ASSESSMENT OF D- DIMER IN SUDANESE WOMEN WITH RECURRENT MISCARRIAGE

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ABSTRACT

D-dimer is a fibrin degradation product (or FDP), a small protein fragment present in the blood after a blood clot is degraded by fibrinolysis. It is so named because it contains two cross-linked D fragments of the fibrin protein. Recurrent fetal loss (RPL) is one of the most common causes of sterility. Several studies identified thrombophilia as the principal cause of recurrent pregnancy loss. During pregnancy, elevated markers of coagulation and fibrinolytic system activation, such as D-Dimer, indicate increased thrombin activity and increased fibrinolysis following fibrin formation. Testing for D-Dimer during pregnancy could therefore be useful for the diagnosis and prediction of a venous thromboembolic event (VTE) or pregnancy-related complications, and for monitoring antithrombotic treatment. This approach, however, is hampered by the fact that even an uncomplicated pregnancy in healthy women is accompanied by a substantial increase of D-Dimer. Miscarriage is the unintended loss of pregnancy before the period of viability. The loss of a wanted pregnancy is always distressing to the mother irrespective of its timing and this is true in recurrent abortion. The present study was aimed to assess D-dimer in Sudanese Women with Recurrent Miscarriage. This cross sectional study was conducted in Omdurman Maternity Hospital, Omdurman Khartoum state during September and October 2015. A total of (50) pregnant ladies with at least three miscarriage were enrolled in this study. 2.5 ml of venous blood were collected from each lady in trisodium citrate anticoagulant container, platelet poor plasma was mixed on the roller mixer machine and centrifuged for 15 minutes at 1500 g. The plasma was collected at the end of centrifugation and used for the D-dimer assay. They were assessed by using Fluorescence Immunoassay that measured the D-Dimer concentration in plasma. Clinical data were collected from patient medical records. The Sudanese women with recurrent miscarriage were aged between 25 and 35 years and The mean of D-Dimer for the Sudanese women was 2785.2020 ± 2910.7098. The study revealed a clear relationship between D-dimer and recurrent abortion.

Keywords: Fluorescence Immunoassay, Miscarriage, Antithrombotic.

INTRODUCTION

Pregnancy is a state characterized by hypercoagulability [1] and an increased risk of venous thromboembolism (VTE) [2], which is one of the leading causes of maternal death in developed countries [3]. Although the risk of VTE is highest during the postpartum period [4, 5], many antenatal VTE events occur in the first trimester [6-7]. Therefore, VTE in pregnancy is a significant concern and recommendations for prophylaxis have been reported [8]. Measurement of the D-dimer level is useful for excluding VTE in non-pregnant patients with suspected VTE [9-10]. Recurrent pregnancy loss (RPL) represents a major health problem with two-three or more losses in up to 5% of women of reproductive age and is actually one of the most common causes of female sterility [11]. D-dimer level is elevated physiologically during pregnancy [12-13], the cut-off value for non-pregnant 66 individuals is not useful because it has low specificity and positive predictive values. Theoretically, D-dimer can be a useful tool, and three studies have suggested that a 68 higher cut-off value is useful for excluding pregnant women without VTE [14-15].

During pregnancy, in fact, many changes have been observed in the haemostatic balance with a trend
towards thrombophilia in order to be prompt for the haemostatic challenge of delivery [16,1 7]. Thus, pregnancy is a condition associated to thrombophilia per se, and for this reason it is associated with the increase of several clotting factors (i.e. factor VIII, vWF, fibrinogen, factor VII) [18]. Moreover, other markers of a hypercoagulable state are also increased during pregnancy, such as D-dimer and/or prothrombin fragment 1+2. For this reason, episodes of venous thromboembolism (VTE) have been observed during pregnancy [19]. Moreover, women carrying further thrombotic risk factors (e.g. inherited thrombophilia show an addition-ally increased risk of thrombotic events during pregnancy, such as venous thromboembolism and/or abortion [20].

OBJECTIVES
The aim of this study was to assess D- dimer in Sudanese Women with Recurrent Miscarriage referring to Omdurman Maternity Hospital, Omdurman Khartoum state during the period of September to October 2015.

MATERIALS AND METHODS
Total of (50) Sudanese Women with Recurrent Miscarriage referring to Omdurman Maternity Hospital, Khartoum state, Sudan, were assessed by the D- Dimer using Ichromaredear which is the Fluorescence Immunoassay that the measured the D- Dimer concentration in plasma. About 2.5 mL of the blood was transferred into a tube containing sodium citrate anticoagulant solution. This was mixed on the roller mixer machine and centrifuged for 15 minutes at 1500 g. The plasma was collected at the end of centrifugation and used for the D-dimer assay.

Every Sudanese women with the at least three miscarriage and who gave written informed consent, were included of this study, women with recurrent miscarriage with clinical disorder associated with alteration in D-Dimer level were excluded.

STATISTICAL ANALYSIS
Data analysis was performed using SPSS (Statistical Package for the Social Science) version17.0statistical software. Dependent variable, percentage, mean, standard deviation, Chi-Square Test and range were calculated, P values<0.05wereconsideredas statistically significant.

Ethical considerations
This study was approved by the faculty of medical laboratory sciences, Al neelain University and informed consent was obtained from each participant before sample collection.

RESULTS
Total of (50) Sudanese Women with Recurrent Miscarriage referring to Omdurman Maternity Hospital, Khartoum state, Sudan were included in this study. The Sudanese women were aged between 25 and 35 years and the mean and Standard Deviation of D-Dimer for the Sudanese women was 2785.2020 ± 2910.7098, were not significant (P-value = .305).

DISCUSSION
In this Study for the first time the role of d-dimer was investigated in diagnostic screening of Sudanese women with recurrent miscarriage. D-dimer is a fibrin degradation product which usually is extensively screened in patients with suspected thrombosis and/or pulmonary embolism [20].

Our study found increased D- dimer in Sudanese women with recurrent miscarriage and this agree with study by Arkelet al and Humphries et al showed that increased d-dimer has been observed also in subjects affected by thrombophilia (inherited thrombophilia and/or acquired thrombophilia) showing hyper coagulable state without ongoing thrombosis.

Kline JA, Williams GW, Hernandez-Nino J et al showed that significantly increased d-dimer level during pregnancy was observed in this study and this is in agreement with the earlier findings, This study further revealed that the d-dimer levels increased significantly in the pregnancy and these are consistent with the reports of previous authors which showed progressive rise in the d-dimer concentrations of up to 600 ng/mL. There was no influence of maternal age on the d-dimer level during pregnancy in this study and this is in line with the report of Jeremiah et al.

CONCLUSION
In conclusion, the study have been associated with increased levels of d-dimer of Sudanese women with recurrent miscarriage.

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CONFLICT OF INTEREST:
The authors declare that they have no conflict of interest.

REFERENCES