Full Length Research Article

EFFECT OF PARITY ON PLASMA FIBRINOGEN IN NORMAL PREGNANT SUDANESE WOMEN

1,*Abdelrahman Mohamed Sidahmed, 2Mutaz Ibrahim Hassan and 3Rashid Eltayeb Abdalla

1Faculty of Medical Laboratory Sciences, Al-Neelain University, Sudan
2Department of Clinical Chemistry, Faculty of Medical Laboratory Sciences, Shendi University, Sudan
3Faculty of Medicine, Shendi University, Sudan

ARTICLE INFO

ABSTRACT

Background: The parity is the number of times that she has given birth to a fetus with a gestational age of (24) weeks or more, regardless of whether the child was born alive or was stillborn. The aim of this study is to shed more like on the role of effect parity on fibrinogen level.
Objectives: study the effect of parity on the plasma fibrinogen in normal pregnant Sudanese women, and determination of levels of plasma fibrinogen in pregnant women Material and method: cross- sectional study was conducted at Algazeraand Khartoum states during October to November 2015. (120) normal pregnant women with age ranging (20 – 42) years, classified as (60) non pregnant women (nullparas) as control group, (30) multiparae and (30) grand multipara's.
Results: The concentration of fibrinogen in the multiparae mean (6.20) as compared to (8.52) mg/dl in the control group *(P.value 0.266)* was insignificant, Grand multipara mean (3.77) as compared to (8.52) mg/dl in the control group (*P.value 0.015*) were significantly decreased compared to control.
Conclusion: Normal pregnant multipara and grand multipara women fibrinogen levels are lower than in aged matched with non pregnant women. These changes are not directly associated with lipid metabolism during pregnancy [8].

INTRODUCTION

Normal human pregnancy lasts approximately (40) weeks, as measured from the first day of the last normal menstrual period. During pregnancy, a woman undergoes dramatic physiological and hormonal changes. Physicians customarily divide pregnancy, which begins at the first day of last menses into three intervals called trimesters, each slightly longer than (13) weeks (Adler *et al.,* 2000). Maternal blood volume increases during pregnancy by an average of (45%) of plasma and volume increases more rapidly than red blood cell mass. The concentrations of several blood coagulation factors are increased during pregnancy. Plasma fibrinogen increases approximately (50%), from (300 to 600) mg/dl. This increase contributes to the increase in sedimentation rate. The risk of thromboembolism during pregnancy is up to (5) - times the normal risk (Almagor, 2003). Fibrinogen is one of the largest proteins present in the blood plasma.

---

*Corresponding author: Abdelrahman Mohamed Sidahmed
Faculty of Medical Laboratory Sciences, Al-Neelain University, Sudan

It coagulates to form a fibrin clot and thus is present only as a precursor in the plasma and as degradation product (fibrin split products) in serum after coagulation had occurred (Bukowska, *et al.,* 1998) C-reactive Protein (*CRP)* a substance present in the sera of acutely ill individuals that is able to bind the C-polysaccharide on the cell wall of streptococcus pneumonia first was described in 1930. In 1941, it was shown to be a protein and given the name C-reactive protein. It is one of the first Acute Phase Proteins (*APPs)* to become elevated in inflammatory disease and also the one exhibiting the most dramatic increase in concentration. It consists of (5) identical subunits and is synthesized primarily in the liver (IJOG, 2013). An increased level of fibrinogen is associated with an increased erythrocyte sedimentation rate, which in turn since long has been correlated to a risk for ischemic heart diseases. In acute myocardial infarction the level of plasma fibrinogen as well as the level of free fatty acids are increased (Carl *et al.,* 1996). In pregnancy fibrinogen, factor VII, factor X and platelets are all increasing lead to change in coagulation time and capacity for clotting is increased (Choi and Pai, 2007) Parity in the (United Kingdom) *UK* is defined as the number of times that she has given birth to a fetus with a gestational

age of (24) weeks or more, regardless of whether the child was born alive or was still is very important in diagnosis of diseases, treatment and follow up of pregnancy. The study of outcomes of previous pregnancies gives some indication of the likely outcome and degree of risk with the current Pregnancy. From the previous studies the multiparity associated with increasing of (Erythrocytes Sedimentation Rate) *ESR*, lipids, clotting and associated with low (Hemoglobin) *Hb*, all of these risks can lead to Myocardial Infarction. The number of previous pregnancies and deliveries will also Influence the risks associated.

MATERIALS AND METHODS

Study design

Cross- sectional study conducted at Algazera and Khartoum states during the period October to November 2015. (120) normal pregnant women with age ranging (20 – 42) years, classified as (60) non pregnant women (nullparas) as control group, (30) multiparae and (30) grand multipara's.

Sampling

Venous blood should be collected from pregnant women by clean venipuncture. In trisodium citrate anticoagulant tubes and plane tube without anticoagulant. Samples were centrifuged at (1500) rpm for no less than (15) minutes. Plasma removed from the tube within (60) minutes using a plastic pipette and stored in plastic tube used to measure fibrinogen and *CRP*.

Ethical consideration

Ethical consideration was taken verbally. This study posed no physical risk to participants though an interview of (10) min, might have been convenient to some participants. It is a convenient study, thus neither the participants name nor his institution in use in any of the study materials and each participant was assigned a unique identification number. Collected data will be secured in a computer protected by password.

Measurement of fibrinogen

Fibrinogen level was determined by using fibrinoquan kit utilizes the Clauss clotting time method (by using coagulometer) for the determination of plasma fibrinogen levels. Wherein excess bovine thrombin is used to clot diluted plasma. First, standard curve is prepared using fibrinoquan Standard, reference plasma of known fibrinogen content, at dilutions of (1/5,1/10.1/20 and 1/40). When thrombin is added, the clotting time obtained is inversely proportional to the fibrinogen content. Patient plasma, at dilution of (1/10), is clotted with thrombin and the resultant clotting time is used to interpolate fibrinogen level from the standard curve.

Statistical analysis

All data was analyzed using statistical analysis soft ware (SPSS) version (16). Statistical analysis included description statistic of *mean and standard deviation*.

RESULTS

Table 1. Concentration of fibrinogen level in multiparas versus control group

Variable	Case Mean ± SD	Control Mean ± SD	p.value
Fibrinogen	3.77 ± 2.47	8.52 ± 7.05	0.015

Result expressed as mean ± SD
Significant different consider as p.value ≤ 0.05

Table 2. Concentration of fibrinogen level in grand multiparas versus control group

Variable	Case Mean ± SD	Control Mean ± SD	p.value
Fibrinogen	3.77 ± 2.47	8.52 ± 7.05	0.015

Result expressed as mean ± SD
Significant different consider as p.value ≤ 0.05

DISCUSSIONS

This study revealed that there are significant decrease in mean concentration of the fibrinogen level in patient with grand multiparas in comparison with control group with *p.value* (0.015) this finding agreed with previous study which report, of the department of obstetrics and gynecology, king Abdul-Aziz university hospital a retrospective analysis of (646) arab grand multipara's who booked for hospital confinement between 1983 and 1985 was carried out. The result was compared with that of non- grandmultiparas during the same period. In the grand multiparas, the incidence of gestational diabetes, hypertension rheumatic heart disease, antepartum, postpartum, hemorrhage and macroscopic infants were increased. However, contrary to some previous reports, the incidence of anemia, cesarean sections induced labor, dysmaturity and prenatal deaths were decreased. This is thought to be due to the provision of modern specialist prenatal care and improve socioeconomic standard (Mwambingu et al., 2001). The present study revealed that, there was insignificant difference between mean fibrinogen level in multiparas compared with control group with (*P.value* 0.266).

Conclusion

Normal pregnant multipara and grand multipara women fibrinogen levels are lower than in aged matched with non pregnant women. These changes are not directly associated with lipid metabolism during pregnancy (ALmagor *et al.,* 2013).

REFERENCES

Adler, G., Duchinski, T., Jasinska, A and Piotrowska, U. 2000. The C-reactive protein and fibrinogen in pregnancy, Departments of Obstetrics and Gynaecology, Medical Centre of Postgraduate Education, Warsaw, Poland.pp 211-220.

Almagor, M., Gorten, D., Yaffe, H., 2003. Decreased levels of fibrinogen in very high parity women, Division of clinical laboratories, Bikur Cholim Hospital, Israel., pp50-148.

ALmagor, M, *et al.* 2013. Dyslipidaemia in pregnancy. obstetrics and gynecology Medical Centre of Postgraduate Education, Warsaw, Poland.pp 211-220. 2013.

IJOG, 2013. Sequential studies in pre-eclampsiausing plasma fibrinogen Chromatography, University Department of Obstetrics, Glasgow Royal Maternity Hospital An *International Journal of Obstetrics and Gynaecology*, pp 909–918.

Bukowska, *et al*1998. Atherosclerosis, Decrease in fibrinogen and LDL-cholesterol levels upon supplementation of diet with Lactobacillus plantarum in subjects with moderately elevated cholesterol, pp437-8.

Carl, A. Burtis and Edward R. Ashwood, 1996. Tietz-Fundamentals of clinical chemistry-4th Edition-cha11;pp 745 – 748.

Choi, J.W., Pai, S.H. 2007. Tissue plasminogen activator levels change of Clinical Pathology, College of Medicine, Inha University Hospital, Shinheung-dong, pp 400-103, Republic of Korea

Craig A. Lehman, 1998. Saunders Manual of clinical laboratory Science. First edition. London: W. Saunders Company pp 28 – 29.

Mwambingu, F.T., ALMeshari, A.A., AKIELA, 2001. Department of Obstetrics and Gynecology, king Abdul-Aziz university hospital.

****