

Determination of Platelet Count and platelet Indices in Women after Normal Delivery in Shendi Town, Sudan

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Abstract

Background: Delivery is the process of birth. As the uterus contracts, the lower part stretches and thins, the cervix expands, the birth canal is formed, and the baby sinks through the pelvis, Platelet counts of less than 150,000 per cubic millimeter during uncomplicated pregnancies are described as gestational thrombocytopenia if no alternative cause is identified. Platelet counts may be even lower in women with pregnancy-related complications.

Objective: The purpose of this study was to measure the platelet count and platelet index in women after normal delivery.

Methods: This descriptive study was conducted in the city of Shendi during the period from March (2021) to January (2022) and measured the platelet count and platelet index in women after normal delivery. P.value of the test at the 95-confidence level was 0.000, less than 0.05, indicating significant variation between the case and control groups in platelet counts. Hundreds of venous blood samples were collected for use in this study, 50 of which were collected from the test group and 50 from the control group. Platelet counts and platelet indices (including platelet critical value (PCT), platelet distribution width (PDW), and mean platelet volume (MPV) were determined for all samples and performed in an automated manner using a hematology analyzer.

Results: The study showed that the mean platelet count in the delivery group was 147.84 compared to 263.14 in the control group. The P. value was significant (P. value 0.000). The most affected age for platelet count in the study group was 30 years and older, with a platelet count percentage of 84%. The most effective number of workers for platelet counts in postpartum women was 2 or more workers. The platelet count percentage was 84%. The study showed that the mean platelet volume (MPV) for the delivery group was 8.696 compared to 8.616 for the control group. The value of the test was not significant (0.620). The mean platelet distribution width (PDW) was 15.750 for the treatment group and 15.828 for the control group. The P. value was not significant (0.418).

Keywords: thrombocytopenia; platelet indices; delivery; shandi; sudan

Introduction

Platelets are produced in the bone marrow by cytoplasmic fragmentation of megakaryocytes, one of the largest cells in the body. Megakaryoblasts, precursors of megakaryocytes, are formed through a differentiation process from hematopoietic stem cells. Mature megakaryocytes are extremely nuclear and have a low nucleocytoplasmic ratio. Each megakaryocyte produces approximately 1000-5000 platelets. The primary function of platelets is the formation of mechanical plugs during the normal hemostatic

response to vascular injury [1]. These cells are composed of cytoplasmic granules and membranes containing procoagulant molecules. It highlights glycoproteins from the membrane that aim to enable platelet-platelet and platelet-endothelial interactions [2]. Labor is the process of childbirth. As the uterus contracts, the lower part stretches and thins, the cervix expands, the birth canal is formed, and the baby descends through the pelvis [3].

Platelet counts of less than 150,000 per cubic millimeter during uncomplicated pregnancies are

described as gestational thrombocytopenia if no alternative cause is identified. Platelet counts may be even lower in women with pregnancy-related complications. However, the occurrence and severity of thrombocytopenia throughout pregnancy are not defined [4].

Beginning in 1993, three large studies documented that 5 to 10% of women who had uncomplicated pregnancies had a platelet count of less than 150,000 per cubic millimeter at the time of delivery [5,7], which was described as gestational thrombocytopenia [8]. The normal distribution of platelet counts at the time of delivery and the absence of health problems in the mother and infant suggested that gestational thrombocytopenia was the result of lower platelet counts that occur in all women during pregnancy [6,7,9,10]. The current thinking is that platelet counts in all women begin to decrease in the mid-second to third trimester and continue to decrease until the time of delivery [8].

Mild thrombocytopenia in pregnant women at the time of delivery, described as gestational thrombocytopenia, has been well documented in three large studies during that past 24 years [4]. The reduced, but symmetrical, distribution of platelet counts at delivery suggests that a shift from normal values to lower platelet counts occurs in all women. These observations have led to the common belief that a physiologic change associated with pregnancy causes platelet counts to gradually decrease [4].

Materials And Methods

Study design

This is a cross-sectional descriptive study conducted in the city of Shendi to measure platelets and platelet parameters in a woman after normal delivery during the period from March (2021) to January (2022).

Study area

This research was conducted in Shendi City.

Study population

Hundreds of venous blood samples were collected into her EDTA container, 50 from normal women and 50 from women after vaginal delivery.

Inclusion Criteria

The study included women after normal delivery in Shendi.

Exclusion Criteria

Women after normal delivery excluded Shendi from this study.

Data collection tools

Data were collected using a self-administered, pre-coded questionnaire designed specifically to obtain research-useful information.

Ethical considerations

The procedure for taking venous blood is described for women who have given birth normally. All participants were briefed on the purpose and procedures of the study during the interview period. Valid written consent was obtained from all participants.

Data Analysis

Data are calculated and analyzed using the Social Science Software Program version 21.0 statistical package. Mean values are obtained and frequencies and percentages of other variables are calculated and displayed in numerical and tabular form. P. value is used to assess the significance of the results.

Results

The study showed that the mean platelet count in the delivery group was 147.84 compared to 263.14 in the control group. The p-value of the test was significant (*p-value* 0.000) (Table3). The most affected age in terms of platelet count in the study group was 30 years and older, with a platelet count percentage of 84% (Table1). The most effective number of laborers for platelet counts in postpartum women was 2 or more laborers. The platelet count percentage was 84% (Table2). statistical analysis of gathered data reveals that mean of platelet count in case of delivery group was 147.84, while it was 263.14 in control group, The *P. value* of the test was significant (*P. value* 0.000) (Table3). Mean of platelet volume (MPV) in case of delivery group 8.696, while in control group it was 8.616, The *P. value* of the test was insignificant (0.620) (Table4). Mean of platelet distribution width (PDW) in case of delivery group 15.750, While in control group it was 15.828, The *P. value* was insignificant (0.418) (Table5). Mean of platelet crit (PCT) in case of delivery group was 0.150, while in control group was 0.228 (Table6).

Table 1: Distribution of study population according to age.

Age group	Frequency	Percent %
15-20 years	6	12%
21-30 years	2	4%
More than 30 years	42	84%
Total	50	100.0

Table 2: Distribution of study population according to number of labors.

NO. labors	Frequency	Percent %
One	4	8%
Two	4	8%
More than two	42	84%
Total	50	100.0

Table-3: Comparison between test and control in platelet count in normal delivery.

Group	No	Mean	Std Deviation	P. value
Test	50	147.84	16.737	0.000
Control	50	263.14	61.097	

Table 4: Comparison between test and control in mean platelet volume (MPV) in normal delivery.

Group	No	Mean	Std Deviation	P. value
Test	50	8.696	0.901	0.620
Control	50	8.616	0.694	

Table 5: Comparison between test and control in platelet distribution width (PDW) in normal delivery.

Group	No	Mean	Std Deviation	P. value
Test	50	15.750	0.582	0.418
Control	50	15.828	0.347	

Table-6: Comparison between test and control in platelet distribution width (PDW) in normal delivery.

Group	No	Mean	Std Deviation	P. value
Test	50	0.150	0.032	0.000
Control	50	0.228	0.055	

Discussion

Delivery is the process of birth. As the uterus contracts, the lower part stretches and thins, the cervix expands, the birth canal forms, and the baby sinks through the pelvis. The platelet count and platelet index (PCT) were shown to be significantly decreased in the test group (P value < 0.05). The results of this recent study are consistent when compared to studies by [Jessica A. Reese](#) and her colleagues, who found that: At the time of delivery, 9.9% of the women with uncomplicated pregnancies had a platelet count below 150,000 per cubic millimeter. During the course of the uncomplicated pregnancies and deliveries, only 45 women (1.0%) had a platelet count below 100,000 per cubic millimeter ($P < 0.001$) [4]. Compared to his Journal of Physics study that found a decrease in her PLT during pregnancy, I agree. Postpartum hematologic values show a decrease in MPV but an increase in PLT, contradicting the study of [Acta](#)

[Obstetri0 ciaet Gynecologica Scandinavica](#). Section. The most valid age group for platelet counts with this test was 31 years and older. At ≥ 31 years, the platelet percentage was 84%, at (15-20) years, 12%, and at (21-31) years, it was 4%. The most effective number of labors in terms of platelet count in the study group was 2 or more workers. The proportion of platelet counts tested according to the number of labors was 84% for women with two or more workers, 8% for women with one birth, and 8% for women after giving birth. The number percentage was 8%. Delivery was 2 deliveries is 8%. Statistical analysis of the collected data showed that the mean platelet count was 147.84 for the delivery group and 263.14 for the control group. P value of the test was significant (P value 0.000). The mean platelet volume (MPV) for the treatment group was 8.696 versus 8.616 for the control group. The P value of the test was not significant (0.620). The mean platelet distribution width (PDW) was 15.750 for the treatment

group and 15.828 for the control group. The *P. value* of the test was not significant (0.418). The mean platelets (PCT) for the delivery group were 0.150 compared to 0.228 for the control group, The *P. value* of the tests were significant.

Conclusion

Delivery causes a slight decrease in platelet count, but within normal limits. There was no significant change in mean platelet volume (MPV) after normal delivery. There was no significant change in platelet distribution width (PDW) after normal delivery. Significant reduction in platelets (PCT) after normal delivery.

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Conflict of Interest

The author has affirmed that there are no conflicting interests.

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