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Original Research Article

STUDY ON MATERNAL AND FETAL OUTCOME INPREGNANT WOMEN PRESENTING WITH THROMBOCYTOPENIA AT GMC, HALDWANI

Priyanka Singh[1], Anushree[2], Navita Tiwari[2], Mahima Rani[3]

[1]PG 3rd Year, Department of OBS & Gynae, GMC, Haldwani, Uttarakhand, India
[2]PG 2nd Year, Department of OBS & Gynae, GMC, Haldwani, Uttarakhand, India
[3]Associate Professor, Department of OBS & Gynae, GMC, Haldwani, Uttarakhand, India

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CorrespondingAuthor:
Dr. Mahima Rani,
Email: mmrimpy@gmail.com

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Abstract

Background: Thrombocytopenia is defined as platelet count less than 150000/µL. It is a common hematological disorder. It is second only to anaemia as the most common hematological abnormality in pregnancy. The objective is to study maternal and fetal outcome in pregnant women presenting with thrombocytopenia. **Materials and Methods:** This Hospital based Cross sectional & Observational study was conducted in the department of Obstetrics & Gynecology at Dr Sushila Tiwari Hospital, Haldwani. **Result:** 45.2% study subjects showed mild thrombocytopenia, 48.4% had moderate thrombocytopenia & 6.4% had severe thrombocytopenia. On comparison of age with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia. 43.2% of the subjects were primigravida followed by 38.1% second gravida and 18.7% multigravida. (p-value is 0.295). On comparison of etiology with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia. On comparison of associated illness with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia. 51.6 % subjects had normal vaginal delivery followed by LSCS in 48.4% of subjects. 56.8% study subjects had no requirement of blood/blood products transfusion compared to 43.2% subjects who required transfusion. **Conclusion:** Gestational thrombocytopenia was found to be the most frequent cause of thrombocytopenia during pregnancy, although other underlying factors must also be taken into account.

INTRODUCTION

Pregnancy is associated with numerous physiological and pathological changes in platelet number and its functions and which can be of clinical concern. Inherited qualitative and quantitative platelet disorders may also manifest during pregnancy with the risk of bleeding.[1]

Thrombocytopenia or low blood platelet count is encountered in 7-8% of all pregnancies. Obstetricians diagnose thrombocytopenia by automated complete blood cell counts during routine prenatal screening. It can result from a wide range of conditions, several of them being pregnancy related. The normal range of platelets in non-pregnant women is 150,000-400,000/µL. Average platelet count in pregnancy is decreased (2,13,000/µl versus 2,50,000/µL). Decrease in the platelet count is due to hemodilution, increased platelet consumption, and increased platelet aggregation driven by increased levels of thromboxane A2.[2]

The modern recognition of the condition is mainly attributable to automated complete blood count, which routinely includes platelet count. Most of this decrease occurs during the third trimester and is associated with a shift in the histogram of platelet count distribution. There is a physiological fall in the platelet count with a leftward shift in platelet distribution. The cause for this decrease is multifactorial and is related to hemodilution, increased platelet consumption and increase in platelet aggregation driven by increased level of TXA2. This is supported by the fact that platelet count may also be lower in twin pregnancy when compared to singleton pregnancies. But pregnant woman with thrombocytopenia have lower bleeding complications when compared to non pregnant women because of procoagulant state induced by increased levels of fibrinogen, factor VIII, VWF, suppressed fibrinolysis and reduced protein S activity.[3]

The majority of thrombocytopenic pregnant women is healthy, has no history of thrombocytopenia, and is incidentally diagnosed by blood testing.[4] Most

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cases of thrombocytopenia in pregnancy are mild, and have no adverse outcome for either mother or baby, occasionally a low platelet count may be part of a more complex disorder with significant morbidity and may be life threatening.[5]

Thrombocytopenia in pregnancy may be an isolated finding or it may be associated with systemic disorders like severe preeclampsia, HELLP syndrome (hemolysis, elevated liver enzymes, low platelets), or AFLP (acute fatty liver of pregnancy). Furthermore, autoimmune diseases, including systemic lupus erythematosus, antiphospholipid syndrome, thrombotic thrombocytopenic purpura, haemolytic uremic syndrome, and immune thrombocytopenia (ITP) may relapse or be first detected during pregnancy resulting in thrombocytopenia.[6]

Thrombocytopenia carries a risk for both the mother and her foetus, associated with substantial maternal or neonatal morbidity & mortality. However a specific therapy, if instituted promptly, improves the outcome of affected patients and their offspring. Thrombocytopenia during pregnancy is an underexplored condition in Indian women, so the present study was conducted to study maternal and fetal outcome in pregnant women presenting with thrombocytopenia.

MATERIALS AND METHODS

Study Design- This Hospital based Cross sectional & Observational study was conducted in the department of Obstetrics & Gynecologyat Dr Sushila Tiwari Hospital, Haldwani over a period of JAN 2021-SEPT 2022 on pregnant women with singleton pregnancy with gestational age≥37 week admitted in Obstetrics and Gynaecology ward & found to have thrombocytopenia on investigation.

Sample Size: Assuming the prevalence of 10% and margin of error 5%. Sample size was calculated along with loss to follow up is 155.

Inclusion Criteria

- Pregnant woman who was willing to participate in the study.
- All pregnant women ≥37wk of gestational age, with platelet count less than 1,50,000/µL.

Exclusion Criteria

Women with known history of

- Patient who was not willing for study.
- Pancytopenia
- Bone marrow suppression
- Previous bad obstetric history
- Known case of APLA

Methodology

- ANC patient ≥37 wk of gestational age admitted in Obstetrics & Gynaecology ward with thrombocytopenia were enrolled in the study.
- Demographic features, detailed history, presenting complaints if any, findings of general, systemic and obstetrical examination including pelvic examination if required of all the patient was recorded in approvedproforma.
- Baseline investigations like Complete haemogram, blood group and Rh typing, urinalysis, VDRL, HBsAg, HCV and HIV serology and LFT, KFT were carried out in all subjects. Coagulation profile (PT, APTT etc) was done in patients found to have thrombocytopenia.
- History of petechiae, bruising, drug usage, viral infection, thrombocytopenia in previous pregnancy was taken.
- The data was collectedon printed proforma which included clinical details regarding demographic data, presenting complaints, obstetric and menstrual history, symptoms of thyroiddysfunction, associated medical illness like hypertension or other cardiovascular diseases, diabetes mellitus, drug history and general physical examinationsystemic examination, obstetrics examination including pelvic examination was done.
- Duration of pregnancy at the time of delivery, indication of induction and method (if required) and mode of delivery including indication for instrumental delivery or caesarean section were recorded. Neonates of all cases were tested for thrombocytopenia by cord blood sampling.

Statistical Analysis

Data was described in terms of range, mean, +/- standard deviation (SD), frequencies (number of cases), and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the study groups was done using One-Way ANOVA test. For comparing categorical data, the Chi-square test was performed. A probability value (p-value) less than 0.05 was considered statistically significant. AII statistical calculations were done using SPSS 21 (Statistical Package for the Social Science) version statistical program for Microsoft Windows.

RESULTS

In the present study,65.8% of subjects were in the age group of <25 years,21.9% in the age group of 26-30 years, 10.3% in the age group of 31-35 years, 2% were >35 years in age.

In the present study, 43.2% of the subjects were primigravida followed by 38.1% second gravida and 18.7% multigravida.

In the present study, 7.7% of study subjects were in the gestational age of 37-39 years & 92.3% in the gestational age >39 years.

In the present study 45.2% study subjects showed mild thrombocytopenia, 48.4% had moderate thrombocytopenia & 6.4% had severe thrombocytopenia.

In the present study, 56.8% of study subject showed etiology of gestational thrombocytopenia, 15.5% had etiology of pre-eclampsia, 7.1% had HELLP

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syndrome, 6.4% had gestational hypertension, 3.2% had eclampsia & 2.6% had superimposed pre-eclampsia. In other etiologies, 1.9% had dengue, 3.2% had hypersplenism, 1.3% had DIC, 1.3% had ITP and only 0.7% had malaria as an etiology

In the present study, associated illness was anemia in 23.2% of subjects, 7.7% had hypothyroidism, 2.6% had chronic hypertension, 0.7% had liver disorders & 65.8% subjects had no associated illness.

In the present study, 51.6 % subjects had normal vaginal delivery followed by LSCS in 48.4% of subjects

In the present study, indication for LSCS was breech in 12% of subjects, CPD in 5.3%, DLOC with olihohydraminnos in 2.7%, fetal distress in 8%, FIOL in 17.3%, IUGR in 2.7%, IUGR & oligohydramnios in 10.7%, only oligohydramnios in 9.4%, MSL with fetal distress in 4%, previous 2 LSCS in 4%, previous LSCS with fetal distress in 1.3%, previous LSCS with placenta accrete in 1.3%, previous LSCS with IUGR in 8%, previous LSCS with oligohydraminos in 4% & previous LSCS with scar tenderness in 9.4% of subjects.

In the present study, 56.8% study subjects had no requirement of blood/blood products transfusion compared to 43.2% subjects who required transfusion.

In the present study, 65.8% subjects did not require antihypertensive treatment compared to 34.2% who required antihypertensive treatment.

Table 1: Distribution of neonates according to birth weight

Neonatal weight	Number	Percentage
Low birth weight	118	76.1%
Normal birth weight	37	23.9%
Total	155	100%

In the present study, low birthweight was seen in 73.1% of the subjects whereas 23.9% subjects had normal birth weight baby.

Table 2: Distribution of neonates according to APGAR score at 1 min

Apgar score at 1 min	Number	Percentage
≤7	48	31.0%
>7	107	69.0%
Total	155	100%

In the present study, APGAR score at 1 minute was ≤7 in 31% of the neonates whereas it was >7 in 69% babies.

In the present study, APGAR score at was ≤7 in 12.3% of the neonates whereas it was >7 in 87.7% babies.

In the present study, 31% neonates required NICU admission but same was not required in 69% neonates

In the present study, neonatal thrombocytopenia was not observed in 94.8% of neonates whereas 5.2% neonates showed thrombocytopenia

In the present study, neonatal mortality was not seen in 96.1% of neonates where as 3.9 % of neonates could not survive.

Table 3: relation of age with severity of thrombocytopenia

Age group (years)	Severity of thrombocytopenia							
	Mild		Moderate		Severe		Total	
	No.	%age	No.	%age	No.	%age	No.	%age
<25	39	55.7%	55	73.3%	8	80%	102	65.8%
26-30	17	24.3%	15	20.0%	2	20%	34	21.9%
31-35	13	18.6%	3	4.0%	0	0%	16	10.3%
>35	1	1.4%	2	2.7%	0	0%	3	2.0%
Total	70	100%	75	100%	10	100%	155	100%

On comparison of age with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.128.

Table 4: relation of gravida with severity of thrombocytopenia

Gravida	Severity of thrombocytopenia							
	Mild		Moderate		Severe		Total	
	No.	%age	No.	%age	No.	%age	No.	%age
Primi gravida	26	37.5%	38	50.7%	3	30%	67	43.2%
Second gravida	29	41.4%	24	32.0%	6	60%	59	38.1%
Multigravida	15	21.4%	13	17.3%	1	10%	29	18.7%
Total	70	100%	75	100%	10	100%	155	100%

On comparison of gravida with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.295.

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Table 5: relation of gestational age with severity of thrombocytopenia

Gestational age (weeks)	Severity of thrombocytopenia							
	Mild		Moderate		Severe		Total	
	No.	%age	No.	%age	No.	%age	No.	%age
37-39	2	2.9%	6	8.0%	4	40%	12	7.7%
>39	68	97.1%	69	92.0%	6	60%	143	92.3%
Total	70	100%	75	100%	10	100%	155	100%

On comparison of gestational age with severity of thrombocytopenia a significant difference was found between different grades of thrombocytopenia as the p-value is 0.0002.

Table 6: relation of etiology with severity of thrombocytopenia

Diagnosis	Severity of thrombocytopenia							
	Mild		Moderate		Severe		Total	
	No.	%age	No.	%age	No.	%age	No.	%age
Gestational thrombocytopenia	41	58.6%	40	53.3%	7	70%	88	56.8%
Hypertensive disorder of pregnancy	23	32.9%	28	37.3%	3	30%	54	34.8%
Others	6	8.5%	7	9.4%	0	0%	13	8.4%
Total	70	100%	75	100%	10	100%	155	100%

On comparison of etiology with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.950.

Table 7: relation of associated illness with severity of thrombocytopenia

Associated illness	Severity of thrombocytopenia							
	Mild		Moderate		Severe		Total	
	No.	%age	No.	%age	No.	%age	No.	%age
Anemia	15	21.4%	19	25.3%	2	20%	36	23.2%
Hypothyroidism	9	12.9%	3	4.0%	0	0%	12	7.7%
Chronic hypertension	2	2.8%	2	2.7%	0	0%	4	2.6%
Liver disorder	0	0%	1	1.3%	0	0%	1	0.7%
No illness	44	62.9%	50	66.7%	8	80%	102	65.8%
Total	70	100%	75	100%	10	100%	155	100%

On comparison of associated illness with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.96.

On comparison of mode of delivery with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.177.

DISCUSSION

In the present study 45.2% study subjects showed mild thrombocytopenia, 48.4% had moderate thrombocytopenia & 6.4% had severe thrombocytopenia. However, in the study by Borna S et al,[7] and Singh N et al8 mild thrombocytopenia was noted in 54% and 74.7% patients, moderate thrombocytopenia was seen in 30% and 17.9.% of the patients and severe thrombocytopenia was seen in higher percentage of patients (16% and 7.4% respectively).

In the present study,65.8% of subjects were in the age group of <25 years, 21.9% in the age group of 26-30 years, 10.3% in the age group of 31-35 years, 2% were >35 years in age. On comparison of age with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.12.[8] In the study by Asrie F et al,[9] most of the women were between 30-35 years. Singh S et al,[10] in their study of Prevalence and Etiology of Thrombocytopenia in Pregnant Women reported that the most common age group was 21 to 25 years (47.8%), followed by 26 to 30 years (27.6%).

The mean age of the patients was 25±4 years in the present study. In a study by Suri V et al,[11] the mean age was a little higher i.e. 27 years. Turgot A et al,[12] Jaleel A et al,[13] mean age of patient was 27.6±5.7 and 28.43 respectively.[14-19]

In the present study, 43.2% of the subjects were primigravida followed by 38.1% second gravida and 18.7% multigravida. On comparison of gravida with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.295.

Asrie F et al,[9] conducted a study in Ethiopia in 2014 which reported 35% of study group were primigravida and 65% were multigravida.

These results are comparable with the study conducted by Sojitra M et al,[14] on Maternal outcome in pregnancy with thrombocytopenia in 2020 in which 40% were primigravida and 60% women were mutigravida as second gravida not taken separately in this study. Similar distribution of primigravida seen in study conducted by Brohi ZP et al,[15] (40.8%) where as in the study conducted by Won YW et al,[16] 51.6% of participants were primigravida which was higher than our study. The difference may be due to large family norm in our country.

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In the present study, 7.7% of study subjects were in the gestational age of 37-39 weeks & 92.3% in the gestational age >39 weeks. On comparison of gestational age with severity of thrombocytopenia a significant difference was found between different grades of thrombocytopenia as the p-value is 0.0002.

In the study by Parnas M et al,[17] maximum patients 74.4% belonged to 37 to 40 weeks gestation.

The mean gestational age in the present study was 37.08 years. was similar to studies conducted by Chauhan V et al56 (38.6 ± 1.34weeks), Sojitra M et al,[18] (38 weeks) and Lin YH et al,[19] (39 weeks). Where as in the study by Bouzari Z et al,[20] the mean age was 35.83 ± 3.61 weeks which was lower than our study.

In the present study, 56.8% of study subject showed etiology of gestational thrombocytopenia, 15.5% had etiology of pre-eclampsia, 7.1% had HELLP syndrome, 6.4% had gestational hypertension, 3.2% had eclampsia & 2.6% had superimposed pre-eclampsia. In other etiologies, 1.9% had dengue, 3.2% had hypersplenism, 1.3% had DIC, 1.3% had ITP and only 0.7% had malaria as an etiology. On comparison of etiology with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.950.

In a study conducted by Wang X et al,[21] the incidence of gestational thrombocytopenia was 60%, hypertensive disorders were 28.2%and other causes including ITP making 11.8%. In a study conducted by Sainio et al22, gestational thrombocytopenia was 81%, preeclampsia was 16%and ITP was 3%.

In the present study, associated illness was anemia in 23.2% of subjects, 7.7% had hypothyroidism, 2.6% had chronic hypertension, 0.7% had liver disorders & 65.8% subjects had no associated illness. On comparison of associated illness with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.96.

In a study by Chauhan V et al,[23] anaemia was associated in 7.6%, ITP in 3.1%, hypothyroidism in 1.5% and rest had no other medical illness.

In the present study, 51.6 % subjects had normal vaginal delivery followed by LSCS in 48.4% of subjects. On comparison of mode of delivery with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.177.

Singh N et al,[8] (LSCS 36% and FTNVD 64%) and Vyas R et al,[24] (LSCS 37% and FTNVD 63%). Whereas the incidence of LSCS was higher in the studies conducted by Pafumi C et al,[25] (55%) and Yuce T et al (56%).[26]

In the present study, indication for LSCS was breech in 12% of subjects, CPD in 5.3%, DLOC with olihohydraminnos in 2.7%, fetal distress in 8%, FIOL in 17.3%, IUGR in 2.7%, IUGR & oligohydramnios in 10.7%, only oligohydramnios in 9.4%, MSL with fetal distress in 4%, previous 2 LSCS in 4%, previous LSCS with fetal distress in 1.3%, previous LSCS with placenta accrete in 1.3%, previous LSCS with IUGR in 8%, previous LSCS with oligohydraminos in 4% & previous LSCS with scar tenderness in 9.4% of subjects.

In the present study, 56.8% study subjects had no requirement of blood/blood products transfusion compared to 43.2% subjects who required transfusion. On comparison of transfusion of blood/blood products with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.18.

However, the need for blood transfusion was higher in the studies by Parnas M et al,[17] (16.60%), Borna S et al,[7] (26.20%), Yuce T et al (10%).[26]

In the present study, 65.8% subjects did not require antihypertensive treatment compared to 34.2% who required antihypertensive treatment. On comparison of requirement of antihypertensive treatment with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.72.

In the present study, low birth weight was seen in 73.1% of the subjects whereas 23.9% subjects had normal birth weight baby. On comparison of birth weight with severity of thrombocytopenia no significant difference was found between different grades of thrombocytopenia as the p-value is 0.88.

CONCLUSION

Gestational thrombocytopenia was found to be the most frequent cause of thrombocytopenia during pregnancy, although other underlying factors must also be taken into account. To rule out the majority of other causes, a thorough history and physical examination are required. To rule out pancytopenia and platelet clumping linked to pseudo-thrombocytopenia, a thorough analysis of the CBC and smear should be performed. The possibility of ITP should be raised by prior thrombocytopenia history.

REFERENCES

1. Kadir RA, McLintock C. Thrombocytopenia and disorders of platelet function in pregnancy. Semin ThrombHemost. 2011;37:640-52.
2. Peterson JA, McFarland JG, Curtis BR, Aster RH. Neonatal alloimmune thrombocytopenia: pathogenesis, diagnosis and management. Br J Haematol. 2013;161(1):3-14.
3. Koh T, Kabutomori O, Nishiyama M, Fushimi R, Hidaka Y, Amino N. Discrepancy of platelet numbers between automated blood cell analysis and manual counting in the patients with thrombocytopenia. RinshoByori. 1996 Sep;44(9):889-94.
4. Magann EF, Martin J. Twelve steps to optical management of HELLP syndrome. Mississippi & Tennessee classification systems for HELLP syndrome. Clin Obstet Gynecol.1999;42(3):532–550.
5. Misra D, Faruqi M. Fetomaternal outcome in pregnancy with gestational thrombocytopenia: a cross sectional study. Int J Reprod Contracept ObstetGynecol2020;9:2751-8.

ISSN(O): 2687-5365; ISSN(P): 2753-6556

6. Nisha S, Amita D, Uma S, Tripathi AK, Pushplata S. Prevalence and characterization of thrombocytopenia in pregnancy in indian women. Indian J Hematol Blood Transfus. 2011;28:77-81.
7. Borna S, Borna H, Khazardoost S. Maternal and neonatal outcomes in pregnant women with immune thrombocytopenic purpura. Arch Iran Med. 2006;9(2):115-8.
8. Singh N, Amita D, Uma S, Tripathi AK, Pushplata S. Prevalenceand characterization of thrombocytopenia in pregnancy in Indian women. Indian J Hematol Blood Transfus. 2012;28(2):77-81.
9. Asrie F, Enawgaw B, Getaneh Z. Prevalence of thrombocytopenia among pregnant women attending antenatal care service at Gondar University Teaching Hospital in 2014 , northwest Ethiopia. 2017;61–6.
10. Singh S, Balhara K, Oberoi M. Prevalence and Etiology of Thrombocytopenia in Pregnant Women in a Tertiary Care Hospital in Delhi. MAMC J Med Sci 2021;7:239-43.
11. Suri V, Aggarwal N, Saxena S, Malhotra P, Varma S. Maternal and perinatal outcome in idiopathic thrombocytopenic purpura (ITP) with pregnancy. Acta ObstetGynecol Scand. 2006;85(12):1430-5.
12. Turgut A, Demirci O, Demirci E, Uludoğan M. Comparison of maternal and neonatal outcomes in women with HELLP syndrome and women with severe preeclampsia without HELLP syndrome. J Prenat Med. 2010;4(3):51-8.
13. Jaleel A, Baseer A. Thrombocytopenia in preeclampsia: an earlier detector of HELLP syndrome. J Pak Med Assoc. 1997;47(9):230-2.
14. Ciobanu AM, Colibaba S, Cimpoca B, Peltecu G, Panaitescu AM. Thrombocytopenia in Pregnancy. Maedica. 2016;11(1):55-60.
15. Brohi ZP, Sadaf A, Perveen U. Thrombocytopenia in pregnancy: an observational study." Pakistan Journal of Medical Research. 2013;52(3).
16. Won YW, Moon W, Yun YS, Oh HS, Choi JH, Lee YY, et al. Clinical aspects of pregnancy and delivery in patients with chronic idiopathic thrombocytopenicpurpura. Korean J Intern Med. 2005;20(2):129-34.
17. Parnas M, Sheiner E, Shoham-Vardi I, Burstein E, Yermiahu T, Levi I, et al. Moderate to severe thrombocytopenia during pregnancy. Eur J ObstetGynecolReprod Biol. 2006;128(1-2):163-8.
18. Sojitra M, Shah SR, Mehta AV, Panchal PP. Maternal outcome in pregnancy with thrombocytopenia. Int J ReprodContraceptObstetGynecol2020;9:2895-9.
19. Lin YH, Lo LM, Hsieh CC, Chiu TH, Hsieh TT, Hung TH. Perinatal outcome in normal pregnant women with incidental thrombocytopenia at delivery. Taiwan J ObstetGynecol. 2013;52(3):347-50.
20. Bouzari Z, Firoozabadi S, Hasannasab B, Emamimeybodi S, Golsorkhtabar-Amiri M. Maternal and neonatal outcomes in HELLP syndrome, partial HELLP syndrome and severe pre-eclampsia: eleven years" experience of an obstetric center in the North of Iran. World Applied Sciences Journal. 2013;26(11):1459-63.
21. Wang X, Xu Y, Luo W, Feng H, Luo Y, Wang Y, et al. Thrombocytopenia in pregnancy with different diagnoses: Differential clinical features, treatments, and outcomes. Medicine. 2017;96(29):e7561.
22. Sainio S, Kekomäki R, Riikonen S, Teramo K. Maternal thrombocytopenai at term: A population-based study. Acta Obstet Gynecol. 2000;79(9):744–9.
23. Chauhan V, Gupta A, Mahajan N, Vij A, Kumar R, Chadda A. Maternal and fetal outcome among pregnant women presenting with thrombocytopenia. Int J Reprod Contracept ObstetGynecol2016;5:2736-43.
24. Vyas R, Shah S, Yadav P, Patel U. Comparative study of mild versus moderate to severe thrombocytopenia in third trimester of pregnancy in a tertiary care hospital. NHL Journal of Medical Sciences. 2014;3(1):8-11.
25. 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.
26. Yuce T, Acar D, Kalafat E, Alkilic A, Cetindag E, Soylemez F. Thrombocytopenia in pregnancy: do the time of diagnosis and delivery route affect pregnancy outcome in parturients with idiopathic thrombocytopenic purpura? Int J Hematol. 2014;100(6):540-4.

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