# A FURTHER STUDY OF SOME HAEMOSTATIC CHANGES DURING PREGNANCY, LABOUR AND PUERPERIUM IN INDIAN WOMEN

by

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An increase in platelet count during pregnancy has been reported by several authors (1, 4 & 7). On the contrary, a low platelet count has been reported in pregnant women (11 & 9). The relationship between pregnancy and haemostatic changes is not well established. In the present study, an attempt has been made to observe some haemostatic changes in relation to pregnancy, labour and puerperium in Indian women.

*Material and Method*

Thirty non-pregnant healthy females (in the age group of 18 to 38 years) drawn from middle class families, were selected to act as control. This group included 20 medical students and 10 nurses.

Thirty multiparous women at full term pregnancy attending antenatal clinic and subsequently admitted to maternity wards of the Queen Mary's Hospital Lucknow, were followed in labour and on third day of puerperium to observe various haemostatic changes. These women were properly screened and investigated to exclude systemic or localized diseases. Cases suffering from anaemia or other blood disorder were discarded. These cases were divided in two groups:

Group 1, included thirty non-pregnant healthy females who acted as control.

Group 2, included thirty multiparous women who were further subdivided into group II (a), (b) & (c) consisting of same thirty women in each subgroups. They were followed at full term pregnancy, labour and third day of puerperium respectively.

Blood was withdrawn directly from the antecubital vein under aseptic precautions in a dry well fitted syringe. All investigations were carried out within one hour of collection of the blood. Following investigations were carried out.

1. Platelet count (8)
2. Bleeding time (3)
3. Clot retraction (6)
4. Capillary fragility test (Hess test).

*Results*

Table 1, shows a reduction in platelet count at full term pregnancy, labour and puerperium as compared to normal. This reduction was found to be highly significant in pregnancy and labour. However,

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there was a significant increase in platelet count in puerperium as compared to labour group of cases.

There was a significant decrease in clot retraction at full term pregnancy, labour and puerperium (Table III). A highly significant increase in clot retraction was observed during puerperium as compared to labour group of cases.

TABLE I

*Platelet Count—Lacs/cu.mm.*

| | Control | F.T.P. | Labour | Puerp. |
|---|---|---|---|---|
| Range .. | 1.50-3.70 | 1.10-2.95 | 1.00-2.90 | 1.85-3.20 |
| Mean .. | 2.54 | 2.03 | 1.56 | 2.45 |
| S.D. .. | ± 0.29 | ± 0.30 | ± 0.24 | ± 0.30 |

*Table Showing Values of Test Statistic 't'*

| Sources | Value 't' | P Value |
|---|---|---|
| Control & F.T.P. .. .. | 2.15 | P<.05 Significant |
| Control & labour .. .. | 14.25 | P<.01 Highly significant |
| Control & puerp. .. .. | 1.27 | P<.05 Insignificant |
| F.T.P. & labour .. .. | 6.55 | P<.01 Highly significant |
| Labour & puerp. .. .. | 12.62 | P<.01 Highly significant |

F.T.P. = Full Term Pregnancy; Puerp. = Puerperium.

Table II shows an increase in bleeding-time at full term pregnancy, labour and puerperium as compared to normal. The reduction in bleeding time during puerperium was found to be significant as compared to labour group of cases.

Capillary fragility test was found to be negative in control group, full term preg-

TABLE II

*Bleeding Time M-S*

| | Control | | F.T.P. | | Labour | | Puerp. | |
|---|---|---|---|---|---|---|---|---|
| | M | S | M | S | M | S | M | S |
| Range .. | — | 44 | — | 50 | 1 | 30 | 1 | — |
| | 2 | 52 | 3 | — | 4 | 33 | 2 | 35 |
| Mean .. | 1 | 31.5 | 1 | 56.4 | 3 | 1.5 | 1 | 38 |
| S.D. .. | ± | 33.1 S | ± | 36.1 S | ± | 38.9 S | ± | 23.4% |

*Table Showing Values of Test Statistic 't'*

| Sources | Value 't' | P Value |
|---|---|---|
| Control & F.T.P. .. .. | 2.79 | P<.01 Highly significant |
| Control & labour .. .. | 9.60 | P<.01 Highly significant |
| Control & puerp. .. .. | 0.88 | P<.05 Insignificant |
| F.T.P. & labour .. .. | 6.66 | P<.01 Highly significant |
| Labour & puerp. .. .. | 9.97 | P<.01 Highly significant |

F.T.P. = Full Term Pregnancy; Puerp. = Puerperium.
M = Minute; S = Second.

TABLE III
*Clot Retraction*

| | Control | F.T.P. | Labour | Puerp. |
|---|---|---|---|---|
| Range .. | 42-55 | 30-50 | 30-46 | 37-50 |
| Mean .. | 47.70 | 39.07 | 34.60 | 42.83 |
| S.D. .. | ± 3.72 | ± 4.81 | ± 4.33 | ± 4.78 |

*Table Showing the Values of Test Statistic 't'*

| Sources | Value 't' | P Value |
|---|---|---|
| Control & F.T.P. .. .. | 7.77 | P<.01 Highly significant |
| Control & labour .. .. | 12.52 | P<.01 Highly significant |
| Control & puerp. .. .. | 4.40 | P<.01 Highly significant |
| F.T.P. & labour .. .. | 3.78 | P<.01 Highly significant |
| Labour & puerp. .. .. | 6.97 | P<.01 Highly significant |

F.T.P. = Full Term Pregnancy; Puerp. = Puerperium.

nancy, labour and puerperium group of cases. (Table IV).

TABLE IV
*Capillary Fragility*

| Group | No. of cases | Results |
|---|---|---|
| Group I | 30 | Negative |
| Group II (a) | 30 | Negative |
| Group II (b) | 30 | Negative |
| Group II (c) | 30 | Negative |

*Discussion*

In the present study a reduction in platelet count was found at full term pregnancy, labour and puerperium. However, there was a rise in platelet count during puerperium as compared to labour. The present observations are in agreement with those of earlier authors (2 & 11) who reported a fall in platelet count in pregnancy and labour with a rapid rise during puerperium. The present findings are also supported by earlier investigators (5 & 9) who reported a significant and continous increase in platelet count during puerperium.

On the contrary, Wintrobe (12) reported a normal platelet count in pregnancy except a slight fall at the end of pregnancy and early stage of labour. Talbert *et al,* (10) did not get any significant change in platelet count during pregnancy and labour.

The reduction in platelet count at full term pregnancy and labour could be attributed to a fall in plasma proteins. (11). The other nontributing factors may be disintegration of platelets, release of 5-hydroxy tryptamine and thromboplastinogens to facilitate quick haemostasis. The postpartum rise in platelet count may also be attributed to the destruction of tissues and its subsequent absorption. This is supported by the fact that in normal parturition which involves denudation of large areas, a rise in platelet count was found (5), who attributed this rise during puerperium to a definite stimulus which occurs for platelets production during labour.

The increase in bleeding time at full term pregnancy, labour and puerperium is statistically significant. These observations are contrary to earlier author (4).

The bleeding time mainly depends on platelets, prothrombin and on the condition of capillary wall. This can easily explain the prolongation in bleeding time on the basis of low platelet count observed at full term pregnancy and labour. The shortening in bleeding time at puerperium could be due to a rise in prothrombin concentration and an increase in platelet count.

A study of clot retraction, showed a decrease at full term pregnancy, labour and puerperium. However, there was an increase during puerperium as compared to labour. From these observations, it appears that there is a direct-relationship between platelet count and clot retraction. The poor clot retraction observed in the present study, could probably be due to a low platelet count and not due to altered platelet functions. The increase in clot retraction during puerperium could be due to an increase in platelet-count. This view is supported by observations of Wintrobe (12).

Capillary fragility test was found to be negative in control cases at full term pregnancy, labour and puerperium. The positive tests are common in thrombocytopaenics, purpuric states, fibrinogenepaenias and other vascular lesions. However, in the present study none of the pregnant women had any such abnormal haemorrhagic episodes and also no abnormal platelet count was noted (minimum being 1/Lac/cu mm). However, this could be attributed to a raised fibrinogen blood level at full term pregnancy, labour and puerperium.

*Summary*

Haemostatic changes have been studied in pregnancy, labour and puerperium in Indian women. Platelet count and clot retraction time were found to be significantly reduced at full term pregnancy, labour and puerperium with a tendency to rise during puerperium as compared to labour.

Statistically a significant increase was found in the bleeding time at full term pregnancy, labour and puerperium. Capillary fragility test was found to be negative in control cases, full term pregnancy, labour and puerperium group of cases.

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