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CHANGE IN ERYTHROCYTE SEDIMENTATION RATE (ESR) IN PREGNANCY AND PUERPERIUM IN THE SAME WOMAN

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ABSTRACT

Aims and Objective : Normal pregnancy involves many changes including alterations in hematologic parameters. Hematologic changes also involve change in Erythrocyte Sedimentation Rate (ESR) during pregnancy. Therefore in the present study, the change in erythrocyte sedimentation rate is studied in pregnancy and puerperium in the same women.

Methods : 30 pregnant women in the age group of 20 to 30 years who were registered in KIMS, Hubli were enrolled for the study. Erythrocyte sedimentation rate (ESR) was measured in pregnancy and puerperium in the same women.

Results : Values were analyzed statistically using paired "t" test. Erythrocyte sedimentation rate was increased in pregnancy compared to puerperium ($p < 0.0001$) which is statistically highly significant.

Conclusion : The increased erythrocyte sedimentation rate in pregnancy is due to increased plasma fibrinogen level and hemodilution during pregnancy.

Key words : Erythrocyte sedimentation rate, pregnancy and Puerperium.

INTRODUCTION

Pregnancy is a process whereby the life of a baby begins in the mother's womb and progresses up to the stage when it is safe to expose the baby to the outside world. During pregnancy there is progressive anatomical, physiological and biochemical changes not only confined to the genital organs but also to all systems of the body. As the pregnancy progresses, various types of extra demands are imposed on the mother's body by the growing fetus, which are met with by certain adaptations in almost all the organ systems of the body[1].

Normal pregnancy involves many changes in maternal physiology including alterations in hematologic parameters. These changes include expansion in maternal blood and plasma volumes and a decrease in hematocrit, as well as an increase in the levels of some plasma proteins that alters the balance of coagulation and fibrinolysis[2]

Puerperium is the period following childbirth during which the body tissues, specially the pelvic organs revert back approximately to the pre- pregnant state both anatomically and physiologically. The retrogressive changes are mostly confined to the reproductive organs with the exception of the mammary glands which in fact show features of activity. Involution is the process whereby the genital organs revert back approximately to the state as they were before pregnancy. The woman is termed as a puerperal[3].

The puerperium is a time of equal physiological interest because many of the changes effected over the nine months of pregnancy are reversed in a matter of hours or days. These changes may be complex, as appears to be the case with regard to the haematological indices commonly determined in obstetric practice[4].

Pregnancy and puerperium also involve changes in erythrocyte sedimentation rate (ESR). Therefore the present study is undertaken to assess the changes in erythrocyte sedimentation rate in pregnancy and puerperium in the same women.

AIMS AND OBJECTIVES

- To estimate erythrocyte sedimentation rate (ESR) in pregnancy and puerperium in the same women.
- To compare the variations observed in erythrocyte sedimentation rate(ESR) in pregnancy and puerperium in the same women.

MATERIALS AND METHODS

This study was conducted on 30 normal healthy pregnant women with age group of 20 to 30 years.

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This study was performed from March 2012 to march 2013 in the physiology department, with lab assistance from department of pathology, KIMS, Hubli.

Ethical committee KIMS, HUBLI, had approved this study to be conducted in the department of physiology, KIMS, Hubli.

SOURCE OF DATA

SUBJECT: Study group consists of 30 pregnant females aged between 20-30years and later followed during puerperium in and around HUBLI

INCLUSION CRITERIA

1. Healthy women in reproductive age groups.
2. They should not have anemia, blood disorders.
3. Women aged 18-35 years

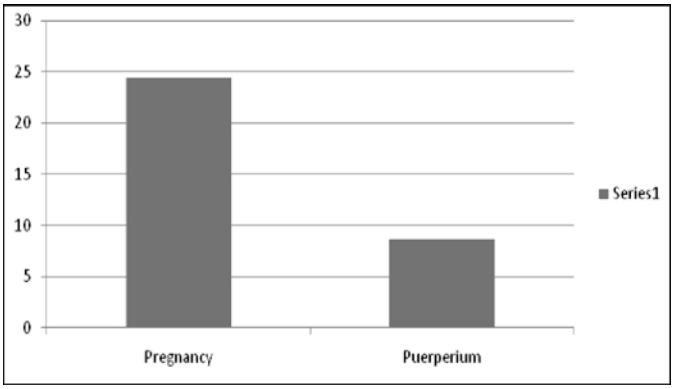
EXCLUSION CRITERIA

H/o gynaecological disorders
H/o bleeding disorders
H/o diabetes mellitus, gestational diabetes
H/o hypertension, PIH (pregnancy induced hypertension)

OBSERVATIONS AND RESULTS

Erythrocyte sedimentation rate of 30 normal healthy pregnant women (aged between 20-30 years) were studied in pregnancy and puerperium, results were analyzed by applying paired "t" test.

ESR (mm/at the end of 1st hr) in pregnancy and puerperium (Mean± SD)				
Pregnancy	**Puerperium**	**t-value**	**P value**	**Significance**
24.50±4.25	8.75±1.77	36.36	<0.0001	Highly Significant



DISCUSSION

In our study we found Erythrocyte sedimentation rate values as follows, Pregnancy 24.50±.25 and puerperium 8.75±1.77.

We found increased ESR in pregnancy compared to puerperium and it was statistically significant.

The erythrocyte sedimentation rate rises early in pregnancy due to increase in fibrinogen and other physiological changes: 100mm in an hour is not uncommon in normal pregnancy.

During normal pregnancy, fibrinogen concentration increases approximately 50 percent. It averages 450mg/dL late in pregnancy, with a range from 300 to 600mg/dL. The percentage of high-molecular weight fibrinogen is unchanged [5]

Hytten et al in 1971 studies show that another marker of inflammation, the erythrocyte sedimentation rate (ESR), is increase in normal pregnancy because of elevated plasma globulins and fibrinogen[6]

Johnson et al in 1997 studied that the majority of the procoagulant factors from the coagulation cascade are markedly increased, including factors I, VII, VIII, IX and X. Factors II, V and XII are unchanged or mildly increased and levels of factors XI and XIII decline[7].

Ozanne et al in 1983 studied that plasma fibrinogen (factor I) levels begin to increase in the first trimester and peak in the third trimester at levels 50 percent higher than before pregnancy. The rise in fibrinogen is associated with an increase in the erythrocyte sedimentation rate[8].

CONCLUSION

Erythrocyte sedimentation rate (ESR) is increased in pregnancy because of elevated plasma globulins and fibrinogen. Hemodilution during pregnancy may be another cause of increased erythrocyte sedimentation rate.

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