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Assessment of Complete Blood Count in Sudanese Pregnant Women in Different Trimesters in Khartoum State

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Abstract:

During pregnancy, the women undergo many physiological changes. The hematological change can be; increase in plasma volume by 50% and the red blood volumes only by 20-30% consequently, the hematocrits decrease due to the dilution. The white blood cell count increases and may peak at over 20mg/mL in stressful conditions conversely there is a decrease in platelet concentration to minimal normal values of 100_150. The most significant hematological changes are physiological anemia, neutrophilia, mild thrombocytopenia, increased procoagulant factors and diminished fibrinolysis. This case and control study conducted in period January 2016 to march 2016 to detect abnormalities in complete blood count (CBC) in Sudanese pregnant women in different trimesters. Study includes 60 samples collected from 20 first trimester woman, 20 from second trimester and 20 from third trimester of pregnancy. The results of WBCs count and platelet were significant within normal for both case and control with p.value (0.02 and 0.02, respectively). PCV was significant decreased with p.value (0.00). Results of differential WBCs significant normal neutrophil, lymphocyte with p.value for both (0.00), and insignificant normal of mix (basophil, eosinophil, and monocyte) with p.value (0.3).

Conclusion: *The study concluded that, there is significant in within normal for both case and control with p.value (0.02 and 0.02,*

respectively), and PCV was significant decreased with p.value (0.00). Differential WBCs significant normal neutrophil, lymphocyte with p.value for both (0.00), and insignificant normal of mix (basophil, eosinophil, and monocyte) with p.value (0.3).

Key words: Pregnancy, Trimester, CBC.PCV

INTRODUCTION:

During pregnancy, the women undergoes many physiological changes, including cardiovascular, hematological, metabolic, renal and respiratory changes that become very important in the event of complication the body must change its physiological and homeostatic mechanisms in pregnancy ,level of progesterone and estrogen rise continually throughout pregnancy, suppressing the hypothalamic axis and subsequently the menstrual cycle[1]. The hematological change can be; increase in plasma volume by 50% and the red blood volumes only by 20-30% consequently, the hematocrits decrease due to the dilution. The white blood cell count increases and may peak at over 20mg/mL in stressful conditions conversely there is a decrease in platelet concentration to minimal normal values of 100_150 [2]. The most significant hematological changes are physiological anemia, neutrophilia, mild thrombocytopenia, increased procoagulant factors and diminished fibrinolysis [3].

MATERIALS AND METHODS:

This case control study was conducted in Khartoum state – Sudan in period from January to March (2016), to assess the complete blood count among pregnant women in different trimesters in Khartoum state. A questioner was used to obtain demographic and clinic data including age , number of

pregnancies , stag of trimesters , use of supplement, history of abortion ,present of disease during pregnancy and whether they regally visit clinics ,and blood samples collected from 20 first trimester woman, 20 from second trimester and 20 from third trimester of pregnancy. Probability sampling of 60 pregnant women in Bahri hospital, venous blood sample (2ml) was collected in EDTA container and hematological parameters were tested.

METHODOLOGY:

Full automated cell counter Sysmex KX N21.

RESULT:

Pregnant women were taken as population of this study and healthy person as control. The results of WBCs count and platelet were significant within normal for both case and control with p.value (0.02 and 0.02, respectively), PCV was significant decreased with p.value (0.00) and also results of differential WBCs significant normal neutrophil, lymphocyte with p.value for both (0.00), and insignificant normal of mix (basophil, eosinophil, and monocyte) with p.value (0.3)(Table 1). pregnant women were classified into 3 age group (<20year, 20-30year, and 31-40 year), the results in correlated to age were normal WBCs in all age group, also normal PCV and platelet in each age group, and in differential WBCs count neutrophil was normal, lymphocyte was normal, and mix (basophil, eosinophil, and monocyte) were normal (table 2).

The pregnant women were classified in correlated to stage of pregnancy into 3 group (first trimester, second, and third), the results showed significant normal WBCs count with p.value (0.00), PCV was significant decreased in in second trimester with p.value (0.05), platelets were insignificant

within normal, and in differential WBCs count were significant normal neutrophil, lymphocyte, and mixed cell with p.value (0.00, 0.00, and 0.01, respectively) (in table 3).

Table 1: Mean of test with case and control:

Sample	WBC	PCV	PLT	Neutrophil	lymphocyte	Mix
Case	8.6	31.6	245	66.4	23.1	10.8
Control	7.1	38.6	272	54.2	31.8	16.8
p.value	0.02	0.00	0.02	0.00	0.00	0.30

Table 2: Mean of test with case age:

Age	Number	WBC	PCV	PLT	Neutrophil	lymphocyte	Mix
>20	6	9.6	31.4	271	69.5	20.1	10.4
20-30	42	8.6	32.2	250	65.7	23.5	10.8
31-40	12	8.1	29.8	218	67.4	23.2	11.0

Table 3: Mean of test with case stage of pregnancy:

Stage of pregnancy	no	WBC	PCV	PLT	Neutrophil	lymphocyte	Mix
First	20	7.4	32.0	250	60.5	28.0	12.5
Second	20	8.5	29.9	246	67.5	22.1	10.3
Third	20	9.9	32.9	240	71.2	19.2	9.7
p.value		**0.00**	**0.05**	**0.70**	**0.00**	**0.00**	**0.01**

DISCUSSION:

The results of WBCs count, PCV, and platelet were significant within normal for both case and control with p.value (0.02, 0.00, and 0.02, respectively), and also results of differential WBCs significant normal neutrophil, lymphocyte with p.value for both (0.00), and insignificant normal of mix (basophil, eosinophil, and monocyte) with p.value (0.3). This agrees in PCV value and disagrees in WBCs and platelet with Mahmoud Mohamed Elgari [4]. The result revealed that there were significant decreased in packed cell volume (PCV)(p. value <0.05) the result TWBCs count increased significantly (P. value <0.05) but platelets count significantly decrease than the normal control (P. value <0.05) Abdelgader et al. also agree with another study

Akinbami et al [5].Also our result of PCV and platelets is disagree with Aida Awad Salih Mohammed [6].

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