



Original Article

THROMBOCYTOPENIA AT DIFFERENT STAGES OF PREGNANCY

AMAL S. ELHASSADE¹ AISHA BEN NASSER²

AUTHOR DETAILS

¹Faculty of medical technology,
Derna, Libya

²Faculty of medical technology,
Department of laboratory
medicine, Derna Libya.

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*Corresponding author email:

elhassade.amal@gmail.com

ABSTRACT

Background: Thrombocytopenia is a common finding in pregnancy, occurring in approximately 10 – 16 % of women. the normal range of platelet counts decreases, and it is not uncommon for the platelet counts to decrease as pregnancy progresses. Lower platelet count observed in the pregnant are due to normal physiologic changes, and has many common causes including gestational thrombocytopenia, viral and bacterial infection and preeclampsia complicated by hemolysis. **Objective:** the objective was to investigate thrombocytopenia during different stages of pregnancy. **Materials and methods:** Sixty three pregnant women were included in this study from different clinic in Derna city. Mean age (28 ± 1.4) year with a range (20 – 1.4) year. At the same time a group of Sixty three healthy non pregnant women mean age (29 ± 2.2) with a range (23 – 45) year to compare platelets count between them. **By** automated cell counter platelets from all pregnant and non pregnant were estimated. **Results:** Pregnant women had lower platelets count (mean 193× 10⁹/l) as compared to healthy non pregnant women (mean 250 × 10⁹/l). there was significant decrease in platelet count in pregnant as compare with non pregnant P ≤ 0.001. **Conclusion:** Platelet counts were performed on sixty three normal patients at different stages of pregnancy. Patients with complications of pregnancy known to influence the platelet count were excluded from the study. There was significant decrease in platelet count during pregnancy.

KEYWORDS: thrombocytopenia, gestational thrombocytopenia, idiopathic thrombocytopenia, pregnancy

INTRODUCTION

Thrombocytopenia is defined as a platelet count of less than 150×10⁹/l. Normal pregnancy is generally thought not to affect the platelet count^[1] but it has been suggested that the normal range is lower in pregnancy, and that the count falls in the third trimester.^[2-4]

Detection of thrombocytopenia in pregnant requires consideration. the condition associated with pregnancy which cause thrombocytopenia. an additional important consideration is the possible effect on the fetus and its delivery.

Thrombocytopenia occurs in approximately 10- 16 % of pregnant women^[3]. Thrombocytopenia in pregnancy has many common causes, including gestational thrombocytopenia, viral and bacterial infection and preeclampsia complicated by hemolysis, acute fatty liver, disseminated intravascular coagulation, thrombotic thrombocytopenic purpura and hemolytic uremic syndrome.^[2]

Gestational thrombocytopenia is considered the most prevalent cause of thrombocytopenia in pregnancy and accounts for 65% - 80% of cases of thrombocytopenia during pregnancy^[1,4]. It is defined by a platelet count of no less than 70 x 10⁹, especially during the third trimester. Increased blood volume, an increase in platelet activation, and increased platelet clearance contribute to a physiologic decrease in the platelet count^[3].

The history and physical examination are important in providing clues to the diagnosis of thrombocytopenia in pregnancy, either by disclosure of preexisting thrombocytopenia or bleeding symptoms or by clinical findings of hypertension, edema, neurologic abnormalities, or signs of autoimmune disease such as idopathic thrombocytopenia purpura (ITP).

ITP occurs in approximately 2 of 1000 pregnant women^[4]. ITP may develop at any time during pregnancy, but is often initially recognized in the first trimester and is the most common cause of isolated thrombocytopenia in this time. It

is characterized by a moderate to severe decrease in the platelet count, and constitutes approximately 5% of cases of thrombocytopenia in pregnancy.^[3,5]

Naturally, ITP can present for the first time during a pregnancy. Unless platelet counts are markedly decreased, or another cause of thrombocytopenia is obvious, the differential diagnosis between ITP and gestational thrombocytopenia might be difficult in view of recent data.

In ITP autoimmune IgG cross the placental barrier and bind to relevant epitopes of fetal platelets, which are then cleared by the fetal reticuloendothelial system. Although neonatal thrombocytopenia was found to be more common in infants of mothers with ITP, no correlation was found between neonatal platelet counts and maternal platelet counts, or platelet-associated immunoglobulin's in maternal or cord blood.^[6]

Elevated liver enzymes and low platelet count (HELLP) and preeclampsia syndrome are considered to be the cause of thrombocytopenia in pregnancy in about 21% of cases.^[7,8]

Platelets count return to normal within 3-5 days of delivery.^[3] The HELLP syndrome is associated with serious clinical problems, both in mothers and in their babies. These problems include disseminated intravascular coagulation (DIC), placental abruption, acute renal failure, and adult respiratory distress syndrome (ARDS).

The maternal mortality is reported to be around 3.3%, while the prenatal mortality of babies is reported to be around 22%.

There are additional, rarer causes of thrombocytopenia during pregnancy, including thrombotic thrombocytopenic purpura (TTP), hemolytic uremic syndrome (HUS), disseminated intravascular coagulation (DIC), systemic lupus erythematosus (SLE), anti-phospholipid antibodies syndrome (APLA), or it may be induced by drugs (such heparin).

The evaluation of the pregnant patient with thrombocytopenia need the history and physical examination which is important in providing clues to the diagnosis of thrombocytopenia in pregnancy, either by disclosure of preexisting thrombocytopenia or bleeding symptoms or by clinical findings of hypertension, abnormalities or signs of autoimmune disease.

The aim of this study was to investigate prevalence thrombocytopenia at different stages of pregnancy in Derna city.

MATERIAL AND METHODOLOGY

Study design: A case control study was designed evaluate platelets count in pregnant women who never suffering any disease and compare their finding platelets count with healthy non pregnant women.

Ethical approval: Approval was granted from the Research and Ethics Committee of the faculty. Consent was gotten from all participated patients.

Sample size and sampling method:

A sample of 126 women, 63 were pregnant women and 63 were healthy non pregnant women were included in the study and measure platelets count by automated cell counter for all.

Inclusion criteria: Pregnant women aged 20 year and more were selected at different stage of pregnancy, most of them were multiple pregnant, control (non pregnant) aged 29 and more were selected randomly.

Exclusion criteria: the study include healthy pregnant women who did not use any drugs affect platelets count and did not have any previous disease affect platelet

Methodology: By Automated cell counter platelets ((sysmex X 21) from all pregnant and controlled were estimated.

Five ml of blood samples from pregnant and controlled were collected by vein puncture in EDTA container. A whole blood specimen containing formed cellular elements, 20 µl of blood is diluted with a premeasured 1.9 ml volume of ammonium oxalate, sorensons phosphoate buffer, thimerosal, and purified water. Fresh capillary or anticoagulant whole blood is added to the diluents, which lyses erythrocytes but preserves platelets for 1:10 dilution of the blood.^[9] The diluted specimen is added to a hemocytometer for manual enumeration of platelets in special circumstances.

Statistical analysis: Result are expressed as mean values ± SD. Data were analyzed by t test using. Significant difference was considered to exist at P value less than 0.05.

RESULT

A total of 126 women, 63 pregnant women mean age (28.6 ± 1.4) year with a range

(20-41) year, and 63 non pregnant women as healthy control mean age (29.4±2.2) with a range (23-45) year. Forty three of the pregnant age of gestation was ≥ 30 weeks and Twenty age of gestation between 15-10 weeks.

In this study we compare platelets count in pregnant with platelets count in non pregnant, without comparing age of gestation. Platelets count in pregnant were (193 ± 51.69 × 10⁹/ l) whereas platelets count in non pregnant were (250± 59.96 × 10⁹/ l).

There was significant decrease in platelet count in pregnant as compare with non pregnant P ≤ 0,001 (Table 1).

Table 1. Platelet in pregnant, non pregnant

Parameters	Control	Pregnant
Number of cases	63	63
Observed range	164 - 401	121 - 342
M ± SD	250±59.6	193.6±51.92

in pregnant vs non pregnant : platelets t = 5.64 df = 124
P ≤ 0.001, P ≥ 0.05 not significant ; P ≤ 0.05 significant.

DISCUSSION

Low platelets during pregnancy are a common finding during pregnancy. The standard platelet count is between 150 to 400 million per milliliter of blood. However, this count may vary from person to person. You are said to have a low platelet count during pregnancy when the count goes below the prescribed standard.

Blood platelets in pregnancy are normal most often but drop slightly in just about 8% of women. Low blood platelets in pregnancy are termed as a condition called gestational thrombocytopenia. This usually happens during the pregnancy third trimester but has no untoward reaction on the fetus and returns to normal once the child is born.

The present study was aimed at investigating thrombocytopenia during pregnancy. In this study 63 pregnant women were included, platelet count measured in all blood samples as a part of complete blood count, at the same time we measured randomly in others 63 healthy females (non pregnant) as a control subject, data statistically was revealed that pregnant woman had significantly decrease platelet counts as compared to non pregnant (control subjects).

Thrombocytopenia is the second most common hematologic abnormality during pregnancy and is usually a benign condition.

Parnas et al found that, the common cause of moderate to severe thrombocytopenia in pregnancy is mainly GT, while ITP, preeclampsia, and HELLP syndrome are less common.^[10]

Normal pregnancy is associated with a physiologic fall in the platelet count that is characterized by a leftward shift in the platelet count distribution.^[11] The reason for this decline is unknown, although it has been speculated that these changes may reflect dilution, decreased platelet production, or increased platelet turnover during pregnancy.^[12] Regardless, the fall in the platelet count during normal pregnancy results in some pregnant women developing platelet counts that falls into the thrombocytopenic range. Generally, these individuals have mild thrombocytopenia that first becomes apparent in the mid-second to third trimester of pregnancy. Although there is no well established minimum value for the platelet count in gestational thrombocytopenia, most experts consider this diagnosis to be less likely when the platelet count falls below 70,000/ μ l. the common cause of decreased platelets count result from physiological fall in platelets count, this change may reflect dilution, decreased or increased destruction of platelets counts.

CONCLUSION

There are decreased in platelets count at different stages of pregnancy, most low platelet counts observed in the pregnant patients are due to normal physiologic changes.

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