



A STUDY OF PLATELET COUNT AND BLEEDING TIME IN THIRD TRIMESTER OF PREGNANCY WITH REFERENCE TO PRE-ECLAMPSIA.

Physiology

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ABSTRACT

BACKGROUND:- Pre-eclampsia is a serious complication of pregnancy and contributes significantly maternal as well as perinatal morbidity and mortality. So an attempt was made to study the platelet count and bleeding time in cases of preeclampsia.

AIM:- (1) To find out the platelet count and bleeding time in pre-eclamptic woman.

(2) To compare the values of platelet count and bleeding time in pre-eclamptics and normal pregnant woman in 3rd trimester of pregnancy.

METHODOLOGY:- 120 pregnant women in age group 18-42 years were included in the study of which 40 women were mild pre-eclamptic, 40 severe pre-eclamptic and 40 normal pregnant women in third trimester of pregnancy.

RESULT:- Significant decrease in platelet count and significant increase in bleeding time was found between pre-eclamptic in comparison with the normal pregnant women.

DISCUSSION:- Platelet count was found to decrease & Bleeding Time increase in pre-eclampsia

CONCLUSION:- From this study, it was concluded that platelet count decrease and bleeding time increase with increase in severity of pre-eclampsia

KEYWORDS

Platelet count, bleeding time, pre-eclampsia, proteinuria, blood pressure.

INTRODUCTION

The glory of attaining motherhood is often associated with shadows of life threatening dangers to the mother and also to the unborn child, even though pregnancy and child birth is purely a physiological process.

Pre-eclampsia is one of the complication of pregnancy and contributes significantly maternal as well as perinatal morbidity and mortality^(1,2). This disorder is characterised by involvement of cardiovascular, coagulation, renal and hepatic system^(3,4). This is a life threatening complication of pregnancy and is characterised by high blood pressure and proteinuria⁽⁵⁾.

Extensive studies have been made to detect the aetiology and pathogenesis of the condition. But despite decade of research, the aetiology of PIH has remained elusive and no definite and universally accepted conclusion has been reached⁽⁶⁾. During normal pregnancy, renal blood flow and glomerular filtration increases appreciably. With the development of pre-eclampsia renal perfusion and glomerular filtration are reduced, resulting in impairment of renal function. The main characteristic feature of pre-eclampsia i.e. edema, proteinuria and hypertension are due to renal involvement. There occurs renal vasospasm which eventually produce endothelial damage, proteinuria and hypertension^(7,8,9).

In India the incidence of PIH is higher due to low socio economic condition and pregnancy in young age group. So considering the matter related to our country an attempt was made to study the platelet count and bleeding time in cases of pre-eclampsia.

AIMS and OBJECTIVES:-

- To find out the platelet count and bleeding time in pre-eclamptic woman.
- To compare the values of platelet count and bleeding time in pre-eclamptics and normal pregnant woman in 3rd trimester of pregnancy.

MATERIALS & METHODS:-

This study was conducted in the Department of Physiology, Gauhati Medical College and Hospital, Guwahati, during the period of 1st Aug. 2015 to 31st Jul 2016. Subjects were taken from the Department of Obstetric & Gynaecology, Gauhati Medical College and Hospital, Guwahati. Blood samples were collected randomly. Convenient procedure of sample taking was applied, with proper consent from the patients.

Sample size was 120, which consists of 80 cases of pre-eclampsia (40 mild & 40 severe pre-eclampsia) and 40 cases of normal pregnant women in the third trimester of pregnancy. Age group of both cases & control were taken from 18 to 45 years. The pre-eclamptic women were subdivided into mild and severe in accordance with "American College of Obstetric and Gynecology guidelines (1980)".

Mild Pre-eclampsia:-

SBP $\geq$ 140- 160 mm Hg and
DBP $\geq$ 90-110 mm Hg
(On two separate readings 4 hrs apart)
Proteinuria (1+/2+) on dipstick measurements.

Severe Pre-eclampsia:-

SBP $>$ 160 mm Hg and
DBP $>$ 110 mm Hg
(On two separate readings 4 hrs apart)
Proteinuria ($\geq$ 3+).

Control cases were obtained from normal pregnant women in third trimester of pregnancy. The control cases were selected from those who gave no history of symptoms referable to disease of any system and their clinical examination did not reveal any abnormal findings.

EXCLUSION CRITERIA:

Patients with known haemorrhagic diathesis or who had taken NSAID in previous 7 days.

METHODS:-

Platelet Count:-

Platelet count was carried out by the method of "Brecher and Cronkite Method"

Bleeding Time:-

Bleeding time was carried out by the "Duke's Method".

RESULT & OBSERVATION

Table -I Table Showing Distribution Of 120 Cases In Study And Control Group.

Serial no.	Different group	No. of cases	Total
1	Control	40	120
2	Mild pre-eclampsia	40	
3	Severe	40	

Table -I showed that, among the 80 cases of study group, 40 cases were of mild pre-eclampsia while 40 cases were of severe pre-eclampsia.

Table-II Table Showing Platelet Count In Study And Control Group

Sl. No.	Groups	No. of cases	Mean (lac/cumm)	S D	S E
1	Normal pregnant Women in third trimester	40	245525	+42570	6735
2	Pre-eclampsia	80	154,425	+42569	4756

Table II showed mean platelet count in the study and Control group. In Control group it is 245,525 and in the study group it is 154,425.

Table-III Table Showing Platelet Count In Control Group, Mild Pre-eclampsia And Severe Pre-eclampsia.

Sl. No.	Groups	No. of cases	Mean (lac/cumm)	S D	S E
1	Normal pregnant women in third trimester	40	245,525	±42570	6735
2	Mild pre-eclampsia	40	183,050	±29581	4680
3	Severe pre-eclampsia	40	125,800	±33382	5282

Table III showed mean platelet count in different study group. In control group it is 245,525, in Mild pre-eclampsia it is 183,050 and in Severe pre-eclampsia it is 125,800.

Table-IV Table Showing Bleeding Time In Study And Control Group.

Sl. No.	Groups	No. of cases	Mean (min)	S D	S E
1	Normal pregnant women in third trimester	40	2.7	±0.51	0.081
2	pre-eclampsia	80	7.91	±0.86	0.096

Table IV showed mean bleeding time in study and control groups. In control group it is 2.7 min and in study group it is 7.91 min.

Table-V Table Showing Bleeding Time In Control Group, Mild Pre-eclampsia And Severe Pre-eclampsia.

Sl. No.	Groups	No. of cases	Mean (min)	S D	S E
1	Normal pregnant women in third trimester	40	2.7	±0.51	0.08
2	Mild pre-eclampsia	40	6.4	±0.63	0.10
3	Severe pre-eclampsia	40	9.4	±0.78	0.12

Table V showed mean bleeding time in different study group. In control group it is 2.7 min. in mild pre-eclampsia it is 6.4 min. and in severe pre-eclampsia it is 9.4 min.

Table-VI Table Showing Comparison Of Platelet Count And Bleeding Time In Normal Pregnant Women And Mild Pre-eclampsia.

Parameters	Normal-pregnant women in third trimester	Mild pre-eclampsia	significance
	Mean±SD	Mean±SD	
Platelet count in lac/cumm	245,525±42570	183,050±29581	<0.05
Bleeding time in min	2.7±0.51	6.4±0.63	<0.05

In table VI Student's t-test had been applied to assess if there was any significance difference in platelet count and bleeding time between control and Mild pre-eclampsia. It had been observed that significant difference in platelet count and bleeding time was found between Control and Mild pre-eclampsia.

Table-VII Table Showing Comparison Of Platelet Count And Bleeding Time In Normal Pregnant Women And Severe Pre-eclampsia.

Parameters	Normal pregnant women in third trimester	Severe pre-eclampsia	Significance
	Mean±SD	Mean±SD	
Platelet count In lac/cumm	245,525±42570	125,800±33382	< 0.05
Bleeding time In min	2.7±0.51	9.4±0.78	< 0.05

In table VII Student's t-test had been applied to assess if there was any significance difference in platelet count and bleeding time between control and severe pre-eclampsia. It had been observed that significant difference in platelet count and bleeding time was found between control and severe pre-eclampsia.

Table-VIII Table Showing Comparison Of Platelet Count And Bleeding Time In Mild Pre-eclampsia And Severe Pre-eclampsia.

Parameters	Mild Pre-eclampsia	Severe pre-eclampsia	Significance
	Mean±SD	Mean±SD	

Platelet count In lac/cumm	183050±29581	125,800±33382	< 0.05
Bleeding time In min	6.4±0.63	9.4±0.78	< 0.05

In table VIII Student's t-test had been applied to assess if there was any significance difference in platelet count and bleeding time between mild pre-eclampsia and severe pre-eclampsia. It had been observed that significant difference in platelet count and bleeding time was found between mild pre-eclampsia and severe pre-eclampsia.

Table-IX Table Showing No. Of Cases In Study And Control Group With Platelet Count <100,000, Between 100,000 – 150,000 And >150,000.

Platelet count	Cases		Control	
	No.	%	No.	%
<100,000	12	15	-	-
100,000-150,000	29	36.2	-	-
>150,000	39	48.7	40	100

Table-IX showed among the cases in study group 15% had platelet count less than 100,000, 36.2% between 100,000 – 150,000 and 48.7% greater than 150,000. And in the control group all the cases had platelet greater than 150,000.

Table-X Table Showing No. Of Cases In Mild Pre-eclampsia And In Severe Pre-eclampsia With Platelet Count <100,000, 100,000-150,000 And >150,000.

Platelet count	Mild pre-eclampsia		Severe pre-eclampsia	
	No.	%	No.	%
<100,000	1	2.5	11	27.5
100,000-150,000	8	20	21	52.5
>150,000	31	77.5	8	20

Table X showed 2.5% of cases of Mild pre-eclampsia had platelet count <100,000 and 27.5% of cases of Severe pre-eclampsia had platelet count <100,000. 20% of Mild pre-eclampsia and 52.5% of Severe pre-eclampsia had platelet count between 100,000 – 150,000. 77.5% of Mild pre-eclampsia and 20% Severe pre-eclampsia had platelet count > 150,000.

Table- Xi Table Showing No. Of Cases Of Study And Control Group With Bleeding Time >9.5min. And <9.5min.

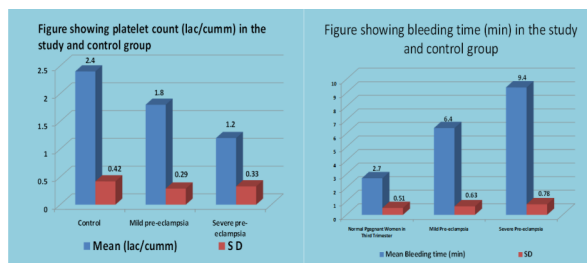
Bleeding-time (min)	Study		Control	
	No.	%	No.	%
>9.5	24	30	-	-
<9.5	56	70	40	100

Table showed 30% of cases in study group had bleeding time > 9.5 min and 70% had bleeding time < 9.5 min. In the control all the cases had bleeding time < 9.5 min.

Table-xii Table Showing No. Of Cases In Mild Pre-eclampsia And Severe Pre-eclampsia With Bleeding Time >9.5min And <9.5min.

Bleeding-time(min)	Mild pre-eclampsia		Severe pre-eclampsia	
	No.	%	No.	%
>9.5	7	17.5	17	42.5
<9.5	33	82.5	23	57.5

Table XII showed 17.5% of cases of Mild pre-eclampsia had bleeding time >9.5min and 42.5% of cases of Severe pre-eclampsia had bleeding time > 9.5min.



RESULT & OBSERVATION

In the present work, the platelet count and bleeding time have been studied in pre-eclamptic women and normal pregnant women in the third trimester of pregnancy.

80 cases of pre-eclampsic women and 40 cases of normal pregnant women in the third trimester of pregnancy were taken from the Department of Obstetric and Gynaecology, Gauhati Medical College & Hospital, Guwahati, over a period of one year from 1st Aug 2015 to 31st Jul 2016.

Out of 80 cases of pre-eclampsia 40 cases were mild pre-eclampsia and 40 cases were severe pre-eclampsia.

The Significance of the difference of the mean was calculated by using students t-test.

DISCUSSION:-

In this study we have observed significant difference in platelet count and BT when comparison was made between the control and pre-eclampsics. ($p<0.05$). between mild and severe pre-eclampsics. ($p<0.05$)

Review of previous work by different worker has shown that blood platelet count can be used as an important marker for early diagnosis of pre-eclampsia.

Redman et al.(1978) observed that in majority of pre-eclampsic cases the platelet count is much lower than that of normal pregnancy⁽¹⁰⁾.

Jeremy R. Davis (2005) found platelet count in pre-eclampsia 177,000/cumm which is lower as compared to the control (257,000/cumm)⁽¹¹⁾.

Norris LA & associates in 1993 in their study with 30 pre-eclampsic women and 20 healthy normal pregnant women found much reduced platelet count in pre-eclampsics in comparison with the control⁽¹²⁾.

SUMMARY

The present study was carried out in the Department of Physiology, Gauhati Medical College and Hospital, Guwahati, during the period of 1st Aug. 2015 to 31st Jul 2016, to assess blood platelet count and bleeding time in pre-eclampsic women and normal pregnant women in the third trimester of pregnancy.

This study was carried out to evaluate whether blood platelet count and bleeding time can be used as a haematological parameters to diagnose pre-eclampsia and to determine their place in diagnosing the severity of pre-eclampsia.

The available literatures on platelet count and bleeding time in normal pregnancy and pre-eclampsia have been reviewed thoroughly.

80 cases of pre-eclampsia were selected for study group, among which 40 cases of mild pre-eclampsia and forty cases of severe pre-eclampsia were taken. 40 cases of normal pregnancy in their third trimester of pregnancy without evidence of hypertension were taken as control group.

Every effort was made to match study and control group in regard to socio-economic status, gravid & parity, age, relevant past history etc. which could affect platelet count and bleeding time.

Patient with diabetes mellitus, severe heart disease, Rh negative, haemoglobinopathy severe anaemia, multiple gestation were excluded from study.

Platelet count estimation was done by using Brecher & Cronkite Method and Bleeding time was estimated using Duke's method.

Mean platelet count in normal pregnancy was found 245,525+42570/cumm and Mean bleeding time in normal pregnancy was found 2.7+0.51min.

Mean platelet count in mild pre-eclampsia was 183,050+29581/cumm and in severe pre-eclampsia were 125,800+33382/cumm.

Mean bleeding time in Mild pre-eclampsia was 6.4+0.63min and in severe pre-eclampsia was 9.4+0.78min.

In this study mean platelet count in Pre-eclampsia (mild & severe) was found to be lowered in comparison to normal pregnancy ($p<0.05$) and Mean bleeding time was found to be raised in comparison to normal pregnancy ($p<0.05$).

There was also significant decrease ($p<0.05$) in mean platelet count between mild and severe pre-eclampsia. Also increase in bleeding time was significant ($p<0.05$) between mild and severe pre-eclampsia.

CONCLUSION:-

Platelet count is found to decrease & Bleeding Time increase in pre-eclampsia.

Estimation of bleeding time along with platelet count gives a better idea of severity of the disease.

It has been observed that hypertensive disorders of pregnancy are a very common occurrence in obstetrics, causing various maternal and fetal hazards.

Though the disorder cannot be prevented, at least the course can be altered by adequate antenatal care, supervision and early detection, by which maternal and fetal complications can be minimized.

By careful observation and frequent estimation of these value, we can diagnose and take precaution at the earliest, thereby reducing perinatal as well as maternal morbidity and mortality.

Ethical clearance- Taken

Source of funding – Self

Conflict of interest – Nil

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