



**PLASMA LEVELS OF VON WILLEBRAND FACTOR ANTIGEN IN SUDANESE
PREGNANT LADIES IN KHARTOUM 2017**

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ABSTRACT

Von Willebrand factor (VWF) is a large sialoglycoprotein that circulates in normal plasma as a series of heterogeneous multimers and plays a critical role in primary hemostasis by mediating platelet adhesion to exposed collagen at sites of vascular injury. This is a cross sectional study conducted at Omdurman Maternity Hospital, Omdurman City to evaluate the vwf level among Sudanese pregnant womens. Forty apparent normal pregnant women recruited at the antenatal clinic were evaluated for VWF: Ag in platelet poor plasma using commercial ELISA kits from Technoclone Vienna, Austria .The data was analyzed using SPSS version 21. The result showed that there is no significant association between pregnancy and plasma vwf level (p-value=0.8) but the result show significant association between vwf and age (P-value=0.000). The mean vWF Ag level is within normal range in pregnancy however there is a insignificant decline in activity in the third trimester.

KEYWORDS: Von Willebrand factor, pregnancy.

INTRODUCTION

Von Willebrand factor (VWF) is a large adhesive glycoprotein synthesized by endothelial cells and megakaryocytes, that circulates in the plasma as a series of heterogeneous multimers.^[1-3]

VWF has two major functions in hemostasis. First, it is essential for platelet-subendothelium adhesion and platelet-to-platelet interactions as well as platelet aggregation in vessels in which rapid blood flow results in elevated shear stress. Second, VWF is the specific carrier of factor VIII (FVIII) in plasma and protects it from proteolytic degradation, prolonging its half-life in circulation and efficiently localizing it at the site of vascular injury.^[4]

While a deficiency of VWF is responsible for a hemorrhagic diathesis (von Willebrand disease, VWD)^[5], there are increasing evidences that elevated VWF levels represent an important thrombotic risk factor.^[6,7]

Von Willebrand factor (VWF) is a large sialoglycoprotein. VWF circulates in normal plasma as a series of heterogeneous multimers and plays a critical role in primary hemostasis by mediating platelet adhesion to exposed collagen at sites of vascular injury. The multimeric composition of plasma VWF plays a key role in determining its functional activity. In particular,

high-molecular-weight multimers of VWF demonstrate enhanced binding affinities for both collagen and platelets and are therefore more efficient in mediating platelet recruitment. Following synthesis within EC, VWF is either constitutively secreted into the plasma or else stored within specific intracellular organelles known as Weibel-Palade (WP) bodies. This WP-stored VWF is enriched in high-molecular-weight multimers and is actively secreted following EC activation.^[8]

METHODOLOGY

This is a cross sectional study carried out in Khartoum state in the period from April to June 2017 forty Sudanese pregnant ladies were enrolled in this study. All subjects were aged between 19 to 45years and all gave their consent in accordance 3 ml of blood was collected from each subject and was transferred into 3.2% Trisodium citrate container at a concentration of 9 parts of blood to 1 part of the.

Enzyme linked immunosorbent assay (ELISA) for VWF: Ag in platelet poor plasma was measured using commercial ELISA kits from Technoclone Vienna, Austria. (Technozyme VWF: Ag ELISA (Lot no. RA32B00), according to the manufacturer's instructions.

Data were analyzed by statistical package for social science (SPSS) software using one sample T test.

Ethical consideration

Samples were collected after approval of the patients. Ethical approval was obtained from Alneelain university ethical review board.

RESULT

The result of present study showed that the overall mean of VWF level in studied pregnant ladies was 0.99 and there is significant difference when compared with normal values.

The results of the present study showed that the mean of plasma VWF level of pregnant ladies during first trimester was (0.9967 ± 0.3552) which was normal according to the normal range (0.5-1.5 U/ml).

The results of the present study showed that the mean of plasma VWF level of pregnant ladies during second

trimester was (01.0225 ± 0.2790) which was normal according to normal range (0.5-1.5 U/ml).

The results of the present study showed that the mean of plasma VWF level of pregnant ladies during second trimester was (0.9713 ± 0.3254) which was normal according to normal range (0.5-1.5 U/ml).

The result of correlation of plasma homocysteine and the age of the study population showed statistically significant correlation (P-value= 0.000). as shown in Table 1.

In different age group the mean of vwf was (28.5750 ± 6.7856) . In group age from 15-25 it was (0.8531 ± 0.3114) in 26-35 it was (0.9706 ± 0.1941) In 36-45 it was (1.3238 ± 0.3012) and there is significant difference between vwf and age; the vwf level increase with increase in age (p-value was 0.000).

		groups	Mean \pm Std. Deviation	Minimum	Maximum	P.value
	Age Groups	15-25 Years	0.8531 ± 0.3114	0.20	1.30	0.000
		26-35 Years	0.9706 ± 0.1941	0.59	1.50	
		36-45 Years	1.3238 ± 0.3012	0.98	1.65	
	Gestational Age	First Trimester	0.9967 ± 0.3552	0.20	1.61	0.814
		Second Trimester	1.0225 ± 0.2790	0.70	1.59	
		Third Trimester	0.9713 ± 0.3254	0.28	1.65	

- t-test was used to calculate P value
- P value less than 0.05 considered significant

DISCUSSION

Gestation is a challenge to haemostasis and it is associated with significant haemostatic changes. Several studies have evaluated von Willebrand factor in normal pregnancy, but in Sudan there is little knowledge about it's level among Sudanese pregnant ladies so we conducted this study to evaluate the vWF level.

The result of our study showed that there is no significant association between pregnancy and plasma vwf level (p-value=0.8) with evidence that but the result showed a significant association between vwf and age of pregnant ladies (P-value=0.000) and this findings is disagrees with Brenner B et al who found that in normal pregnancy, there is a marked increase in the procoagulant activity in maternal blood characterized by elevation of factors VII, X, VIII, fibrinogen and von Willebrand factor, which is maximal around term.^[8] Also our results disagrees with Castaman G et al who reported that the VWF and FVIII increase significantly during pregnancy in normal women, already within the first trimester, reaching levels by far >100 U/dL by the time of parturition.^[9] Our results agrees with MG Conlan who found that VWF level increases with age.^[11]

CONCLUSION

The mean vWF Ag level is within normal range in pregnancy however there is an insignificant decline in activity in the third trimester.

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