

A COMPARATIVE STUDY OF CHANGE IN PLATELET COUNT IN PREGNANCY AND PUERPERIUM

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ABSTRACT:

Normal pregnancy involves many changes including alterations in hematologic parameters. One of the parameters changed involves platelets. In the present study, change in platelet count is studied during pregnancy and puerperium of the same woman. 30 pregnant women in the age group 20-30 years who were registered for ANC in BMC, Chitradurga were enrolled for the study. Platelet count was measured both during pregnancy and in puerperal period in all the women. Values were analyzed statistically using paired "t" test. Results showed that Platelet count was found to decrease during pregnancy compared to puerperium ($p < 0.0001$) which was statistically significant.

Conclusion: The decline in the platelet count during gestation is possibly caused by increased destruction or hemodilution. It may also be a consequence of physiological increase in fibrinolysis within the uteroplacental circulation in order to maintain the blood flow. There may be increased platelet consumption too, leading to a greater proportion of younger, larger platelets.

Keywords: Platelets, Pregnancy and Puerperium.

INTRODUCTION

Pregnancy is a process where the life of a fetus begins in the mother's womb and progresses up to the stage when it is safe to expose it to the outside world. During pregnancy, there is progressive anatomical, physiological and biochemical changes not only in the genital organs but also in all systems of the body. As the pregnancy progresses, various extra demands are imposed on the mother's body by the growing fetus, which are met by certain adaptations in all the organ systems of the body¹.

So, Normal pregnancy involves some alterations in hematologic parameters of mothers also. These include expansion in maternal blood volume, plasma volume and a decrease in hematocrit as well as an increase in the levels of some plasma proteins that alter the balance of coagulation and fibrinolysis².

Puerperium is that period following childbirth wherein the body tissues, specially the pelvic organs, revert back both anatomically and physiologically to the pre-pregnant state almost completely. These changes are mostly confined to the reproductive organs which is termed involution, with the exception of the mammary glands which show features of activity. A woman in such a stage is termed as a puerperal³.

Puerperium is a time of physiological interest because many of the changes effected over the nine months of pregnancy are reversed within a matter of hours or days. These changes may be complex, as appears to be the case with regard to the haematological indices that are commonly determined in obstetric practice⁴.

Pregnancy and puerperium also involves changes in platelets. Therefore the present study is undertaken to assess the changes in platelet count during pregnancy and puerperium.

AIMS AND OBJECTIVES

To estimate platelet count in third trimester of pregnancy and puerperium of the same woman as well as to compare the variations observed.

MATERIALS AND METHODS

This study was conducted on 30 normal healthy pregnant women of age group of 20 - 30 years and who were recruited from antenatal clinic of BMC, Chitradurga. Procedure was explained and written informed consent was taken from pregnant women. This study was performed from March 2013 to March 2014 in the Physiology department, with lab assistance from department of pathology, BMC, Chitradurga. Ethical approval for this study was obtained from BMC, Chitradurga.

Source of Data:

Subject: The study group consisted of 30 pregnant females aged between 20-30 years and later followed up during puerperium from OBG OPD in BMC, Chitradurga.

Inclusion Criteria

1. Healthy pregnant women in the age groups 20-30 years.
2. No H/O of anemia, bleeding disorders.

Exclusion Criteria

H/o gynaecological disorders/menorrhagia
 H/o bleeding disorders in the past.
 H/o diabetes mellitus, gestational diabetes
 H/o hypertension, PIH (pregnancy induced hypertension)

Procedure: 3 ml of venous blood collected from the median cubital vein with minimum stasis were put into EDTA bottle. The blood was properly mixed and analyzed for platelet count. The instrument used to estimate platelet count was sysmex XP-100 automated haematology analyzer and results were analyzed by applying paired “t” test.

OBSERVATIONS AND RESULTS

Platelet count of 30 normal healthy pregnant women (aged between 20-30 years) were studied during third trimester of pregnancy and puerperium as follows. In our study we found platelet counts values as follows, in pregnancy 2.19 ± 0.66 and puerperium 2.63 ± 0.68 .

Platelet count (lakh cells/cu mm) in pregnancy and puerperium (Mean± SD)

Pregnancy	Puerperium	t-value	P value	Significance
2.19 ± 0.66	2.63 ± 0.68	9.35	<0.0001	Highly significant

DISCUSSION

This study found platelet counts were decreased in pregnancy when compared to puerperium which was statistically significant.

This is due to haemodilution or increased platelet consumption. The decrease is more marked in women developing pregnancy-induced hypertension (PIH) and antedates the rise in blood pressure⁵. Although the average fall of platelet count in normotensive women is around 20%, at the onset of labor most women have a platelet count greater than 1,00,000 /cu mm. During the first 2 days postpartum, the platelet count falls following which there an outpouring of fresh platelets with increased adhesiveness into the circulation is resulting in rapid rise in platelet count which remains elevated until the 50th day postpartum. The state of puerperal hypercoagulability therefore lasts for about 7 weeks. This has obvious implications while planning prophylactic anticoagulant regimens for women at risk of thromboembolic diseases⁶.

Platelet count and platelet volume remain within normal non-pregnant range in a majority of pregnancies even though platelet survival is reduced⁷. In 8-10% of normal pregnancies the platelet count falls below 1,50,000/cu.mm without any ill effect on the fetus or neonate⁸. Probably this is a consequence of physiologically increased fibrinolysis within the

uteroplacental circulation that occurs in order to maintain the blood flow⁹.

Platelet reactivity is increased in the second and third trimesters of pregnancy and does not return to normal until 12 weeks after delivery¹⁰.

Normal pregnancy also involves changes in platelets¹¹. The progressive decline in the platelet count during gestation possibly caused by increased destruction or hemodilution^{12,13}. Approximately 8 percent of gravids develop gestational thrombocytopenia in the third trimester, with platelet count between 70,000 and 1,50,000/mm^{3,14}.

CONCLUSION

Platelet count is significantly decreased during pregnancy as compared to puerperium in the same woman due to hemodilution and increased platelet destruction. There is a physiologically increased fibrinolysis within the uteroplacental circulation in order to maintain blood flow.

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