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ORIGINAL ARTICLE

Prevalence of Thrombocytopenia in Women during Third Trimester of Pregnancy

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ABSTRACT

Objectives: To determine the prevalence of thrombocytopenia in women during third trimester of pregnancy.
Study Design: Cross-sectional study.
Place and Duration: Department of Obstetrics and Gynaecology Department, District Headquarter Hospital, Gujranwala, from April 2022 to October 2022.
Methodology: Women with third trimester of pregnancy (aged 18-45 yeas) were analyzed. Two milliliters of venous blood was collected and sent to institutional laboratory for complete blood count evaluation. Frequency of thrombocytopenia was noted. Thrombocytopenia was defined as the platelets count $<150\times10^6/mm^3$.
Results: In a total of 150 women, the mean age was 28.17±4.61 years and 101 (67.33%) women were aged between 18-30 years. The mean gestational age was 32.88±1.78 weeks while the mean parity was 2.84±1.02. The mean platelets count was $213\times10^6/mm^3\pm78.33\times10^6/mm^3$. Thrombocytopenia in women during third trimester of pregnancy was found in 15 (10.0%) women.
Practical Implications: Early detection of gestational thrombocytopenia and careful calculation of risks and preemptive management can be done in order to reduce the fetomaternal morbidity and mortality of patients.
Conclusion: The prevalence of thrombocytopenia in women during 3rd trimester of pregnancy was 10.0%.
Keywords: Gestational age, parity, pregnancy, third trimester, thrombocytopenia.

INTRODUCTION

In normal pregnancy the hemodilution is the major factor which changes the various parameters of cell counts. This is more likely to occur in the third trimester of pregnancy since maximum hemodilution occurs during this period.[1] Platelets are the derived from the megakaryocytes during formation and the role of platelets in the hemostasis is well established. The normal range of platelets count in healthy individual is $150\text{-}400\times10^6/mm^3$.[2] During the pregnancy, platelets count may be decreased up to $70\times10^6/mm^3$ without any adverse outcomes and most of the time, the thrombocytopenia during pregnancy remains subclinical.[3]

Primary hemostatic disorders are characterized by prolongation of bleeding time while the physical examination is evident of petechial nd purpura. The secondary hemostasis disorders exhibit in the form of delayed deep bleeding and may exhibit in the forms of hemarthrosis during physical examination. Hemarthrosis as well as muscular hematomas are usually not evident in cases of primary hemostatic abnormalities.[4,5] Most frequent causes of thrombocytopenia among pregnant females include gestational thrombocytopenia, infections and pre-eclampsia complicated by "Hemolysis, elevated liver enzymes and low platelets (HELLP) syndrome".[6,7]

The gestational thrombocytopenia can be classified into three categories i.e. mild, moderate and severe (100-150, 50-100 and $<50\times10^6/mm^3$ respectively).[8] Gestational thrombocytopenia is more expressive in patients with already having some form of platelets related disorder like idiopathic thrombocytopenic purpura (ITP) or preeclampsia. Other associated factors are infections like dengue fever, malaria, leukemia, folate deficiency etc.[9-11]

The adverse outcomes of pregnancy are expected when gestational thrombocytopenia is more severe.[12] Asrie F et al found that prevalence of gestational thrombocytopenia was 8.8% in pregnant women and mostly were in the category of mild form of thrombocytopenia in Ethiopia.[3] Early detection of gestational thrombocytopenia and careful calculation of risks and preemptive management is the key for best possible outcomes.[9]

There is insufficient data available in Pakistan regarding gestational thrombocytopenia. We wanted to estimate the magnitude of problem of gestational thrombocytopenia in our population. These results can help in anticipating its importance and burden during pregnancy and it may assist in reducing the fetomaternal morbidity and mortality among these women patients. This study was conducted to find out the prevalence of thrombocytopenia in women during third trimester of pregnancy attending antenatal clinic of District Headquarters Hospital, Gujranwala.

METHODOLOGY

This cross-sectional study was carried out at "The Department of Obstetrics and Gynecology", district headquarter hospital, Gujranwala from April 2022 to October 2022. Approval from "Institutional Ethical Committee" was obtained. Informed and written consents were taken from all women. Sample size of 150 was calculated with 5% level of significance, 5% margin of error and taking expected percentage of thrombocytopenia among pregnant women as 8.8%.[1]

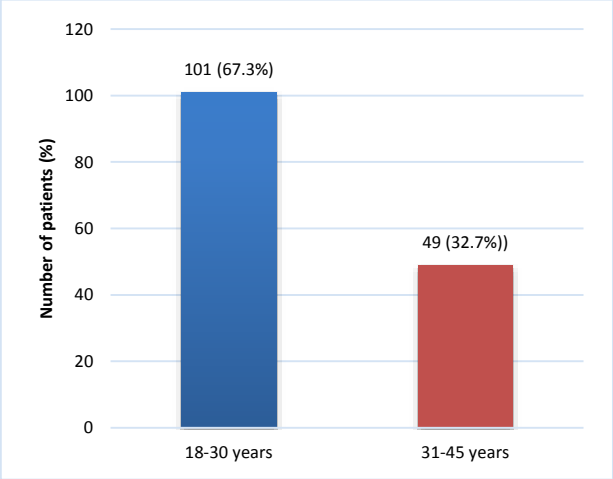
Inclusion criteria were women aged 18-45 years with third trimester of singleton pregnancy (assessed on last menstrual period) who presented for routine antenatal checkup. Women with history of chronic diseases like diabetes mellitus (as per medical record), ischemic heart disease (as per medical history), chronic liver disease (as per medical record), chronic renal failure (as per medical record), or Immunocompromized women (as per medical record) or those taking corticosteroid therapy, or with bleeding diathesis other than thrombocytopenia were also excluded. Women with previous history of any chemotherapy or radiotherapy, any history of repeated infections or having pregnancy induced hypertension were excluded. Patients with molar pregnancy or uterine fibroids were also not included.

Detailed history, clinical and ultrasound examinations were carried out. Two milliliters of venous blood was collected and sent to institutional laboratory for complete blood count evaluation. Standard protocols were adopted during laboratory investigations. Thrombocytopenia was defined as the platelets count $<150\times10^6/mm^3$.

Data was analyzed using "Statistical Package for Social Sciences (SPSS)", version 26.0. The quantitative variables were represented as mean and standard deviation. Frequency and proportions were calculated for qualitative data. Effect modifiers like age, gestational age and parity were controlled by stratification. Post-stratification chi-square test was applied taking $p\leq0.05$ as significant.

RESULTS

In a total of 150 women, the mean age was 28.17 ± 4.61 years (ranging between 18-45 years) while 101 (67.3%) were aged between 18 to 30 years (figure-1).



Figuer-1: Age distribution of the Patients (n=150)

The mean gestational age and parity were 32.88±1.78 weeks and 2.84±1.02 respectively. The mean platelets count was 213±78.33 $\times 10^6/mm^3$. Table-1 is showing details of all pregnant women studied.

Table-1: Characteristics of Women (n=150)

Characteristics		Number (%)
Age (years)	18-30	101 (67.3%)
	31-45	49 (32.7%)
Gestational age (weeks)	28-34	114 (76.0%)
	>34	36 (24.0%)
Parity	0-2	60 (40.0%)
	>2	90 (60.0%)

Thrombocytopenia in women during third trimester of pregnancy was found in 15 (10.0%) women (figure-2).

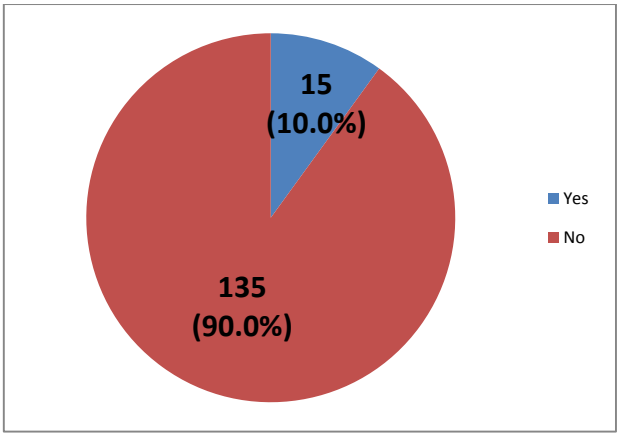


Figure-2: Prevalence of thrombocytopenia in women during third trimester of pregnancy (n=150)

Stratification of thrombocytopenia with respect to age did not show any statistically significant differences (p=0.601). Gestational age above 34 weeks was found to have significant linkage with thrombocytopenia (p=0.030). Parity was not statistically different among women with or without thrombocytopenia as shown in table-2.

Table-2: Stratification of Thrombocytopenia with respect to Study Variables

Study Variables		Thrombocytopenia		p-value
		Yes (n=15)	No (n=135)	
Age (years)	18-30	11 (73.3%)	90 (66.7%)	0.601
	31-45	4 (26.7%)	45 (33.3%)	
Gestational age (weeks)	28-34	8 (53.3%)	106 (78.5%)	0.030
	>34	7 (46.7%)	29 (21.5%)	
Parity	0-2	6 (40.0%)	54 (40.0%)	1
	>2	9 (60.0%)	81 (60.0%)	

DISCUSSION

Among pregnant females, gestational thrombocytopenia, idiopathic thrombocytopenic purpura and pre-eclampsia are some of the most frequent causes behind gestational thrombocytopenia.[13,14] Some researchers have shown that gestational thrombocytopenia might increase the chances of excessive bleeding during or after the delivery especially among cases who undergo cesarean section or any other surgical procedure but these manifestations are more evident among cases of severe gestational thrombocytopenia.[15,16]

We found the frequency of thrombocytopenia to be 10% among pregnant females attending the outpatient department for antenatal check-ups. Frequency of thrombocytopenia in pregnant ladies has been described as 7.7% by Vyas et al,[17] 8.8% by Nisha S and colleagues),[18] 8.2% by Dwivedil P et al,[19] 8% by Shamoon RP et al from Iraq (8%)[20] and 8% by Jeffrey A et al.[21] These findings are closer to what we found in this study (10%). Relatively higher proportions of thrombocytopenia in pregnant women have been found in studies conducted in Switzerland (12%),[22] Ethiopia (14%),[23] Ghana (15%),[24] Israel (22%),[25] and Nigeria (14%).[26] Burrows and Kelton[27] in a prospective study analyzing 6715 deliveries revealed 6% women to have thrombocytopenia. In another population based study, Sainio and coworkers[28] showed that gestational thrombocytopenia was noted in 7.3% women. The variation in reported prevalence of gestational thrombocytopenia could have been due to the fact that different criteria (platelets count) have been used by different researchers for labeling thrombocytopenia during pregnancy.

In this study, we found that relatively increasing gestational age (>34 weeks) was associated with thrombocytopenia. Fay RA et al disclosed that platelets count reduced continuously with the progression of the pregnancy.[29] In another study, Verdy E et al exhibited that platelets count fell around 10% among females with uncomplicated pregnancies while the reduction in platelets counts was highest among cases of 3rd trimester which arises the need for routine screening for platelets count among pregnant females in the 3rd trimester.[30] Some authors have explained gestational thrombocytopenia to be secondary to raised consumption of platelets in the placental circulation with or without inhibition of megakaryocytopoiesis.[31]

The literature highlights that most of gestational thrombocytopenia cases are mild to moderate in nature while fetomaternal outcomes among these cases are generally no impacted poorly.[17,25] Gestational thrombocytopenia could be an initial manifestation of the autoimmune disease while the risk of poor fetal or maternal outcomes is very low as the normalization of the platelets count occurs in majority of the females in the post-partum phase.[31] Still, identification of pregnancy ladies with severe form of thrombocytopenia my help in better monitoring, management and outcomes.

The present study tried to add in what is known about the burden of gestational thrombocytopenia among females presenting to an antenatal clinical for routine checkups during 3rd trimester. Being a single center study conducted on a relatively small sample size, our findings should further be verified in further multicentric large trials. Studies should also be planned to prospectively observe the impact and outcomes of gestational thrombocytopenia.

CONCLUSION

This study concluded that prevalence of thrombocytopenia in women during 3rd trimester of pregnancy was 10.0%. Early detection of gestational thrombocytopenia and careful calculation of risks and preemptive management can be done in order to reduce the fetomaternal morbidity and mortality of patients.

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