

Original Research Article

TO DETERMINE THE FREQUENCY OF THROMBOCYTOPENIA IN PRE ECLAMPTIC ~~WOMEN~~ PRESENTED AT ISRA UNIVERSITY HOSPITAL

Comment [oa1]: It is a one word :
PREECLAMPTIC

Comment [oa2]: I do not think this is necessary since preeclampsia only occurs in women but rather "women" can be changed to "patients"

ABSTRACT

OBJECTIVE: To determine the frequency of thrombocytopenia in pre-eclamptic women presented at Isra University Hospital Hyderabad.

PATIENTS AND METHODS: This ~~cross sectional~~ descriptive study of six months study was conducted at Isra university hospital from April 2019 to September 2019. All the patients between ≥ 18 - 45 years of age diagnosed ~~as~~ preeclampsia were admitted and evaluated for thrombocytopenia.

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RESULTS: During six month study period, total 177 patients with preeclampsia were evaluated for thrombocytopenia. ~~Majority~~ of patients were from urban areas 125/177 (70.6%). The mean \pm SD for maternal and gestational age of the preeclamptic patient was 32.75 ± 8.85 and 28.75 ± 7.63 whereas the mean platelet count was 93200 ± 10.74 respectively. ~~Majority~~ of the patients were 21-30 years of age (54.8%) and the finding was statistically significant ~~in relation to~~ gestational age [$p=0.002$]. The thrombocytopenia was observed in 99/177 (55.9%) and is statistically significant ~~in relation to~~ maternal age, gestational age and parity while in context to gravida and duration of disease it is ~~non significant~~.

Comment [oa5]: of 177

Comment [oa6]: this should be changed to "the majority"

Comment [oa7]: this should be changed to "the majority"

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CONCLUSION: A significantly high frequency of thrombocytopenia (55.9%) was recorded in the patients with preeclampsia and is statistically significant ~~in relation to~~ maternal and gestational age and parity.

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KEY WORDS: Pre-eclampsia, Platelet, Thrombocytopenia

INTRODUCTION:

Pre-eclampsia is a common pregnancy complication that can cause high morbidity and mortality for both the mother and the fetus.¹ Its condition accounts for 4-8% of all pregnancies worldwide, and is characterized by high blood pressure, proteinuria, and edema². It progresses to eclampsia if it is not treated correctly characterized by malignant hypertension and convulsions requiring emergency caesarean section. One study conducted by Rathore et al and reported prevalence of pre-eclampsia in Pakistan is around 19%³. In a study examining emergency obstetric care (EOC) in Bangladesh, 5% of patients in medical facilities were pre-eclampsia. However, the precise etiology of preeclampsia is unknown⁴. The outcomes from medical research showed the relationship between the aggravation of the hypertensive complication and the change in concentration of various chemistries in mother's serum⁵⁻⁶.

Comment [oa12]: the comma should be removed

Comment [oa13]: this should be re-written as: this is characterized by malignant hypertension and convulsions....

Comment [oa14]: To about/around

Comment [oa15]: had preeclampsia/ were preeclamptic

Comment [oa16]: the mother's

Pregnancy is related to the physiological and pathological changes of platelet count and function, which may be a clinical concern because of the risk of bleeding from the fetus and mother. Thrombocytopenia during pregnancy is commonly encountered in obstetrics and gynecological practice⁷. It affects 10 % of all pregnant women⁸. It can be considered, when platelet count below $150 \times 10^9/L$. Normal range of platelet varies between $150 \times 10^9/L$ to $400 \times 10^9/L$ in pregnant women.¹¹ It can be classified as mild, moderate and severe thrombocytopenia as count between $100-150 \times 10^9/L$, $50-100 \times 10^9/L$ and less than $50 \times 10^9/L$ respectively^{10,11}. The reported prevalence for thrombocytopenia in preeclampsia is 21%¹².

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MATERIAL AND METHODS:

This was a cross sectional descriptive study of the 177 preeclamptic ladies at the department of Obstetrics and gynecological department of Isra University Hospital from April 2019 to September 2019. The study was conducted after taking permission from the ethical committee of Isra university Hospital.

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All pregnant ladies aged between 18 - 45 years diagnosed as preeclampsia and cooperative patients who gave the written consent to participate in the study were included in

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Comment [oa26]: who gave a written informed consent

this study. Exclusion criteria were known case of idiopathic thrombocytopenic purpura (as platelets are lyzed in this disease), known case of aplastic anemia, myelodysplastic syndrome, osteopetrosis (in which platelet production is impaired), already on drug therapy (fansidar, septran, thiazides and chemotherapeutic agents that can lead to thrombocytopenia), had history of repeated blood / platelet transfusion, ~~non-cooperative patients who refused to give written consent for participation in the study~~. The data ~~was~~ collected by filling specified proforma by ~~patient~~ admitted in labour room after ~~taking informed and written consent~~. All the pregnant preeclamptic ~~ladies~~ were admitted ~~in ward~~ and were further ~~evaluate~~ for thrombocytopenia for which 3cc venous blood sample was collected in ~~disposable~~ syringe, transferred to CP bottle and sent to ~~laboratory~~ for analysis.

RESULTS

~~During six month study period, total 177~~ patients with preeclampsia were evaluated for thrombocytopenia. ~~Majority~~ of patients were from urban areas 125/177 (70.6%). The mean±SD for maternal and gestational age of the preeclamptic patient was 32.75±8.85 and 28.75±7.63 whereas the mean platelet count was 93200±10.74 respectively. The distribution of maternal age ~~in relation to~~ gestational age, parity, gravida, duration of disease and thrombocytopenia. The distribution of gestational age ~~in relation to~~ parity, gravida, duration of disease and thrombocytopenia is shown in Table 1. The parity ~~in relation to~~ gravida, duration of disease and thrombocytopenia is shown in Table 13-15. The ~~gravida~~ in context to ~~duration~~ of disease and thrombocytopenia is shown in Table 2 whereas the thrombocytopenia in relation ~~duration~~ of disease is mentioned in 2.

Comment [oa27]: non-consenting patients

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Comment [oa29]: patients

Comment [oa30]: obtaining an informed written consent

Comment [oa31]: women

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Comment [oa34]: a disposable

Comment [oa35]: the laboratory

Comment [oa36]: during the six months study period a total of 177

Comment [oa37]: the majority

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Comment [oa41]: gravidity

Comment [oa42]: gravidity

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TABLE No.1
AGE DISTRIBUTION IN-RELATION-TO DIFFERENT VARIABLE
(n=177)

Comment [oa45]: against

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Variable	AGE DISTRIBUTION (Years)				P value
	18-20 years	21-30 years	31-40 years	41-45 years	
PARITY					
• 0	3	8	9	1	0.01
• 1-2	10	32	21	7	
• 3-5	10	27	2	3	
• >5	6	30	7	1	
GRVIDA					
• 1-2	7	16	7	0	0.63
• 3-5	14	52	20	9	
• >5	8	29	12	3	
DURATION OF THE DISEASE (Weeks)					
• 21-25	3	19	7	4	0.02
• 26-30	24	53	17	5	
• 31-36	2	25	15	3	
RELATION TO THROMBOCYTOPENIA					
• Yes	15	63	20	1	0.002
• No	14	34	19	11	

Comment [oa47]: gravidity

TABLE No.2
GESTATIONAL AGE IN RELATION TO DIFFERENT VARIABLE
(n=177)

Variable	GESTATIONAL AGE (Weeks)			P value
	21-25 weeks	26-30 weeks	31-36 weeks	
PARITY				
• 0	18	3	00	<0.01
• 1-2	45	23	2	
• 3-5	8	33	1	
• >5	00	65	38	
GRVIDA				
• 1-2	17	9	4	0.27
• 3-5	34	35	26	
• >5	20	21	11	
DURATION OF THE DISEASE (Weeks)				
• 21-25	12	16	5	0.02
• 26-30	47	33	19	
• 31-36	12	16	17	
RELATION TO THROMBOCYTOPENIA				
• Yes	25	41	33	<0.01
• No	46	24	8	

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Comment [oa49]: variables

Comment [oa50]: gravidity

DISCUSSION:

Thrombocytopenia is 2nd only to anemia, found as the most frequent hematological abnormality at some stage in pregnancy. Hypertensive problems **represents** 21% cases of thrombocytopenia in pregnancy^{13,14}.

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The reasons **of** thrombocytopenia from being pregnant-triggered hypertension and HELLP (hemolysis, increased liver enzymes, low platelet count number) syndrome are unknown. One clarification is that it is probably initiated **by means of** microvascular damage that consequences in platelet activation. Degranulation of the platelets is observed through vasospasm and similarly endothelial damage¹³. The most effective acknowledged remedy for this cycle is **delivery** of the fetus. Thrombocytopenia occurs more commonly associated with mild and severe forms of pre-eclampsia (15%-18%)^{15,16}, whereas the present study observed 55.9% prevalence of thrombocytopenia in preeclamptic **ladies**. In **current** study the mean \pm SD for maternal and gestational age observed was 32.75 ± 8.85 and 28.75 ± 7.63 and it is consistent with the study by Nazli R, et al.¹⁷ Recent studies have recorded that increased plasma levels of soluble vascular endothelial cell growth factor (VEGF), receptor type 1 (sFlt1)¹⁵, endoglin, an endothelial cell-derived member of the tumor growth factor- α (TGF- α) receptor family¹⁸, are present in patients intended to develop preeclampsia as early as the late first trimester. The placentae of preeclamptic patients contain a significant level of sFlt1 and endoglin mRNA, these **neutralizes** VEGF and placental growth factor (PLGF). Another important member of the VEGF family, its level increases significantly during pregnancy, and endoglin inhibits TGF- α binding to endothelial cells¹⁹.

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Comment [oa55]: women

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Comment [oa57]: neutralize

Thrombocytopenia is **said** noticeably often in severe pre-eclampsia, with the prevalence range of 11-29%²⁰. The seriousness of **pregnancy related** hypertensive issues and thrombocytopenia noticed are firmly related, which shows that thrombocytopenia is straightforwardly corresponding to the seriousness of **pregnancy related** hypertensive problems. An international study of Bockenstedt PL—**was** reported 11.6% cases **pregnancy related**

Comment [oa58]: ??seen

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hypertensive disorders associated with thrombocytopenia²¹. One more review from Pakistan, which showed that the platelet count was not essentially associated with the seriousness of hypertensive issues during pregnancy²².

Study of Line et al reported that prevalence of thrombocytopenia associated with preeclampsia was 50%. The motive given by using the writer for this high incidence became that they included women unwell enough to be admitted inside the intensive care unit. Stavrou E, et al reported a prevalence of 35% in preterm proteinuria hypertensive patients. Thrombocytopenia is generally moderate and platelet number not often decreases to less than 20,000/ μ l and constantly correlates with the severity of the sickness, reported by Perepu U, et al.^{23,24}.

Comment [oa62]: The prevalence

In particular, it is not clear whether these peripheral changes are a cause or a consequence of the occlusive vascular lesions in the uteroplacental arteries associated with fetal growth retardation. Because of the variation in counts between patients, no diagnostic importance can be attached to a single low reading; thus platelet counts would not be a good screening test for preeclampsia. They are simpler to obtain than other measurements of disturbed coagulation, however, and repeated readings in the same patient can be useful in showing a consistent trend towards lower counts, which may herald the onset of preeclampsia. Thus the platelet count can be helpful in monitoring high-risk pregnancies^{25,26}.

The haemostatic work starts when the platelets come into contact with damaged endothelial wall or with circulatory coagulation factors, particularly thrombin, bringing about platelet activation, aggregation and clot formation. Thus, the endothelial dysfunction and the increase in vascular reactivity are proven to be involved in preeclampsia pathogenesis: the generalized endothelial alteration from preeclampsia causes vasoconstriction and promotes the adhesion and aggregation of the platelets, as well as the activation of the coagulation factors, inducing supplementary hypoxic injury of the endothelium²⁷.

The etiopathogenic factors of preeclampsia are very complex: the endothelium is the key in comprehension a multi-step process in which the platelet likewise has a significant impact. It is necessary to recognize the molecular and cellular alterations, due to the fact those precede with quite a few months the clinical features, subsequently presenting a massive advantage and the possibility of prevention.

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CONCLUSION:

A significantly high frequency of thrombocytopenia i.e. 99 patients (55.9%) was recorded in the patients **had** preeclampsia. It is important to remember that most patients have a benign condition but a few seriously ill patients are at risk of developing serious morbidity and mortality. These patients have good results as well and can be safely treated by family doctors of appropriate consultation with obstetricians and hematologists.

Comment [oa64]: Who had

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