Original Article

Neonatal Thrombocytopenia

Frequency of Neonatal Thrombocytopenia in Pregnant Women Complicated by Idiopathic Thrombocytopenia

Fehmida Umar and Zubia Bugti

ABSTRACT

Objective: To find out the frequency of neonatal thrombocytopenia in pregnant women complicated by idiopathic thrombocytopenia.

Study Design: Cross sectional survey

Place and Duration of Study: This study was conducted at the Department of Obstetrics & Gynecology Sandeman Provincial Hospital Bolan Medical Complex Hospital Quetta from 15th January 2019 to 30th October 2019.

Materials and Methods: After approval from the ethical committee of the institution 60 pregnant patients of age range between more than 18 and less than 35 diagnosed idiopathic thrombocytopenia on laboratory investigation with platelets <100-10.

Results: The mean age of the patients included in the study was 32.53 ± 3.82 years [range 18 –35]. There were 34(56.67%) patients of age range of 31-35 years, 20 (33.33%) patients of age range of 26 – 30 years, 6 (10%) patients of age range of 18 – 25 years, 27(45%) were between 32-36 weeks of gestation, 24 (40 %) were between 37-40 weeks; and 9(15%) were recorded with >40 weeks of gestation, frequency of neonatal thrombocytopenia was recorded in 33(55%) of cases, 14(42.43%) cases were with severe thrombocytopenia, 11(33%) had moderate and 8(24.24%) mild anemia.

Conclusion: The frequency of neonatal thrombocytopenia is high among patients with in pregnant women complicated by idiopathic thrombocytopenia.

Key Words: Thrombocytopenia, pregnant women complicated idiopathic thrombocytopenia, frequency, neonatal thrombocytopenia

Citation of article: Umar F, Bugti Z. Frequency of Neonatal Thrombocytopenia in Pregnant Women Complicated by Idiopathic Thrombocytopenia. Med Forum 2020;31(3):23-25.

INTRODUCTION

Idiopathic Thrombocytopenic Purpura (ITP) is an acquired thrombocytopenia without other clear cause of the thrombocytopenia. It may result from antiplatelet antibodies which can accelerate clearance and destruction of opsonized platelets by the reticuloendothelial system. In addition, antiplatelet antibodies also target antigens on megakaryocytes so that platelet production is suppressed.[1]

Compared to an ITP diagnosis during pregnancy, a diagnosis of ITP before pregnancy may indicate a higher risk for obstetric complication, such as fetal loss or stillbirth, premature delivery.[2] Kasai et al, found that gestational thrombocytopenia with platelet counts of <10 × 109/L is common in twin pregnancies.[3]

Department of Obstetrics & Gynecology Sandeman Provincial Hospital Bolan Medical Complex Hospital Quetta

Correspondence: Dr. Zubia Bugti, Senior Registrar, Department of Obstetrics & Gynecology, Sandeman Provincial Hospital Bolan Medical Complex Hospital Quetta
Contact No: 0333-3073009
Email: z.asadullahbugti@gmail.com

Received: November, 2019
Accepted: January, 2020
Printed: March, 2020

Fetal and neonatal immune thrombocytopenia is caused by maternal immunoglobulin G crossing the placenta and destroying fetal platelets. Two main forms are described. The autoimmune condition is related to maternal immune thrombocytopenia, while the alloimmune form, commonly named fetal and neonatal alloimmune thrombocytopenia, is due to transplacental passage of specific antibodies against fetal platelets exhibiting antigens inherited from the father. The incidence of fetal and neonatal intracranial hemorrhage in these 2 conditions differs widely, of 10% to 30% in fetal and neonatal alloimmune thrombocytopenia and 0% to 2.9% in the autoimmune form, respectively.[4]

MATERIALS AND METHODS

Between January 2019 and October 2019 a cross section (Descriptive) study was carried out in department of Gynecology and Obstetrics, Bolan Medical College/ Sandeman Provincial Hospital Quetta, after approval from the ethical committee of the institution 60 pregnant patients of age range between more than 18 and less than 35 diagnosed idiopathic thrombocytopenia on laboratory investigation with platelets <100-10^9. Infants born to mothers with thrombocytopenia due to other causes such as SLE, Pre-eclampsia ,Raised Blood Pressure > 140/90

mmgHg after 20 weeks of gestation, Proteinuria > 300mg/24 hours ,(HELLP) hemolytic anemia, elevated liver enzymes, low platelet count syndrome were excluded by Lactate dehydrogenase, CBC, Platelet count and liver function test ,Sepsis by history of temperature, deranged coagulation profile and serum fibrinogen level ,Any history of Drugs e.g. (Cyclosporine, Quinine and Chemotherapy. A Performa was used to collect data from booked patients coming from labor room to Gynecology Department after taking verbal consent to include their data in this research work. They were included in the study on the basis of history, physical examination and who fulfill the inclusion criteria. All the patients were followed until delivery and newborns were followed for the development of thrombocytopenia according to operational definitions i.e. mild, moderate and severe thrombocytopenia. Outcomes were assessed on 2nd post-natal day and investigations were done from Fatima Memorial Hospital Laboratory. Data was analyzed by using computer software SPSS version 11. Mean ± S.D. was calculated for age, gestational age. Tables were formed, frequencies and percentages were calculated for outcome i.e. neonatal thrombocytopenia and its severity (mild, moderate, severe).

RESULTS

In this study, a total of 60 patients were recruited after fulfilling the inclusion/exclusion criteria to find out the frequency of neonatal thrombocytopenia in pregnant women complicated by idiopathic thrombocytopenia.

The mean age of the patients included in the study was 32.53 ± 3.82 years [range 18 –35]. There were 34(56.67%) patients of age range of 31-35 years, 20 (33.33%) patients of age range of 26 – 30 years, 6 (10%) patients of age range of 18 – 25 years.

Table No. 1: Distribution of patients by age (n=60)

Age in years	No. of cases	Percentage
18-25	06	10
26-30	20	33.33
31-35	34	56.67
Total	**60**	**100**
Mean and SD	**32.53+3.82**	

Patients were also distributed according to gestational age. There were 27(45%) were between 32-36 weeks of gestation, 24 (40 %) were between 37-40 weeks; and 9(15%) were recorded with >40 weeks of gestation.

Table No. 2: Gestational age of the subjects (n=60)

Gestational age (in weeks)	No. of cases	Percentage
32-36	27	45
37-40	24	40
>40	09	15
Total	**60**	**100**

Frequency of neonatal thrombocytopenia was recorded in 33(55%) of cases while 27(45%) of neonates had no thrombocytopenia.

Table No. 3: Frequency of neonatal thrombocytopenia in pregnant women complicated by idiopathic thrombocytopenia (n=60)

Neonatal thrombocytopenia	No. of cases	Percentage
Yes	33	55
No	27	45
Total	**60**	**100**

Frequency of severity of neonatal thrombocytopenia was stratified according to mild, moderate and severe, 14(42.43%) cases were found with sever thrombocytopenia, 11(33%) had moderate and 8(24.24%) had mild anemia.

Table No. 4: Frequency of severity of neonatal thrombocytopenia (n=33)

Severity	No. of cases	Percentage
Mild	08	24.24
Moderate	11	33.33
Severe	14	42.43
Total	**33**	**100**

DISCUSSION

ITP during pregnancy isn't considered a heavy risk of perinatal bleeding, but may cause moderate thrombocytopenia in neonate. In mothers with ITP, the danger of thrombocytopenia is merely 10%, with no over 1% risk of in utero ICH. The incidence of ITP is estimated at 0.1-1 in 1,000 pregnancies. In one-third of cases, ITP presents during pregnancy. within the majority of patients, asymptomatic thrombocytopenia is detected in tests obtained for other reasons. in additional severe cases, petechiae and straightforward bruising is also noticed 5.

The lower range (5th percentile) for infants born < 32 weeks of gestation is 104,000/μL, and 123,000/μL for late preterm and term neonates. At birth, the incidence of thrombocytopenia defined by a platelet count < 150,000/μL is 0.12-0.24% of all neonates. About 0.1-2% of all infants develop thrombocytopenia during the time of life. 18-35% of infants admitted to NICUs exhibit thrombocytopenia a minimum of once. In extremely low birth weight neonates (< 1,000 g), the incidence of thrombocytopenia is quite 70%, and severe thrombocytopenia (< 50,000/μL) is 40%[6].

Fetal platelets express HPA-1a as early as 16 weeks of gestation. However, there aren't any reports demonstrating the transfer of fetal platelets to maternal circulation during a standard pregnancy. Maternal exposure to platelets probably occurs at delivery, and 0.5-1 ml fetal blood enters the maternal circulation in normal, uncomplicated deliveries. Unlike D sensitization, 40-60% of cases occur within the first pregnancy[7,8]. This means previous maternal exposure to HPA-1a through insertion, prior undetected

pregnancies, transfer of fetal platelet, trophoblast or trophoblast particles early within the current pregnancy[9].

HPA antigen incompatibility alone isn't sufficient to induce maternal alloimmunization, since only 10% of HPA-1a incompatible pregnancies end in maternal HPA-1a sensitization. One explanation for this unexpected finding is expounded to HPA-1a antigen presence and therefore the associated immunologic response. Antibody production depends on T helper {t cell|CD4 T cell|CD4 cell|T cell|T lymphocyte} activation resulting from interaction between T cell receptor and HLA class II peptide complex. HLA class II antigen DRB3*01:01 present on T cells provides a binding groove which shows better avidity for β3 peptides (i.e. HPA-1a).[10]

Severe neonatal thrombocytopenia could be a rare complication of maternal autoimmune thrombocytopenia and is unfortunately not reliably predicted by maternal characteristics like platelet count during pregnancy or delivery, presence of detectable antiplatelet antibodies, case history of autoimmune thrombocytopenia, and corticosteroid therapy[11].

Following current recommendations, intravenous immunoglobulin and platelet transfusion should be administered if the platelet count is lower than 30 G/L. In case of hemorrhagic diathesis, the treatment should be administered regardless of the platelet count, accompanied by platelet transfusion[12].

CONCLUSION

The frequency of neonatal thrombocytopenia is high among patients with in pregnant women complicated by idiopathic thrombocytopenia. So, it is recommended that every pregnant woman who is complicated by idiopathic thrombocytopenia, should be sort out for neonatal thrombocytopenia as well. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

Author's Contribution:

Concept & Design of Study:	Femida Umar
Drafting:	Zubia Bugti
Data Analysis:	Zubia Bugti
Revisiting Critically:	Femida Umar, Zubia Bugti
Final Approval of version:	Femida Umar

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Hisano M, Tsukada N, Sago H, Yamaguchi K. Successful prevention of exacerbation of thrombocytopenia in a pregnant patient with idiopathic thrombocytopenic purpura by anticoagulation treatment. BMC Pregnancy Childbirth 2015;15:48.
2. Wyszynski DF, Carman WJ, Cantor AB, Graham JM Jr, Kunz LH, Slavotinek AM, et al. Pregnancy and birth outcomes among women with idiopathic thrombocytopenic purpura. J Pregnancy 2016; 2016:8297407.
3. Kasai J, Aoki S, Kamiya N, Hasegawa Y, Kurasawa K, Takahashi T, et al. Clinical features of gestational thrombocytopenia difficult to differentiate from immune thrombocytopenia diagnosed during pregnancy. J Obstet Gynaecol Res 2015;41:44‐9.
4. Intracranial Hemorrhage and Autoimmune Thrombocytopenia in a Neonate: A Rare "Unpredictable" Event Andrea Becocci, MD1, Cristina Felice-Civitillo, MD1, Me´ryle Laurent, MD2,Franc¸oise Boehlen, MD3, Roberta De Luca, MD1, and Joel Fluss, MD4 Received November 09, 2017. Received revised February 22, 2018. Accepted for publication March 09, 2018.
5. Jodkowska A, Martynowicz H, Kaczmarek-Wdowiak B, Mazur G. Thrombocytopenia in pregnancy – pathogenesis and diagnostic approach. Postepy Hig Med Dosw (Online). 2015;69: 1215-21.
6. Cremer M, Sallmon H, Kling PJ, Bührer C, Dame C. Thrombocytopenia and platelet transfusion in the neonate. Semin Fetal Neonatal Med 2016; 21(1):10-8.
7. Brouk H, Ouelaa H. Fetal and neonatal alloimmune thrombocytopenia: advances in laboratory diagnosis and management. Int J Blood Res Disord 2015;2(1):013.
8. Mella MT, Eddleman KA. Neonatal alloimmune thrombocyto penia. Int J Clin Transfus Med 2015; 3:29-40.
9. Curtis BR. Recent progress in understanding the pathogenesis of fetal and neonatal alloimmune thrombocytopenia. Br J Haematol 2015; 171 (5):671-82.
10. Delbos F, Bertrand G, Croisille L, Ansart-Pirenne H, Bierling P, Kaplan C. Fetal and neonatal alloimmune thrombocytopenia: predictive factors of intracranial hemorrhage. Transfusion 2016; 56(1):59-66.
11. Koyama S, Tomimatsu T, Kanagawa T, et al. Reliable predictors of neonatal immune thrombocytopenia in pregnant women with idiopathic thrombocytopenic purpura. Am J Hematol 2012;87(1):15-21.
12. Chakravorty S, Roberts I. How I manage neonatal thrombocytopenia. Br J Haematol 2012;156(2): 155-162.