

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى:

يَا أَيُّهَا النَّاسُ إِن كُنتُمْ فِي رَيْبٍ مِّنَ الْبَعْثِ فَإِنَّا خَلَقْنَاكُمْ مِّن تُرَابٍ ثُمَّ مِنْ نُطْفَةٍ ثُمَّ مِنْ عَلَقَةٍ ثُمَّ مِنْ مُّضْغَةٍ مُّحَلَّقَةٍ
وَغَيْرِ مُحَلَّقَةٍ لِّنُبَيِّنَ لَكُمْ ۚ وَتُقَرَّفُ فِي الْأَمْرِ حَامٍ مَا شَاءَ إِلَهِي ۚ أَجَلٌ مُّسَمًّى ثُمَّ نُخْرِجُكُمْ طِفْلًا ثُمَّ لِّنَبْلُغُوا
أَشَدَّكُمْ ۖ وَمِنْكُمْ مَّن يُؤَفِّقُ ۖ وَمِنْكُمْ مَّن يُرَدِّدْ إِلَىٰ أَمْرِ ذَلِ الْعُمُرِ لِكَيْلَا يَعْلَمَ مِن بَعْدِ عِلْمٍ شَيْئًا ۚ وَنَرَى
الْأَرْضَ هَامِدَةً فَإِذَا أَنزَلْنَا عَلَيْهَا الْمَاءَ اهْتَزَّتْ وَرَبَتْ وَأُتْبِتَتْ مِن كُلِّ زَوْجٍ بَهِيجٍ

صدق الله العظيم

سورة الحج الآية رقم 5

Dedication

To:

My mother and the soul of my father

MY Wife

Sons and Daughters

My brothers, sisters

MY teachers

My friends

Acknowledgements

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Abstract

This is a case control study, conducted in Khartoum locality during the period from February to March 2015, to determine CBC (Hb, RBCs, HCT, MCV, MCH, MCHC, Platelets, WBCs, Leukocyte differential count, RDW, and MPV) of Eighty (80) healthy Sudanese pregnant women at third trimester as case and forty (40) non pregnant women at similar age in Khartoum locality were used as control in this study. pregnant women at third trimester were informed about the study and agreed for participation as case. A questionnaire was designed to collect information about the study group such as age, number of pregnancies, month of pregnancy, history of abortion and whether they visit the clinics regularly. 2.5 ml venous blood was collected in EDTA anticoagulant container. Automated hematological analyzer (Sysmex KX – 21N) was used to measure Complete Blood Count, and the results were analyzed by independent T test and one way ANOVA test of the SPSS computer programme. The means were found as following : Hb (11.8 ± 1.19 g/dl), Hct (35.2 ± 3.0 %), TRBCs ($4.1 \pm 0.35 \times 10^{12}/L$), MCV (84.1 ± 5.62 fl), MCH (27.8 ± 3.73 pg), MCHC (33.4 ± 1.48 %), RDWSD (44.3 ± 3.90 fl), RDWCV (14.2 ± 1.31 %), TWBCs ($7.4 \pm 2.44 \times 10^9/L$), lymphocytes percentage (26.6 ± 9.90 %), neutrophils percentage (63.4 ± 11.31 %), lymphocytes absolute ($1.8 \pm 0.66 \times 10^9/L$), neutrophils absolute ($4.8 \pm 2.19 \times 10^9/L$), platelets count ($212 \pm 64.5 \times 10^9/L$), PDW (14.9 ± 2.19), MPV (9.5 ± 1.60 fl) in case and Hb (12.0 ± 1.19 g/dl), Hct (38.7 ± 3.55 %), TRBCs ($4.5 \pm 0.45 \times 10^{12}/L$), MCV (85.2 ± 8.07 fl), MCH (26.6 ± 2.65 pg), MCHC (31 ± 1.33 %), RDWSD (46.6 ± 6.13 fl), RDWCV (14.3 ± 1.29 %), TWBCs ($5.9 \pm 1.63 \times 10^9/L$), lymphocytes percentage (38.9 ± 8.01 %), neutrophils percentage (49.1 ± 11.89 %), lymphocytes absolute ($2.2 \pm 0.46 \times 10^9/L$), neutrophils absolute ($3.0 \pm 1.41 \times 10^9/L$), platelets count

($289.5 \pm 79.74 \times 10^9/L$), PDW (15.2 ± 0.82), MPV (9.3 ± 1.21 fl) were found in control group. This study was concluded that: there was significant decreased ($p \leq 0.01$) in means of Hct, TRBCs, RDWSD, lymphocytes percentage and absolute count and platelets count in pregnant women when compared with control, significant increased ($p=0.00$) in means of MCHC, TWBCs and neutrophils percentage and absolute of pregnant women more than control. There was significant increased in means of MPV ($p=0.01$) of with abortion when compared to without abortion. According to numbers of children there was significant increased ($p=0.01$) in means of Hct, MCV, and RDWSD in < 2 more than > 2 children. According to their age group there was significant increased ($p \leq 0.03$) in means of Hct, MCV, and MCH in < 30 more than > 30 years.

مستخلص البحث

اجريت هذه الدراسة بطريقة الحالات الإفرادية المقترنة بحالات ضابطة في محلية الخرطوم في الفترة من فبراير 2015 إلى مارس 2015 لقياس صورة الدم الكاملة عند النساء الحوامل خلال الثلاثة أشهر الأخيرة من الحمل. تم إختيار ثمانين من النساء الحوامل وفقا لنظام الإختيار المحدد وعوملن كعينات إختبارية بعد اخذ موافقتهم، وتم إختيار أربعين إمراة من غير الحوامل وفقا. لنظام الاختيار المحدد وعوملن كعينات ضابطة. تم اخذ 2.5 ملي لتر عينة دم وريدية من كل متبرعة ووضعت في إناء بلاستيكي يحتوى على مانع تجلط (EDTA) وتم اختبارها لقياس صورة الدم الكاملة بإستخدام جهاز تحليل الدم الآلي. ثم تحليل النتائج بإستخدام الفرق بين المتوسطين غير المعتدين في برنامج الحزم الإحصائية للعلوم الإجتماعية المحوسب. ووجدت المتوسطات كالاتي: متوسط خضاب الدم (11.8 ± 1.19 g/dl)، الدم المكس (35.2 ± 3.0 %) ، عدد كرات الدم الحمراء ($4.1 \pm 0.35 \times 10^{12}$ /L) ، متوسط حجم الخلية الحمراء (84.1 ± 5.62 fl) ، متوسط تركيز خضاب الدم في الخلية الواحدة (27.8 ± 3.73 pg) ، تركيز خضاب الدم في 100 مل من الدم (33.4 ± 1.48 %) ، انتشار الخلايا الحمراء (44.3 ± 3.90) ، عدد كرات الدم البيضاء ($7.4 \pm 2.44 \times 10^9$ /L) ، النسبة المئوية للخلايا اللمفاوية (26.6 ± 9.90 %) ، النسبة المئوية للخلايا العدلة (63.4 ± 11.31 %) ، العدد المطلق للخلايا اللمفاوية ($1.8 \pm 0.66 \times 10^9$ /L) ، العدد المطلق للخلايا العدلة ($4.8 \pm 2.19 \times 10^9$ /L) ، عدد صفائح الدم ($212 \pm 64.5 \times 10^9$ /L) ، انتشار صفائح الدم (14.9 ± 2.19) ، متوسط حجم صفيحة الدم الواحدة (9.5 ± 1.60 fl) عند النساء الحوامل ، و متوسط خضاب الدم (12.0 ± 1.19 g/dl) ، الدم المكس (38.7 ± 3.55 %) ، عدد كرات الدم الحمراء ($4.5 \pm 0.45 \times 10^{12}$ /L) ، متوسط حجم الخلية الحمراء (85.2 ± 8.07 fl) ، متوسط تركيز خضاب الدم في الخلية الواحدة (26.6 ± 2.65 pg) تركيز خضاب الدم في 100 مل من الدم (31 ± 1.33 %) ، انتشار الخلايا الحمراء (46.6 ± 6.13 fl) ، عدد كرات الدم البيضاء ($5.9 \pm 1.63 \times 10^9$ /L) ، النسبة المئوية للخلايا اللمفاوية (38.9 ± 8.01 %) ، النسبة المئوية للخلايا العدلة (49.1 ± 11.89 %) ، العدد المطلق للخلايا اللمفاوية ($2.2 \pm 0.46 \times 10^9$ /L) ، العدد المطلق للخلايا العدلة ($3.0 \pm 1.41 \times 10^9$ /L) ، عدد صفائح الدم ($289.5 \pm 79.74 \times 10^9$ /L) ، انتشار صفائح الدم (15.2 ± 0.82) ، متوسط حجم صفيحة الدم الواحدة (9.3 ± 1.21 fl) عند النساء غير الحوامل.

إستنتج من هذه الدراسة ان هنالك نقص ذات دلالة معنوية في الدم المكس ، عدد كرات الدم الحمراء ، انتشار الخلايا الحمراء، النسبة المئوية والعدد المطلق للخلايا اللمفاوية و عدد كرات الدم البيضاء عند النساء الحوامل مقارنة بالنساء غير الحوامل، وزيادة ذات دلالة معنوية في متوسط عدد كرات الدم البيضاء ، تركيز خضاب الدم في 100 مل من الدم و النسبة المئوية والعدد المطلق للخلايا العدلة عند النساء الحوامل مقارنة بالنساء غير الحوامل، وزيادة معنوية في متوسط حجم صفيحة الدم الواحدة عند النساء اللاتي تعرضن لإسقاط مقارنة باللاتي لم يتعرضن لإسقاط. وبناءا علي عدد الاطفال هناك زيادة ذات دلالة معنوية الدم المكس، متوسط حجم الخلية

الحمراء و انتشار الخلايا الحمراء في اللاتي انجبين اقل من طفلين اكثر من اكثر من طفلين وبناءا
علي اعمارهن هناك زيادة معنوية في متوسطات الدم المكس ، حجم الخلية الحمراء و تركيز
خضاب الدم في الخلية الواحدة عند اقل من 30 سنة مقارنة باكثر من 30 سنة.

Abbreviations

CD	Cluster of differentiation
CFU-GEMM	Colony forming unit that generates myeloid cells
CV	Coefficient of variation
DMT-1	Divalent metal transporter
DNA	Deoxyribonucleic acid
EDTA	Ethylene-diamine-tetra acetic acid
EPO	Erythropoietin
fl	Femtolitre
GM-CSF	Granulocyte macrophage colony stimulating factor
Hb	Hemoglobin concentration
HCG	Human chorionic gonadotropin
HCP-1	Haem carrier
Hct	Haematocrit
IF	Intrinsic factor
MCH	Mean cell hemoglobin
MCHC	Mean cell hemoglobin concentration
MCV	Mean cell volume
MPV	Mean platelet volume
MTHFR	Methylenetetrahydrofolate reductase
PCV	Packed cell volume
pg	Pico gram
RBC	Red blood cell count
RDWCV	Red cell distribution width by coefficient of variation
RDWSD	Red cell distribution width by standard deviation
r-HuEPO	Human recombinant erythropoietin
SCF	Stem cell factor

SDF-1	Stromal derived factor 1
sTFR	soluble transferrin receptor
TC	Transcobalamin
TIBC	total iron-binding capacity
WBC	White blood cell count
ZPP	Zinc protoporphyrin

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