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PREGNANCY;
THROMBOEMBOLIC COMPLICATIONS

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ABSTRACT: Thromboembolic complications are considered as the major cause of death in pregnant ladies. **Objectives:** To evaluate the presence of this complication. **Design:** Retrospective and comparative study. **Setting:** Services Hospital Lahore. **Period:** From 2010 to 2012. **Materials and Methods:** Forty pregnant ladies admitted in Services Hospital Lahore were subjected to estimation of fibrinogen level, FDP level and plasma D-dimer level within 24 hours of delivery. **Results:** Twenty controls and 40 patients (pregnant ladies) were studied. Fibrinogen level, FDP level and plasma D-dimer levels were increased in all patients as compared to the controls and this increase in all three investigations was statistically significant (P□ O.O5). **Conclusion**: Significant changes in Fibrinogen level, FDP level and plasma D-dimer level were found in pregnant ladies immediately after delivery (within 24 hours).

Key words: Fibrinogen Products (FDPs), Plasma D-dimer level

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INTRODUCTION

Pregnancy is associated with many physiological, biological, and anatomic changes, however, most systems return to non-pregnant state between the time of delivery and post-partum.[1] The post-partum period extends up to six weeks after delivery and has been arbitrarily divided in to, Immediate puerperium (first 24 hours after parturition), Early puerperium (extending up to first post-partum week), and Remote puerperium (extending up till the 6-th week post-partum).[2] The most striking maternal physiological changes occurring during pregnancy are associated with hematological system. Progressive activation of clotting system, enhanced platelet activation and changes in fibrinolysis during pregnancy and puerperium present a unique challenge to the pregnant lady and it is believed to be a hypercoagulable state.[3,4,5] Blood flow, particularly in the veins of limbs and pelvis may be reduced by pressure from pregnant uterus and bed rest. The combined effect of hypercoagulable state and venous stasis is responsible for the great risk of thromboembolism during pregnancy.[6] Venous thrombosis is the commonest complication during pregnancy and puerperium, and pulmonary embolism is now the single major cause of maternal death associated with pregnancy.[7] The greatest clinical problem is to recognize deep vein thrombosis and pulmonary embolism which can be effectively prevented by prophylactic anticoagulation.[8,9] Thus recognition of a hypercoagulable state has primary importance in treatment and prevention of thromboembolic phenomenon.[10]

The TAT-Complex (Thrombin–antithrombin-Complex), Prothrombin fragment 1 +2 and plasma D-dimer have been considered the sensitive markers for determining the functional state of the coagulation system. Their elevated levels have been shown to be associated with hyper coagulation and an increased risk of venous thrombosis.

Selection Criteria

Sixty women were selected between the age group of 20-40 years.

A. Twenty age matched normal, non-pregnant, non-diabetic and without a history of blood transfusion were selected as the control.
B. Twenty women in post-partum period within 24 hours following normal vaginal delivery.
C. Twenty women with caesarean-section within

24 hours of the operation.

Exclusion Criteria

Women with a history of diabetes, blood transfusion within 12 days or the women taking non-steroidal anti-inflammatory drugs were excluded from the study.

Blood Sampling

3.6 ml of blood with 0.4 ml of tri-sodium citrate was collected in a test tube for the determination of; Fibrinogen level, FDP level and plasma D-dimer test.

RESULTS

Forty (40) patients were included in this study, twenty with normal delivery and twenty with caesarean-section.

Comparison of fibrinogen concentration in normal delivery group (Group B), Caesarean-section group (group C) and controls (group A).

Group A	Group B	Group C
n=20	n=20	n=20
332.5±42.9	519.5±69.8**	540±75.6**
(267---383)	(446---653)	(446---653)

Table-I. Fibrinogen Assay
***P<0.05 significant*

The results of fibrinogen assay in different study groups are shown in table-I. In the control group (group A), the fibrinogen level was 332.5 ± 42.9 mg/dl with a range from 267 mg/dl to 383 mg/dl.

In normal delivery group (group-B), the fibrinogen level was 519.5±69.8 mg/dl with a range from 446 mg/dl to 653 mg/dl. This value was statistically significant as compared to control group (P <0.05).

In caesarean section group (group-C), the fibrinogen level was 540± 75.6 mg/dl with a range from 44 6 mg/dl to 653mg/dl. This value was also statistically significantly high as compared to control group (P < 0.05).

Statistically the difference in normal delivery group (fibrinogen level 519.5±69.8 mg/dl) and caesarean-section group (fibrinogen level 540±75.6 mg/dl) was non-significant (P> 0.05).

Comparison of fibrin/fibrinogen degradation products (µg/ml) in controls (Group A), normal delivery group (group B) and Caesarean-section group (group C).

Group A	Group B	Group C
n=20	n=20	n=20
20` < 5 µg/ml	17 < 20 µg/ml (85%)	12 < 20 µg/ml (60%)
(100%)	3 > 20 µg/ml (15%)	8 > 20 µg/ml (40%)

Table-II. Fibrin/Fibrinogen Degradation Products (FDPs)

The results of Fibrin/Fibrinogen Products (FDPs) are shown in table-II. The plasma FDP levels in the control subjects (group-A) were within normal limits (<5 µg/ml). In normal delivery group (group-B), the levels of FDP were more than normal limits (>5µg/ml) in all 20 subjects (100%) It was less than 20 µg/ml in 17 subjects (85%) and more than 20 µg/ml in 3 subjects (15%) in this group.

In caesarean-section group (group-C), the increased levels were found in all 20 subjects (100%). On further dilutions, FDP levels were found less than 20 µg/ml in 12 subjects (60%), while more than 20 µg/ml were observed in 8 subjects (40 %).

Comparison of plasma D-Dimer levels (µg/ml) in controls (Group A), normal delivery group (group B) and Caesarean-section group (group C).

Group A	Group B	Group C
n=20	n=20	n=20
20` < 0.5 g/ml	17 < 1.0 µg/ml (85%)	12 < 1 µg/ml (60%)
(100%)	3 > 1.0 µg/ml (15%)	8 > 1 µg/ml (40%)

Table-III. Plasma D-Dimer Test

The results of D-dimer Test in different groups are shown in table-III. The plasma D-dimer levels in control subjects (group-A) were within normal limits (< 0.5 µg/ml) in all 20 subjects (100%).

In normal delivery group (group B), the plasma D-Dimer levels were increased (> 0.5 μg/ml)in all 20 subjects (1000%).The raised levels were less than 1.0 μg/ml in 17 subjects (85 %), while more than 1.0 μg/ml were observed in 3 subjects (15%). In caesarean-section group (group-C), the plasma D-dimer levels were increased in all 20 subjects (100%). The increased levels were less than 1.0 μg/ml in 12 subjects (60%), while more than 1 μg/ml were observed in 8 subjects (40%).

DISCUSSION

Deep vein thrombosis and pulmonary embolism are being considered the major cause of maternal death during pregnancy and puerperium. The great clinical problem is to recognize deep vein thrombosis (DVT) and pulmonary embolism (PE). Immediate puerperium is the most dangerous period because highest number of thromboembolic complications occurs during this period[11]. In the present study plasma fibrinogen concentration levels were significantly elevated in both study groups. When these increased levels were compared with non-pregnant controls, the difference was significant. This finding was in conformity with different studies.[3,4,12]

The mean values of FDPs were found high in both B and C groups when compared with normal group-A. This is in accordance with the observations published.[5,12]

The mean values of plasma D-dimer were found significantly high in both normal delivery (group B) and caesarean-section (group C) patients, when compared to group-A (non-pregnant subjects). A similar observation was made by studies.[5,12]

CONCLUSION

It is recommended that the coagulation status of each lady should be properly evaluated in immediate puerperium and anticoagulation and other measures be adopted to prevent thromboembolic complications.

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Adventures fill your soul."

Jaime Lyn

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. M. Aslam Ahsan	Data Collection	
2	Dr. M. Rafique Cheema	Statistical Analysis	