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"MATERNAL OUTCOME IN PREGNANCY WITH THROMBOCYTOPENIA"

Obstetrics & Gynaecology

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ABSTRACT

INTRODUCTION-
Thrombocytopenia is diagnosed when the platelet count is less than 1,50,000 per microliter of blood It is a common hematological disorder Thrombocytopenia is divided into 3 types according to severity: mild (100,000 to 150,000), moderate (50,000to100,000) and severe (less than 50,000) thrombocytopenia.

MATERIALAND METHOD-
Objective- To study the incidence of thrombocytopenia in normal pregnancy.
to study the maternal and fetal outcomes in pregnant patients with thrombocytopenia
This is a retrospective study in which a total of 1202 patients delivered in a maternity hospital of Gwalior from 1 January 2018 to 30 June 2019 were studied. 72 patients with a platelet count below 1.5 lakhs were included in the study.

RESULTS-
A total of 1202 patients were delivered during the study period out of the 72 patient had thrombocytopenia thus the prevalence was found to be 5.99%.
In our study majority of the patients were multigravida 63.88% in the 3rd trimester 54.16% majority by between age of 25-30 years 58.33%.
In our study 61.11% of women had mild, 27.77 had moderate and 11.11% had severe thrombocytopenia.
In this study, gestational thrombocytopenia was the most common etiological factor with 29.16% of cases. In our study, 70.83% of patients were delivered vaginally and 29.16% of patients were delivered by LSCS. No complication was reported in 48.61% of patients. The bleeding during CS was found in 4.16% cases, maternal hemorrhage was found in 5.55%, pulmonary edema in 5.55%, ARF in 5.55%, DIC 4.16%, and Puerperal sepsis in 2.77%.
Blood transfusion was needed in 15.27% of patients, platelet transfusion in 4.16% of patients. Obstetric hysterectomy was done in 1 patient. During the study, 2 maternal death were reported due to the HELLP syndrome and associated complications.

CONCLUSION-
Gestational thrombocytopenia is the most common cause of thrombocytopenia during pregnancy. We conclude that early diagnosis of thrombocytopenia in pregnancy is essential for better maternal and fetal outcomes. It is important to determine the exact etiological cause of thrombocytopenia so that timely management can be provided to the pregnant patients to decrease the complication rate thus, timely diagnosis, frequent monitoring, and treatment is must achieve a better outcome.

KEYWORDS

1. INTRODUCTION-

Thrombocytopenia is a condition characterized by a persistent decrease in the number of platelets in the blood that is often associated with hemorrhagic conditions. The non-nucleated cellular fragments megakaryocytes are known as platelets and they play a critical role in hemostasis. Thrombocytopenia is diagnosed when the platelet count is less than 1,50,000 per microliter of blood It is a common hematological disorder.[1]

It is the second most common hematological abnormality in pregnancy after anemia. In the last 20 years, it has been observed by clinicians that thrombocytopenia is being more frequently diagnosed. Thrombocytopenia in pregnant women may occur from the effects of manifold processes, which may be either physiological or pathological.[2]

Thrombocytopenia is divided into 3 types according to severity: mild (100,000 to 150,000), moderate (50,000to100,000) and severe (less than 50,000) thrombocytopenia. Gestational thrombocytopenia (GT; defined as a platelet count below 150×10^9/L) occurs in 4.4% to 11.6% of pregnancies, accounting for about 75%of all cases of thrombocytopenia in pregnancy.[1,3]

According to etiology, thrombocytopenia in pregnancy is divided into gestational, medical (ITP, hypersplenism, hepatic disorders, etc.) and obstetric (hypertensive disorders, DIC) thrombocytopenia.[2]

Pregnant women with thrombocytopenia have a higher risk of excessive bleeding during or
after childbirth, particularly if there arises a need to have a cesarean section or other surgical intervention during pregnancy, labor, or in the puerperium.[4]

Platelet counts in many women gradually show a downward trajectory beginning in the second trimester, which is most likely due to hemodilution related to an increase in plasma volume during pregnancy and possibly increased platelet clearance as mean platelet volumes, platelet volume distribution width, and platelet-derived cyclooxygenase products rise.[3,4]

Several women with gestational thrombocytopenia (GT)develop a more significant decline in platelet count and a reduction in antithrombin III, suggesting distinct pathogenesis that lies on a continuum with the hemolysis, elevated liver enzymes, low platelets(HELLP)syndrome, and acute fatty liver of pregnancy(AFLP)and it may be associated with a higher risk of recurrence in subsequent pregnancies.[5]

Gestational thrombocytopenia is a clinically benign thrombocytopenic disorder usually occurring in late pregnancy. It resolves spontaneously after delivery.[7]

Immune thrombocytopenia (ITP) occurs in 0.83 of 10,000 pregnancies and presents unique challenges in the postpartum setting. ITP can develop during any trimester of pregnancy and can be difficult to distinguish from other causes of thrombocytopenia in pregnancy such as gestational thrombocytopenia, acute fatty liver of pregnancy, and hypertensive emergencies (preeclampsia and HELLP; hemolysis, elevated liver enzymes, low platelet count).[8]

In normal pregnancies, 7.6% of women present with mild thrombocytopenia, and 65% of them will not be associated with any pathology. Thrombocytopenia in pregnancy can be due to either gestational thrombocytopenia (GT) or other obstetric disorders like hypertensive conditions such as preeclampsia/eclampsia and its

complications such as hemolysis elevated liver enzymes and low platelets (HELLP), amniotic fluid embolism, disseminated intravascular coagulopathy (DIC) or medical causes like thrombotic thrombocytopenic purpura (TTP)/ hemolytic uremic syndrome (HUS), autoimmune disorders: systemic lupus erythematosus (SLE), idiopathic thrombocytopenic purpura (ITP), antiphospholipid syndrome, infections, sepsis, hypersplenism, primary bone marrow dysfunction. Other causes are spurious/pseudo thrombocytopenia or drug-induced thrombocytopenia.[5,6,7]

In patients where a disorder of hemostasis is suspected, defects in platelet number or function, impaired coagulation, or abnormalities in vascular function should be considered.

Treatment is started for bleeding when the platelet count falls below20 $\times 10^9$/L to 30×10^9/L, and for procedures and delivery. Studies show that there is an increased risk of bleeding if the platelet count is below 20 $\times 10^9$/Lto 30 $\times 10^9$/L for a vaginal delivery or below 50 $\times 10^9$/Lfora cesarean delivery. Hematomas following neuraxial anesthesia are mostly rare in patients with stable ITP and a platelet count above50 $\times 10^9$/L with no concomitant coagulopathy or exposure to an antithrombotic agent, for example, low-molecular-weight heparin.[10]

However, most guidelines suggest a minimum platelet count of 80 $\times 10^9$/L is advisable for neuraxial anesthesia. Platelet counts should be measured more frequently starting at 32-34 weeks and repeated weekly in unstable patients.[9]

Care should be coordinated with an experienced obstetrician and neonatologist to avoid any possible complications. For initial short-term treatment, for example, in anticipation of delivery, daily oral prednisone may be preferred over pulse dexamethasone because there is less concern about the placental transfer.[7] If there is the failure of corticosteroid therapy or if its use is limited by maternal intolerance, Intravenous immune globulin (IVIG) is used. There is limited published data with IV immunoglobulin G (IgG) anti-RhD, which crosses the placenta and coats fetal erythrocytes.[8]

Persistent exposure to high-dose corticosteroids in the first trimester is associated with a small increased risk of cleft palate and exposure throughout gestation may increase the risk of preterm birth and gestational diabetes. Therefore, relying on periodic administration of IVIG is more favored.[10,11]

Thrombocytopenia itself causes complications and thrombocytopenia is a complication of other disorders. Maternal platelet count has no direct influence on neonatal complications. The fetal complications occur in cases of preterm delivery, abruption, thrombocytopenia associated with anemia, sepsis.[11]

Gestational thrombocytopenia is the most common cause of thrombocytopenia during pregnancy (50%), but other underlying causes must be considered as well and should not be neglected. A detailed history and physical examination will rule out most causes. Investigations like CBC and smear must be observed to rule out pancytopenia and platelet clumping associated with pseudo thrombocytopenia.[11]

If no previous history of thrombocytopenia is present and platelet counts are above 70,000/mcL, the condition is more likely to be GT. If platelet counts fall below 50,000/mcL or if a pre-existing history of thrombocytopenia is present, the condition is more likely to be ITP. There is a positive correlation between thrombocytopenia with adverse feto-maternal outcome.[12] Therefore, periodic monitoring of platelet count can be considered. Proper antenatal care and institutional deliveries enable obstetricians to diagnose thrombocytopenia and its complication at an early stage and early intervention result in better outcome.[10] Thus, working knowledge of the clinical features and management of pregnant women with thrombocytopenia due to different causes is important for hematologists. Specific therapies, if promptly administered, may significantly improve the outcomes of pregnant women and their off spring.[13]

2. MATERIAL AND METHOD-

OBJECTIVE- To study the incidence of thrombocytopenia in normal pregnancy.to study the maternal and fetal outcomes in pregnant patients with thrombocytopenia.

This is a retrospective study in which a total of 1202 patients delivered in a maternity hospital of Gwalior from 1 January 2018 to 30 June 2019 were studied. In the study, 72 patients with a platelet count below 1.5 lakhs were included in the study. All the patients were follow-up throughout the antenatal period, Intrapartum, and the postpartum period. Demographic profile, age, parity, Gestational age, any history of petechiae, bruising in present or past, bleeding from gums or nose, h/o prolong bleeding from cuts, h/o splenomegaly h/o drug ingestion, h/o viral infection, h/o thrombocytopenia in a previous pregnancy, h/o hepatic, renal, respiratory or another pre-existing disease, h/o blood transfusion, and platelet transfusion during or before pregnancy were recorded. All the investigations like CBC [(To note the severity of thrombocytopenia according to platelet count mild (100,000 to 150,000), moderate (50,000 to 100,000) and severe (less than 50,000)] & other investigations reports like RFT, LFT, HBsAg, HIV were studied If fever is there a test of malaria and dengue IGM were studied.

Coagulation tests (PT, APTT, FDP, and fibrinogen levels)were done if required. Presenting complaints of any complications during the antenatal intranatal and postpartum periods were noted. the fetal outcome, NICU admission, and early neonatal outcome were also noted.

All the data were analyzed using IBM, SPSS Ver. 20 software. Cross Tabulation and frequency distribution were used to prepare tables. Data are expressed as numbers, percentages, and mean.

3. RESULTS-

A total of 1202 patients were delivered during the study period out of the 72 patient had thrombocytopenia thus the prevalence was found to be 5.99%.

Table 1:- Distribution according to Gravida status.

Status	Number	Percentage
Primigravida	23	31.94
Multigravida	46	63.88
Grand multigravida	3	4.16
Total	**72**	**100**

In our study majority of the patients in our study were multigravida 63.88% followed by Primigravida 31.94%.

Table 2:- Gestational age at the time of diagnosis.

Gestational age	Number	Percentage
1st Trimester	11	15.27
2nd Trimester	22	30.55
3rd Trimester	39	54.16
Total	**72**	**100**

In our study maximum number of patients with thrombocytopenia was found in the 3rd trimester 54.16%.

Table 3:- Distribution of study group as per age.

Age group (years)	Number	Percentage
<25	23	31.94
25-30	42	58.33
>30	7	9.72
Total	**72**	**100**

In the present study, the majority of patients were age group between 25-30 years 58.33%.

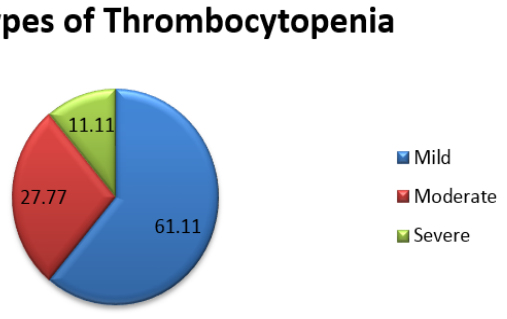

Figure 1- Types of Thrombocytopenia

In our study 61.11% of women had mild, 27.77 had moderate and 11.11% had severe thrombocytopenia.

Table 4:- Distribution of cases according to etiology.

Etiology	No	Percentage
Gestational thrombocytopenia	21	29.16
Pregnancy-induced hypertension	14	19.44
Eclampsia	5	6.94
HELLP (Syndrome of hemolysis, elevated liver enzymes, and low platelets)	4	5.55
Antepartum hemorrhage	2	2.77
Idiopathic thrombocytopenic purpura	1	1.38
Malaria	12	16.66
Dengue	7	9.72
Renal disease	1	1.38
Actual respiratory distress syndrome	1	1.38
Hypersplenism	1	1.38
Hepatic disease	1	1.38
Multiorgan failure	1	1.38
Septicemia	1	1.38
Total	**72**	**100**

In this study, gestational thrombocytopenia was the most common etiological factor with 29.16% cases, followed by 19.44 in pregnancy-induced hypertension, followed by 16.66% for malaria, 9.72% for dengue, 6.94% in eclampsia, 5.55% in HELLP syndrome.

In our study, gestational hypertension was found in 16.66%.
In our study, HELLP syndrome was found in 5.55%.
In our study, the ITP was found in 1.38%.

Table 5:- Mode of delivery and gestational age at the time of delivery.

Mode of delivery	Number	%
Vaginal	51	70.83
Cesarean section	21	29.16
Total	**72**	**100**
Gestational age	**Number**	**%**
Term (>37weeks)	49	68.05
Preterm (<37 weeks)	23	31.94
Total	**72**	**100**

In our study, 70.83% of patients were delivered vaginally and 29.16% of patients were delivered by LSCS (increased rate of LSCS was observed due to associated conditions). 68.05% were delivered at term and 31.94% were delivered before term.

Table 6:- Maternal morbidity associated with thrombocytopenia.

	Outcome	No. of cases	%
Maternal	No morbidity	35	48.61
	Episiotomy Hematoma	2	2.77
	Incision site hematoma / Bleeding during CS	3	4.16
	Maternal hemorrhage	4	5.55
	ARF (renal failure)	4	5.55
	DIC	3	4.16
	Pulmonary edema	4	5.55
	Obstetrical hysterectomy	1	1.38
	Blood transfusion	11	15.27
	Platelet Transfusion	3	4.16
	Puerperal sepsis	2	2.77
	Maternal death	2 (due to HELLP syndrome and its complication)	2.77

In our study, no complication was reported in 48.61% of patients. The bleeding during CS was found in 4.16% cases, Hemorrhage was found in 5.55%, Pulmonary edema in 5.55%, ARF in 5.55%, DIC 4.16%, and Puerperal sepsis in 2.77%.

Blood transfusion was needed in 15.27% of patients, platelet transfusion in 4.16% of patients. Obstetric hysterectomy was done in 1 patient. During the study, 2 maternal death were reported due to the HELLP syndrome and associated complications.

4. DISCUSSION-

Gestational thrombocytopenia is the most common cause of thrombocytopenia during pregnancy (50%), but other underlying causes must be considered as well and should not be neglected. A detailed history and physical examination will rule out most causes. Investigations like CBC and smear must be observed to rule out pancytopenia and platelet clumping associated with pseudo thrombocytopenia.[11]

In the present study, the incidence of thrombocytopenia was 5.99% which was comparable to other studies 8.17%, 7.6%, 8.8%, 7.6%, and 7.1% in a study of **Dwivedi et al**[14], **Vyas et al**[15], **Singh et al**[16], **Burrows et al**[17] and **Manthan Sojitra**[18]. Our study was not in agreement with other studies in which higher incidence of thrombocytopenia was found 13.50%, 11.11% in a study of **Ajibola et al**[19] and **Onisai et al**[20].

In our study majority of the patients in our study were multigravida 63.88% followed by Primigravida 31.94%, this was in agreement with the study of **Manthan sojitra**[18] (multigravida 60%, Primigravida 40%). Our study was not in agreement with the study conducted by **Janes SL et al** [21] in which the prevalence was high in Primigravida (70%) and less in multigravida 30%.

In our study maximum number of patients with thrombocytopenia was found in the 3rd trimester 54.16%. which was similar to the study of **Jui Manish Shah**[22] in which the author found a maximum of 64.44% of patients in the 3rd trimester. **Boehlen et al** [23] stated that platelet counts mostly fall in the 3rd-trimester Leyding to thrombocytopenia.

In the present study, the majority of patients were age group between 25-30 years 58.33%. the results were not in agreement with the study of **manthan sojitra**[18] in which a maximum number of 56% of thrombocytopenia patients were in the age group of <25 years.

In our study 61.11% of women had mild, 27.77 had moderate and 11.11% had severe thrombocytopenia. Our study was in agreement with the study of **Manthan sojitra**[18] in which 60% of women had mild, 24% had moderate and 16% had severe thrombocytopenia. Our study was also in agreement with other studies in which mild cases were found in 54%, moderate in 30%, and severe in 16% in a study of **Borna et al**, the incidence of mild cases was 74.7%, moderate 17.9 severe 7.4% found in a study of **Singh et al**[16].

In this study, gestational thrombocytopenia was the most common etiological factor with 29.16% cases followed by 19.44% in pregnancy-induced hypertension, followed by 16.66% for malaria, 9.72% in dengue, 6.94% in eclampsia, 5.55% in HELLP syndrome, our study was in agreement with the study of **Rajshree Dayanand Katke**[25] in which gestation thrombocytopenia was found in 30.1% cases, Malaria in 18.4%, Dengue 12.6% pregnancy-induced hypertension 16.6%, eclampsia 8.7% and HELLP syndrome 5.8%.

gestational hypertension 26.7%, 24%, 24.2%, and 22%, **Brohi et al**, **Manthan sojitra** [26,18]. Singh et al and **Vyas et al**[15].

In our study gestational hypertension was found in 19.44% which was in agreement with the study of **Manthan Sojitra**[18] (24%), **Singh et al**[16] (24.20%), **Brohi et al**[26] (26.70%), **Vyas et al**[15] (22%) **Parnas et al**[27] (21.11%) and **Burrows et al**[17]. (21%).

In our study, the HELLP syndrome was found in 5.55% which was in agreement with the study of **Manthan sojitra**[18] (4%) **Turgot et al**[28] (1.14%), **Vyas et al**[15] (4.08%) whereas studies by **Onisai et al**[20] and **Parnas et al**[27] showed HELLP syndrome in 9.52% and 12.06% women respectively, which was higher than our study.

In our study, the ITP was found in 1.38% which was lower than the study of **Manthan Sojitra**[18] (4%). **Burrows et al**[17] (3%) and **Singh et al**[16] (8.40%).

In our study, 70.83% of patients delivered vaginally and 29.16% of patients were delivered by LSCS. 68.05% were delivered at term and 31.94% were delivered before term. Our study was in agreement with the study of **Manthan sojitra**[18] (60% delivered vaginally and LSCS 40%,) **Vyas et al**[15], (vaginally 63% and LSCS 37%). Whereas the incidence of LSCS was higher in the study of **Pafumi et al**[29] (55%).

In our study, no complication was reported in 48.61% of patients. The bleeding during CS.

was found in 4.16% cases, Hemorrhage was found in 5.55%, Pulmonary edema in 5.55%, ARF in 5.55%, DIC in 4.16%, and Puerperal sepsis in 2.77%.

Blood transfusion was needed in 15.27% of patients, platelet transfusion in 4.16% of patients. Obstetric hysterectomy was done in 1 patient. During the study, 2 maternal death were reported (due to the HELLP syndrome and associated complications).

In our study platelet transfusion was required in 4.16% of cases which was lower than the study of **Manthan sojitra et al[18].** (20%) and **Ajzenberg N et al[30]** (22%).

In the study of **Jigyasa singh[31]**, Pulmonary edema (10%) and maternal hemorrhage (8.88%) is the most common complication. According to this study, 38 (42.32%) cases had complications which include puerperal sepsis(6.66%), ARF (5.55%), DIC (7.78%), and obstetrical hysterectomy (2.2%)

5. CONCLUSION-

We conclude that early diagnosis of thrombocytopenia in pregnancy is essential for better maternal and fetal outcomes. the common causes of thrombocytopenia in pregnancy are gestational thrombocytopenia, pre-eclampsia & eclampsia, nutritional anemia, Dengue, and other infections. Gestational thrombocytopenia is the most common cause of thrombocytopenia during pregnancy. If the platelet count is below 50000 with a pre-existing history of thrombocytopenia then it can be idiopathic thrombocytopenia It is important to determine the exact etiological cause of thrombocytopenia so that timely management can be provided to the pregnant patients to decrease the complication rate thus timely diagnosis frequent monitoring and treatment is must achieve a better outcome.

REFERENCES-

1. Perepu U, Rosenstein L. Maternal thrombocytopenia in pregnancy. Proceedings of Obstet Gynecol. 2013;3(1):1-15.
2. Shehata N, Burrows RF, Kelton JG. Gestational thrombocytopenia. Clin Obstet Gynecol. 1999;42:327-34.
3. Jeffrey AL, Lance DM. Thrombocytopenia in Pregnancy. J Am Board Fam Pract. 2002;15:290-7.
4. Kam PC, Thompson SA, Liew AC. Review article, thrombocytopenia in the parturient. Anesthesia. 2004;59:255-64.
5. Cunningham FG, Gant NF, Leveno KJ, Gilstrap LC,Hauth JC, Wenstrom KD. Williams Obstetrics. In: Hematological disorders. 21st ed, NY: McGraw-Hill; 2001:1307-38.
6. Sahu L, Rathore A, Paliwal V. A clinical study of thrombocytopenia in pregnancy. Int J Scientific Research. 2015;1(6):738-40.
7. Silver R, Berkowitz R, Bussel J. Thrombocytopenia in pregnancy. Practice Bulletin, No 6. Chicago: Clin Obstet and Gynaecol. 1999;42:335-48.
8. Parnas M, Sheiner E, Shoham. Moderate to severe thrombocytopenia during pregnancy. Eur J Obstet Gynecol Reprod Biol. 2006;128:163-8.
9. Myers B. Diagnosis and Management of maternal thrombocytopenia in pregnancy. British J Haematol. 2012;158:3-15.
10. Gemsheimer T, James AH, Stasi R. How I treat thrombocytopenia in pregnancy. Blood. 2013;121(1):38-47.
11. Boehlen F, Hohlfeld P, Extermann P, Perneger TV, deMoerloose P. Platelet count at term pregnancy: a reappraisal of the threshold. Obstet Gynaecol. 2000;95:29.
12. Sainio S, Kekomaki R, Riikonen S, Teramo K. Maternal thrombocytopenia at term: a population-based study. Acta Obstet Gynecol Scand. 2000;79:744.
13. Scully M, Starke R, Lee R, Mackie I, Machin S, Cohen H. Successful management of pregnancy in women with a history of thrombotic thrombocytopenic purpura. Blood Coagul Fibrinolysis. 2006;17(6):459-463.
14. Dwivedi P, Puri M, Nigam A, Agrawal K, Fetomaternal outcome in pregnancy with severe thrombocytopenia. Eur Rev Med PharmacolSci. 2012;16(11):1563-6.
15. Vyas R, Shah S. Yadav P, Paterl U. Co,parative study of mild versus moderate or severe thrombocytopenia in the third trimester of pregnancy in a tertiary care hospital. NHL J Med Sci. 2014;3(1):8-11.
16. Singh N, Amita D, Uma S, Tripathi AK, Pushplata S. Prevalence and characterization of thrombocytopenia in pregnancy in Indian women. Indian J Hematol Blood Transfus. 2012;28(2): 77-81.
17. Burrows RF, Kelton JG, Thrombocytopenia at delivery: a prospective survey of 6715 deliveries. Am J Obstet Gynecol. 1990;162(3): 731-4.
18. Manthan Sojitra, Sushma R. Shah, Ami V. Mehta, Payal P. Panchal, Ronak Bhankhar, Maternal outcome in pregnancy with thrombocytopenia, Original research International Journal of Reproduction, Contraception, Obstetrics, and Gynecology DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20202729.
19. Ajibola et al.
20. Onisai M, Valdareanu AM, Delta C, Ciorascu M, Bumbea H, Nicolescu A. Perinatal outcome for pregnancies complicated with thrombocytopenia. J Matern Fetal Neonatal Med. 2012;25(9):1622-6.
21. Janes SL. Thrombocytopenia in pregnancy. Postgrad Med J. 1992; 68:321-6.
22. Jui Manish Shah, Rakesh Anand, Thrombocytopenia, Original research International Journal of Reproduction, Contraception, Obstetrics and Gynecology DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20210733.
23. Boehlen F. thrombocytopenia during pregnancy. Importance, diagnosis, and management of hamostaseologie. 2006;26(1):72-4.
24. Borna S, Borna H, Kahzardoost S. Maternal and neonatal outcomes in pregnant women with immune thrombocytopenic purpura. Arch Iran Med. 2006;115-8.
25. Rajshree Dayanand Katke, Dhruv Pravin Gohil, Thrombocytopenia during pregnancy: an institutional-based study Original research International Journal of Reproduction, Contraception, Obstetrics, and Gynecology, DOI: 10.5455/2320-1770.ijrcog20141214.
26. Brohi ZP, Perveen U, Sadaf A. Thrombocytopenia in pregnancy: an observational study Pak J Med. 2013;52(3):67-70.
27. Parnas M, Sheiner E, Shoham-Vardi I, Buresterin E, Yermiahu T, Levi I, et al. Moderate to severe thrombocytopenia during pregnancy. Eur J Obstet Gynecol Reprod Biol. 2006. Sep-Oct;128(1-2):163-8.
28. Turgut A, Demirci O, Demirci E, Uludogan M. Comparison of maternal and neonatal outcomes in women with HELLP syndrome and women with severe pre-eclampsia without HELLP syndrome. J Prenat Med. 2010;4(3):51-8.
29. Pafumi C, Valenti O, Giuffrida L, Colletta G, Gestational thrombocytopenia: does it cause any maternal and/or perinatal morbidity? Cukurova Med J. 2013;38(3):349-57.
30. Ajzenberg N, Dreyfus M, Kaplan C, Yvart J, Weill B, Tchernia G. Pregnancy-associated thrombocytopenia revisited: assessment and follow-up of 50 cases. Blood. 1998;92(12):4573-80.
31. Jigyasa Singh Kalpana Kumari, Vandana Verma, Study of thrombocytopenia in pregnancy: clinical presentation and outcome at tertiary care rural institute. Original research International Journal of Reproduction, Contraception, Obstetrics, and Gynecology, DOI: http://dx/doi.org/10.18203/2320-1770.ijrcog20201234.