Erythrocyte sedimentation rate in Pregnancy

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Abstract

Introduction: There are so many significant haematological changes occurring in pregnancy. In the present study ESR was measured and compared in pregnancy and puerperium.

Methods: Pregnant women in the age group of 20-30, who were registered in Mamata General Hospital, Khammam, A.P., were selected. ESR estimation was done both in pregnancy and puerperium.

Result: There was a statistically significant increase of ESR in pregnancy compared to puerperium (0.0001).

Conclusion: ESR increases in pregnancy due to increase in Fibrinogen levels and haemodilution during pregnancy.

Keywords: Erythrocyte sedimentation rate, pregnancy, puerperium, fibrinogen, haemodilution.

1. Introduction

During pregnancy there are progressive changes in the mother in all the systems of the body. They include anatomical, physiological and biochemical changes because various types of extra demands are imposed on the mother’s body by the growing foetus.1

Haematological changes include expansion of blood volume causing haemodilution, increase of Fibrinogen and other plasma proteins that alters the balance of coagulation and fibrinolysis.2 Because of increased fibrinogen and haemodilution erythrocyte sedimentation rate also increases. Puerperium is the period that follows childbirth during which the body tissue especially pelvic organs revert back to pre-pregnant state both physiologically as well as anatomically except the mammary glands which in fact show the features of activity.3 Puerperium is a time of equal physiological interest because many of the changes affected over the nine months of pregnancy are reversed in a matter of hours or days.4 Therefore the present study is undertaken to study and compare the changes in ESR levels in pregnancy and puerperium.

Aims and Objectives: To estimate and study ESR in pregnancy and puerperium.

2. Material and Methods

The study was conducted on 30 normal healthy pregnant women with the age group of 20 to 30 years, in and around Khammam. This study was performed in the physiology department with the lab assistance from the pathology department. College ethical committee approved for this.

2.1 Inclusion criteria

Healthy women in the reproductive age groups.
They should not have anaemia or other blood disorders.
Women between 20-30 years, otherwise healthy persons.

2.2 Exclusion criteria

h/o other gynaecological disorders,
h/o bleeding disorders,
h/o diabetes, or gestational diabetes,
h/o hypertension or pregnancy induced hypertension.

3. Observation and Results

The results were analysed by applying paired “t” test.

ESR values after one hour are as follows. SD values in pregnancy 24.50±.25 and in puerperium 8.75±1.77.

Result: There was increased ESR in pregnancy when compared to puerperium and it was statistically significant. T value was 36.36 and p value 0.0001 i.e. highly significant.

4. Discussion

ESR rises early in pregnancy due to increase in fibrinogen and other physiological changes. Value of 100 mm at the end of first hour is not uncommon in normal pregnancy.

During normal pregnancy fibrinogen concentration increases by approximately 50%. It averages 450mg/dl in late pregnancy, with a range from 300-600mg/dl. The percentage of high molecular weight fibrinogen is in-changed.5

Hyttén et al in 1971 studies show that another marker of inflammation, ESR increases in normal pregnancy because of elevated plasma globulins and fibrinogen.6

Johnson et al in 1997 studies that majority of the procoagulant factors from the coagulation cascade are markedly increased, including factors 1, V11, V111, 1X AND X. Factors 11, V, X11 are unchanged or mildly increased and levels of factors X11 AND X111 decline.7

Ozanne et al in 1983 studied that plasma fibrinogen begins to increase in the first trimester and peak in the third trimester at levels 50% higher than before pregnancy. Rise in fibrinogen is associated with an increase in ESR.8
5. Conclusion

ESR is increased in pregnancy because of elevated plasma globulins and fibrinogen. Hemodilution during pregnancy may be another cause of increased ESR.

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