia was associated with hypertensive disorders of pregnancy accounted for 30% cases followed by HBV induced chronic liver disease associated with thrombocytopenia which was 10%.

Singh et al reported gestational thrombocytopenia for majority of cases of thrombocytopenia in pregnancy (50%) followed by hypertensive disorders (22.4%). It was further followed by ITP (11.11%) and dengue (5.5%).[17] Parnas et al reported the main causes of thrombocytopenia as gestational thrombocytopenia (59.3%), ITP (11.05%), preeclampsia (10.05%), and HELLP syndrome (12.06%).[18] Katke et al reported gestational thrombocytopenia as the most common etiological factor with 30.1% cases, 27.2% cases of thrombocytopenia associated with hypertensive disorders, 18.4% cases of thrombocytopenia associated with malaria followed by 12.6% cases of dengue.[19] In another study by Xiaoyue et al, there were 117 (60.0%), 55 (28.2%), and 23 cases (11.8%) of pregnancy-associated thrombocytopenia, immune thrombocytopenia and hypertensive disorder in pregnancy.[20]

In our study, 5 cases underwent LSCS out of which 1 case underwent emergency hysterotomy, 2 cases had full term vaginal delivery and 2 cases had preterm vaginal delivery with PPH reported in 1case. In the study by Katke et al, the route of delivery of the 102 cases was full term vaginal delivery with episiotomy in 24.27% cases, full term vaginal delivery without episiotomy in 24.27% cases, LSCS in 24.27% cases, preterm vaginal delivery in 21.35% cases, 3.88% spontaneous abortions.[19]

In our study, 3 neonates had thrombocytopenia who required IVIG at birth whereas 8 neonates were healthy. Burrows and Kelton et al, conducted a prospective study for 1 year on a group of women who delivered at McMaster university and demonstrated that gestational thrombocytopenia appears to have no adverse effects on either mothers or their infants.[21] In the study by Katke the number of neonatal mortalities were seen were 8 (7.76% of cases).[19]

CONCLUSION

Gestational thrombocytopenia is the most common cause of thrombocytopenia in pregnancy. Though other causes of thrombocytopenia should also be ruled out. Immune thrombocytopenic purpura is always a diagnosis of exclusion. The patients should be thoroughly investigated and followed up so as to improve maternal and neonatal outcome. These conditions are usually benign which does not alter the obstetrical management and is not associated with adverse maternal or neonatal outcome as compared to other causes like thrombocytopenia associated with hypertensive disorders of pregnancy which require immediate intervention and may also be associated with poor prognosis of mother and the fetus.

The challenge to the clinician is to weigh the risks of maternal and fetal bleeding complications and at the same time ensure about favourable outcome for both.

An accurate diagnosis and risk assessment in the antenatal period are essential for developing specific plans for any antenatal interventions and for management of delivery and the postpartum periods and the neonate. A multidisciplinary approach and inputs from hematologist ensures favourable maternal and neonatal outcome.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Tiwari N, Kanhere A, Dutta SP, Madhav N. Thrombocytopenia in pregnancy. Int J Reprod Contracept Obstet Gynecol 2023;12:1453-8.