Available online freely at www.isisn.org

Bioscience Research

Print ISSN: 1811-9506 Online ISSN: 2218-3973

Journal by Innovative Scientific Information & Services Network

RESEARCH ARTICLE BIOSCIENCE RESEARCH, 2021 18(3): 2067-2071. **OPEN ACCESS**

Frequency of gestational thrombocytopenia in pregnancy at tertiary care hospital

Sundas Iftekhar[1], Malik Zeb Khan[1], Shahtaj Khan[2], Ansa Kulsoom Rehman[2] and Anees Muhammad[3*]

[1]Pathology Department, Institute of Kidney Disease, Peshawar, **Pakistan**
[2]Pathology Department, Hayatabad Medical Complex, Peshawar, **Pakistan**
[3]Department of MLT, Mardan College of Medical Technology, Bacha Khan Medical College, Mardan, **Pakistan**
***Correspondence:** aneesafridi15295@yahoo.com **Received 27-05-2021, Revised: 23-07-2021, Accepted: 25-07-2021 e-Published: 27-07-2021**

To determine the frequency of gestational thrombocytopenia in tertiary care hospital, Peshawar. This cross sectional study was conducted in duration of six months from July 2015 to January 2016, in tertiary care hospital, Hayatabad Medical Complex, Peshawar. A total of 176 patients samples were collected through consecutive sampling technique. The pregnant female of age 18-45 years and had 3rd of third trimester were included in the study, whereas pregnant female of first and second trimester were excluded from this study. The blood samples were collected from patients in ethylene diamine tetra-acetate (EDTA) vacutainer and were analyzed through Sysmex analyzer. The collected data were analyzed in statistical package for social sciences software versions 17.The mean age of all patients were 27±18.7, in which majority pregnant female were found in age group from 18-25 years. All patients were found with less platelets level in which 08.0% (n=14) patients was identified with severe thrombocytopenia whereas moderate thrombocytopenia were observed in 42.0% (n=74) patients and mild thrombocytopenia was determined in 50.0% (n=88) patients. Furthermore, gestational thrombocytopenia was observed in 35% (n=62) patients. The mild and moderate thrombocytopenia is common among pregnant female along with some gestational thrombocytopenia in regions of Peshawar. Its need proper followup and management approach in order to overcome the mortality rate of maternal and her foetal.

Keywords: Female, Frequency, Gestational, Pregnant, Thrombocytopenia.

INTRODUCTION

Thrombocytopenia is decrease in below 150.00/L while gestational thrombocytopenia is low count of platelets during pregnancy without any history of bleeding before conception. Platelet counts normalize after 2-12 week of delivery without any medication. Gestational thrombocytopenia (GT) is a benign thrombocytopenia which is found in 7-10% of pregnancies (Eslick and McLintock, 2020). It is thought that 75% of all thrombocytopenia is GT and most probable reason for this are hemodilution and increased platelet consumption and destruction in placenta in the period of pregnancy (Hamed, 2018). Other causes of thrombocytopenia during pregnancy include hypertension, immuno thromocytopenic purpura (ITP), pre-eclampsi, HELLP syndrome, immune disorder, thrombotic thrombocytopenic purpura (TTP) (Cines and Levine, 2017).

The prevalence varies region to region of Gestational thrombocytopenia. According to a study the prevalence of GT in Lucknow India was 64.2% (Nisha et al. 2012). Another study show the prevalence of GT to be 1.9% (Oza et al. 2017).

There is no harmful effect of GT on both the

mother and neonate. Several studies conducted to see the effect of thrombocytopenia on either mother and neonate but results show that there is no risk for foetus, neonate or mother and no medical management is required but periodic monitoring will be enough (Singh et al. 2020). In some cases platelet count can be lowered due to bone marrow suppression, folate and cobalamine deficiency. The platelets count decreased due to several disorders including alcohol consumption, vitamin B12, leukemia, cirrhosis, chemotherapy, aplastic anemia, myelodysplasia, viral infections, and iron deficiency (Greenberg, 2017).The mechanism of GT is that the waste product of fetus after diffusion into mother's blood causes mother's spleen overactive and enlarge and during removal of waste product spleen will digest platelet and other blood cells too quickly. Sometimes, GT become important medically because of impaired neonatal outcomes and effect on subsequent pregnancies (Sterpu et al. 2020). Clinical assessment is important to evaluate a pregnant patient with thrombocytopenia including history of bleeding problems, transfusion, alcohol or substance abuse, family history of bleeding and past obstetrical history (Pishko et al. 2020).

There are no critical symptoms of GT while the person with thrombocytopenia might show several symptoms like blood in urine, stool, petechiae, bruises, spleenomegaly, jaundice, nose and gums bleeding along with prolong menstrual flow. The female diagnosed with GT should check their complete blood count routinely during visit to doctor. Having diagnosed GT, female should continue their routine work as the management of pregnancy is not affected with the diagnosis disease (Fogerty, 2018). In our regions, pregnant females were more affected with gestational thrombocytopenia; therefore, this study was designed and determined the gestational thrombocytopenia in pregnancy.

MATERIALS AND METHODS

Study Design and Setting

The present descriptive cross-sectional study was carried out in pathology department of Hayatabad Medical Complex, Peshawar.

Study Duration

The study was carried out from July 2015 to January 2016 (Six month duration).

Sample Population

The pregnant female (patients) having age ranged from 18 to 45 years and of 3rd trimester of pregnancy were recruited for present study. While, the pregnant female (patients) of first and second trimester of pregnancy, having previous history of thrombocytopenia, bleeding episodes, hypertension and immune disorders were excluded from the present study.

Sample Size and Sampling technique

A sample size was 176 calculated as per World Health Organization (WHO) calculator. The prevalence of gestational thrombocytopenia was 33.8% used for WHO calculator with the 95% and 7% confidence interval and margin of error respectively. Samples were collected through consecutive non-probability sampling technique.

Ethical Consideration

Approval of the study was obtained from College of Physicians and Surgeons Pakistan and from Medical and Ethics committee of the hospital.

Data Collection Procedure

All the individuals presenting with the primary complaint of thrombocytopenia referred to us by gynecologist was interviewed in hematology department. An informed consent was obtained justifying the inclusion criteria.

After interviewing, they were allotted a identity number which was recorded. About 2 ml of whole blood was collected in ethylene diamine tetra acetate (EDTA) vacutanier tube. The sample for platelet count was analyzed by Sysmex analyzer (X2100). The peripheral smear was prepared on greaseless glass slide to identity and calculate the platelets quantity and morphology. Confounding variables and bias was control by strictly following the inclusion criteria. The count of platelets was measured and noted.

Data Analysis

The collected data was further analyzed using Statistical Package for Social Science version 17 (SPSS v.17). Percentages and frequency were computed for categorical/groups variables such as gestational thrombocytopenia while the numerical values such as age and platelet count was presented with Mean±SD. Gestational thrombocytopenia was categorized in different age groups and platelet count to observed the effect of modifier. Further stratification was performed by applying chi-square test, where P-

value < 0.05 was considered significant. The collected data was presented in tables.

RESULTS AND DISCUSSION

Age distribution among 176 patients was analyzed as 84 (48%) patients were in age range 18-25 years, 53 (30%) patients were in age range 26-35 years, 39 (22%) patients were in age range 36-45 years. Mean age was 27±18.71 years (Table 1).

Table 1: Age-wise distribution of patients in various categories

Age	Frequency (No. of Cases) %(n)
18-25 years	48.0 (84)
26-35 years	30.0 (53)
36-45 years	22.0 (39)
Total	100 (176)

Platelet count among 176 patients was analyzed as 14 (8%) patients had platelet count ≤ 50,000 µl, 74 (42%) patients had platelet count 51,000 – 100,000 µl, 88 (50%) patients had platelet count 100,000-150,000 µl. Mean platelet count was 98,798±50 µl (Table 2). Gestational thrombocytopenia among 176 patients was analyzed as gestational thrombocytopenia was found in 62 (35%) patients while 114 (65%) patients didn't had gestational thrombocytopenia. (Table 3). Stristification of gestational thrombocytopenia with age and platelet count is given (Table 4, 5**)**.

Table 2: Severe, moderate and mild thrombocytopenia in patients

Platelet Count	Frequency (No. of Cases) % (n)
Severe (≤ 50,000 µl)	8.0 (14)
Moderate (51,000 - 1,00,000 µl)	42.0 (74)
Mild (1,00,000 – 1,50,000 µl)	50.0 (88)
Total	100 (176)

Table 3: Gestational thrombocytopenia in pregnant females

Gestational Thrombocytopenia	Frequency (No. of Cases) % (n)
Yes	35.2 (62)
No	64.8 (114)
Total	100 (176)

Our study showed that mean age was 27±18.71 years and mean platelet count was 98,798± 50861 µl. The incidence of gestational thrombocytopenia was found to be 35% in our setup. Similar results were found in another study conducted in India in 2011 in which the most common cause of thrombocytopenia was gestational thrombocytopenia with a percentage of 64.2% (Nisha et al. 2012). Another study was conducted in 2014 in which the most common cause of thrombocytopenia was Gestational thrombocytopenia with a percentage of 30.1% (Mahey et al. 2013). Another study was conducted in Liaqat University of medical sciences, Hyderabad in 2013 in which the gestational thrombocytopenia was noted in 24 (33.8%) with frequent thrombocytopenia (Perepu and Rosenstein, 2013) which is same to our results.

Thrombocytopenia was observed in 11.6% hypertensive pregnant females, this might be due to higher level of blood pressure may lead to affect the level of platelets (Myers, 2012). Another study reported that thrombocytopenia is significantly associated with frequently preterm delivery. Moreover, intrauterine growth retardation was also associated with thrombocytopenia. Therefore, these are important and independent risk agents to increase the perinatal and pregnant female complications especially in higher hypertensive diseases (Lee et al. 2019).

Consistent findings were observed in other study carried out by Abro et al. in Pakistan with 13.11% (145/1130) incidence of thrombocytopenia in pregnancy. The main causes of thrombocytopenia in pregnancy were gestational thrombocytopenia (Abro AK, 2012).

Another study show that thrombocytopenia during pregnancy is divided into three types among which gestational thrombocytopenia is major causes (75%) of thrombocytopenia (Myers, 2012).

Table 4: Stratification of gestational thrombocytopenia according to age

Gestational Thrombocytopenia	18-25 years % (n)	26-35 years % (n)	36-45years% (n)	Total
Yes	(30) 35.7	(19) 35.8	(13) (14) 33.3	35.2 (62)
No	(54) 64.3	62.9 (34)	66.7 (26)	64.8 (114)
Total	47.7 (84)	30.1 (53)	22.2 (39)	100 (176)

Table 5: Stratification of gestational thrombocytopenia with platelet count

Gesatational Thrombocytopenia	≤ 50,000 µl	51,000 - 100,000 µl	100,000 - 150,000 µl	Total
Yes	(5) 35.7	(26) 35.1	(31) 35.2	35.2 (62)
No	(9) 64.3	(48) 64.9	(57) 64.8	64.8 (114)
Total	(15) 8.0	(74) 42.0	(88)	100 (176)

According to Ozcimen et al. the prevalence of thrombocytopenia in Kenya, Turkey was 9.9% (Ozcimen, 2015). According to another study conducted in India the prevalence of thrombocytopenia in pregnant women was noted to be 12.82% (Zutshi et al. 2019) which is very low as compared to our study. According to Olayemi and Akuffo study the prevalence of gestational thrombocytopenia was 15.3% (Olayemi and Akuffo, 2012) which is 50% in our study.

But another study showed that the prevalence of gestational thrombocytopenia was 59.3% (Parnas et al. 2006) which is far more high then our results. Moderate thrombocytopenia normalizes 2-12 weeks of delivery. According to another study the prevalence of thrombocytooenia was 11.6% (Boehlen et al. 2000) which is quite low then this study. According to study conducted in Libya the prevalence of gestational thrombocypenia was 17% (Elgodwi, 2020) which is much lower than our results. According to a study conducted in Ahmedabad India, showed that the prevalence of gestational thrombocytopenia was 33.8% (Oza et al. 2017) which is nearly in accordance with our results. All these results show that the prevalence of gestational thrombocytopenia in Pakistan is higher than other countries which may be due to many reasons. These reasons may include social life, economy health care facilities etc. But luckily moderate thrombocytopenia has no adverse effects on neonate and mother and no medication is required (Reese et al. 2018).

CONCLUSION

Our study concludes that the incidence of gestational thrombocytopenia was 35% in our setup. It is highly recommended to conduct studies regarding the pregnant females and their outcome.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

ACKNOWLEGEMENT

Thanks to all staff of pathology department of Hayatabad Medical Complex, Peshawar, for their support and facilitation throughout our research project.

AUTHOR CONTRIBUTIONS

SI, MZK, and SK designed and performed the experiments. AKR and AM collected samples and wrote manuscript. SI and AM performed statistical analysis and final draft formation. MZK, SK, and AKR reviewed the manuscript. All authors read and approved the final version.

REFERENCES

Abro ak, u. I., sheikh na, parveen n, farooq m 2012. Thrombocytopenia during pregnancy at lumhs, hyderabad, sind. Pakistan journal of medical & health sciences, 6 283-85.

Boehlen, f., hohlfeld, p., extermann, p., perneger, t. V. & de moerloose, p. 2000. Platelet count at term pregnancy: a reappraisal of the threshold. Obstetrics & gynecology, 95**,** 29-33.

Cines, d. B. & levine, l. D. 2017. Thrombocytopenia in pregnancy. Hematology 2014, the american society of hematology education program book, 2017**,** 144-151.

Elgodwi, s. 2020. Prevalence of thrombocytopenia among pregnant women in tripoli region, libya. Http://doi. Org/10.5281/zenodo. 4096719--ajmas.

Eslick, r. & mclintock, c. 2020. Managing itp and thrombocytopenia in pregnancy. Platelets, 31**,** 300-306.

Fogerty, a. E. 2018. Thrombocytopenia in pregnancy: mechanisms and management. Transfusion medicine reviews, 32**,** 225-229.

Greenberg, e. M. 2017. Thrombocytopenia: a destruction of platelets. Journal of infusion nursing, 40**,** 41-50.

Hamed, n. A. 2018. Thrombocytopenia in pregnancy: difficulties in diagnosis and management. Clinical research in hematology, 1**,** 1-4.

Lee, e., lim, z. & malhotra, a. 2019. Thrombocytopenia in well small for gestational age neonates. Blood coagulation & fibrinolysis, 30**,** 104-110.

Mahey, r., kaur, s. D., chumber, s., kriplani, a. & bhatla, n. 2013. Splenectomy during pregnancy: treatment of refractory immune thrombocytopenic purpura. Case reports, 2013**,** bcr2013201778.

Myers, b. 2012. Diagnosis and management of maternal thrombocytopenia in pregnancy. British journal of haematology, 158**,** 3-15.

Nisha, s., amita, d., uma, s., tripathi, a. & pushplata, s. 2012. Prevalence and characterization of thrombocytopenia in pregnancy in indian women. Indian journal of hematology and blood transfusion, 28**,** 77-81.

Olayemi, e. & akuffo, f. W. 2012. Gestational thrombocytopenia among pregnant ghanaian women. Pan african medical journal, 12.

Oza, h., priydarshi, m. & pancholi, n. 2017. Prevalence and characterization of thrombocytopenia in pregnancy in indian women. Int j res med, 5**,** 60-63.

Ozcimen, e. E. 2015. Gestational thrombocytopenic patients in our center: analysis of the patients and review of the literature. Gynecology obstetrics & reproductive medicine, 21**,** 72-74.

Parnas, m., sheiner, e., shoham-vardi, i., burstein, e., yermiahu, t., levi, i., holcberg, g. & yerushalmi, r. 2006. Moderate to severe thrombocytopenia during pregnancy. European journal of obstetrics & gynecology and reproductive biology, 128**,** 163-168.

Perepu, u. & rosenstein, l. 2013. Maternal thrombocytopenia in pregnancy. Proceedings in obstetrics and gynecology, 3**,** 1-15.

Pishko, a. M., levine, l. D. & cines, d. B. 2020. Thrombocytopenia in pregnancy: diagnosis and approach to management. Blood reviews, 40**,** 100638.

Reese, j. A., peck, j. D., deschamps, d. R., mcintosh, j. J., knudtson, e. J., terrell, d. R., vesely, s. K. & george, j. N. 2018. Platelet counts during pregnancy. New england journal of medicine, 379**,** 32-43.

Singh, g., bansal, d. & wright, n. A. 2020. Immune thrombocytopenia in children: consensus and controversies. The indian journal of pediatrics, 87**,** 150-157.

Sterpu, i., pilo, c., koistinen, i. S., lindqvist, p. G., gemzell-danielsson, k. & itzel, e. W. 2020. Risk factors for poor neonatal outcome in pregnancies with decreased fetal movements. Acta obstetricia et gynecologica scandinavica, 99**,** 1014-1021.

Zutshi, v., gupta, n., arora, r. & dhanker, s. 2019. Prevalence of gestational thrombocytopenia and its effect on maternal and fetal outcome. Iraqi journal of hematology, 8**,** 21.