

Original Research

Prevalence of thrombocytopenia during pregnancy among Libyan women

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Abstract

Thrombocytopenia is a recurrent hematological disturbance in pregnancy. In pregnant women with thrombocytopenia, the risk of excessive bleeding during or after child-birth is high, particularly when they require a cesarean section, other surgery during pregnancy, labor or in the puerperium period. The objective of this study was to assess the prevalence of thrombocytopenia among pregnant women attending antenatal care service at Tripoli University Hospital, Libya. A cross-sectional analysis was used to determine the prevalence thrombocytopenia in pregnant women attending prenatal care services from July to December, 2020 at Tripoli University Hospital. A structured pretested questionnaire was used to obtain socio-demographic data, nutritional factors, obstetrics and gynecological factors, history and clinical conditions. Venous blood samples were collected for platelet count and other platelet parameters, which determined by using Sysmex automation. A total of 72 participated women; about 40%, 35% and 259% of the participants were in the third, second and first trimester, respectively. The mean number of children that women have was 2, with 2.7% having just one child and 47% having three or more children. This study concluded that the prevalence of thrombocytopenia and mostly with mild form is 8.3% and as being greater among pregnant women living in rural areas. Health care providers should do thrombocytopenia test regularly for every pregnant woman in order to prevent excessive bleeding during pregnancy, especially whom living in rural areas.

Keywords: Antenatal care, bleeding, pregnant women, Libya, thrombocytopenia

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Introduction

Thrombocytopenia considered as the second leading cause of blood disorders in pregnancy after anemia. It is defined as a condition of low blood platelet counts ($< 150,000 \times 10^3/\text{mm}^3$) [1]. Further, the occurrence of hemo-dilution, increased of consumption in peripheral tissue and increased aggregation causes physiological decline in platelet counts during a normal pregnancy. However, physiological thrombocytopenia of pregnancy is mild and has no adverse effects on mothers and fetuses. Severe medical-related thrombocytopenia, on the other hand, may have substantial effects on maternal-fetal and necessitate specific monitoring and effective treatment [2]. Gestational thrombocytopenia (GT), idiopathic

thrombocytopenic purpura (ITP) or preeclampsia causes a greater low of platelet counts during pregnancy. Other causes include infection such as malaria or folate deficiency and diseases (leukemia and aplastic anemia), nevertheless, 70 - 80% of all cases of thrombocytopenia in pregnancy are elucidated by GT. Hypertensive and immune thrombocytopenic purpura conditions were account for 20% and 4%, respectively [3]. This disease has been the causes of unneeded, sometimes invasive, additional tests and cesarean deliveries before giving birth and it can be expensive and distressing to the patient when obstetricians need to assess and treat thrombocytopenia and can lead to an adverse outcome. There is a paucity of studies assessed the prevalence of thrombocytopenia

among Libyan patients. Earlier studies conducted in Tripoli reported a prevalence rate of 17% [4], 19% [5] and thrombocytopenia increased with the age of pregnant women. Thus, in light of a lack of evidence on prevalence, severity and causes of thrombocytopenia, obstetricians in our region do not have an understandable guide to treat pregnant women with thrombocytopenia. In addition, no appropriate data from other regions in Libya is available. Hence, this study was aimed to determine the prevalence of thrombocytopenia among pregnant women attending Tripoli University Hospital and evaluate the extents of causal reasons that can provide valuable evidence to the management of complications that related to thrombocytopenia in Libyan pregnant women.

Materials and methods

Study settings and population: the design of a hospital-based cross-sectional study was used to determine the prevalence thrombocytopenia among pregnant women attending Tripoli University Hospital's antenatal care service from July to December, 2020. The study targets all women between the ages 15 - 49 years' old whom visited Tripoli University Hospital for antenatal treatment during the study period.

Ethical approval has been received from University of Tripoli's Ethical Committee of the Faculty of Medical Technology (2020). In order to participate in this study, each study participant invited to participate willingly and given a written informed consent. During the collection and preparation of specimens, confidentiality was maintained. Each study participant informed about the objective of the study. Voluntary contribution and the right to withdraw at any time that highlighted. In addition, any study subjects with an irregular test outcome were denoted to their doctors for an additional examination and management.

Data collection: after obtaining written informed consent, socio-demographic dietary factors, obstetrics and gynecological factors, history and clinical conditions were obtained from each study contributor using a pre-validated structured questionnaire. Those who have regular blood pressure and have no platelet aggregation on peripheral film investigation were involved in the study. The exclusion criteria were pregnant women on anti-inflammatory medications, women with bleeding disorders, splenomegaly or hypertension or who were on antiretroviral therapy.

Under aseptic settings, approximately 2 ml of venous blood were collected and further transferred in to ethylene

diamine tetra acetic acid (EDTA) anticoagulant tubes by mixing for five minutes. The specimens were labelled with each study participant's identification number. The complete blood cell counts were determined using SysmexKX 21 analyzer (Sysmex Corporation, Bellport, NY, USA) which applies electric impedance principle (Sysmex user manual, 2002) following the manufacturer's instructions. Furthermore, for all blood samples, thin blood films stained with wright stain were prepared to confirm thrombocytopenia and exclude platelet aggregation and malaria parasite presence.

Data analysis: the data was entered and analyzed using SPSS statistical computer software version 22 (IBM Corporation, Armonk, NY, USA). Data were presented in frequencies and percentages.

Results

Socio-demographic characteristics of study participants: a total of 72 women patients from the antenatal care at Tripoli University Hospital was included in this study. Fifty-six (77.8%) of the study subjects were aged < 30 years. The mean (\pm standard deviation, SD) age of the study participants were 25.67 (\pm 4.69) years. Most of the study subjects lived in an urban residence (88.8%, n = 64). Among the study subjects, 71 women were married (98.6%) and 45 women were housewives by occupation (62.5%), (**Table 1**).

Table 1: Socio-demographic characteristics of the participants

Socio-demographic variables	Frequency (%)
Age category	
15 – 19	5 (6.9)
20 – 24	23 (31.8)
25 – 29	28 (38.7)
30 – 34	10 (13.8)
35 – 39	6 (8.3)
Place of residence	
Urban	64 (88.8)
Rural	8 (11.2)
Occupation	
Housewife	45 (62.5)
Employed	23 (31.9)
Student	4 (5.5)
Marital status	
Divorced	1 (1.4)
Married	71 (98.6)

Reproductive characteristics of pregnant women: among the study subjects, 38.8%, 36.1% and 24.9% were in the

third, second and first trimester, respectively. The mean number of children that the women had were 2, with 2.7% having only one child and 47% having three and more children (Table 2).

Table 2: Reproductive characteristics of pregnant women

Reproductive characteristics	Frequency (%)
Gestational stages	
First trimester	18 (24.2)
Second trimester	26 (36.1)
Third trimester	28 (38.8)
Number of children	
One	2 (2.7)
Two	36 (50)
Three	12 (16.6)
Four and more	22 (30.5)

Hematological profiles of the study subjects: the mean \pm SD hematologic profiles of the study subjects were: platelet counts = $238.85 \pm 74.57 \times 10^9$ per L, white blood cells (WBC) counts = $9.35 \pm 2.85 \times 10^9$ per L and red blood cells (RBC) counts = $4.43 \pm 0.40 \times 10^{12}$ per L (Table 3).

Table 3. Hematologic profiles of pregnant women

Hematological profile	Mean \pm SD
Platelet	$238.85 \pm 74.57 \times 10^9/L$
WBC	$9.35 \pm 2.85 \times 10^9/L$
RBC	$4.43 \pm 0.40 \times 10^{12}/L$

Prevalence of thrombocytopenia: the prevalence of thrombocytopenia in this study was found in 6 women (8.3%), the remaining 69 women (91.7%) had platelet counts in a normal range. Among the pregnant women with thrombocytopenia whom involved in this study, 74% of them had mild thrombocytopenia, 15.7% had moderate thrombocytopenia and the others had severe thrombocytopenia (10.3%).

Discussion

The present study was conducted in order to determine the prevalence thrombocytopenia among pregnant women attending the antenatal care at Tripoli University Hospital. Thus, the prevalence thrombocytopenia among pregnant women was found to be 8.3%, which almost comparable to the other results of studies conducted by Elgodwi (8%) [5], Shamooun et al. (8%) [6], Myers (8% - 10%) [7] and Jeffrey et al. (8%) [8]. However, the finding of this study was lower than other studies conducted in Tripoli, Libya

(17%) [4], Switzerland (11.6%) [9], Ethiopia (13.5%) [10] and Ghana (15.3%) [11]. The disparity may be attributable to the differences in the study subjects' socio-demographics or to the differences in the study design. In the current study, 74% of pregnant women with thrombocytopenia had mild thrombocytopenia, 15.7% had moderate thrombocytopenia, and the remaining 10.3% had extreme thrombocytopenia. These findings are consistent with other previous studies which reported a high prevalence of moderate thrombocytopenia [10, 12]. Furthermore, the current study found no difference in thrombocytopenia levels between the trimesters which was in line with the previous published studies [10].

Conclusion

Thrombocytopenia is a serious concern among Libyan pregnant women with prevalence of 8.3% and predominance of mild type thrombocytopenia. Thrombocytopenia is more common in pregnant women from rural areas. Hence, it is recommended that a platelet count should be included in the prenatal screening of pregnant women, particularly if they live in a rural area.

Conflict of Interest

The authors declare that no potential competing of interest.

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