COMPARATIVE STUDY OF HAEMATOLOGICAL PROFILES OF PRIMIGRAVIDAE AND MULTIGRAVIDAE WOMEN IN KANO, NIGERIA

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ABSTRACT

Background: Pregnancy is a physiological condition that affects haematological parameters. Abnormalities of red blood cell indices in complete blood count typically precede the development of lowered haemoglobin levels.The physiological changes can be observed in parameters such as; red blood cell (RBC) count, haemoglobin (Hb) concentration, platelet (PLT) count, white blood cell (WBC) count and differential cell count.

Aim: This study aimed to establish the haematological changes between primigravidae and multigravidae women.

Materials and Methods: This cross sectional study was conducted at Aminu Kano Teaching Hospital (AKTH), involving one (100) hundred primigravidae and one hundred (100) multigravidae. Fifty (50) non pregnant women were used as control. White blood cell count (WBC), differentials, packed cell volume (PCV), haemoglobin and Platelet count were analyzed by manual methods.

Result: Statistically significant difference ($p<0.05$) between Primigravidae and Multigravidaeon mean WBC (8.70±2.3 $x10^9$/L) and (7.51±2.29 $x10^9$/L), Eosinophil (1.50±1.83%) and (2.09±2.05%), PCV (30.40±3.53%) and (29.33±2.66%), Haemoglobin (10.17±1.24 g/dL) and (9.71±0.95 g/dL), Platelet (259.15±81.11 x109/L) and (230.97±63.83 x109/L) were observed respectively.

Conclusion: The levels of some haematological parameters in Multigravidae and Primigravidae differ with increasing risk of Anaemia in Muiltigravidae.

Key words: Anaemia, Pregnancy, Multigravidae and Primigravidae

INTRODUCTION

Pregnancy is the carrying of one or more offsprings known as foetus inside the uterus of female from conception to birth (Chandra *et al*., 2012).The scientific term for the state of pregnancy is gravidity (adjective "gravid");latin for heavy and a pregnant female is sometimes referred to as a gravida. A woman who is pregnant for the first time is known as a primigravida while the one with subsequent pregnancies is known as a multigravida (Al-Tawil, 2013).

Haematological profile is considered to be one of the factors affected by pregnancy and its outcome due to physiological changes (Akinbami *et al.,* 2013). Abnormalities of red blood cell indices in complete blood count typically precede the development of lowered haemoglobin levels (Abu-Ouf and Jan, 2015).

Plasma volume and red blood cell mass are both known to expand during pregnancy; plasma volume grows to a greater extent, therefore diluting the maternal haemoglobin concentration (Laflamme, 2011).The physiological changes can be observed in parameters such as red blood cell (RBC) count, haemoglobin (Hb) concentration, platelet (PLT) count, white blood cell (WBC) count and differential count (Akinbami *et al.,* 2013).Therefore, this study aimed to establish the haematological changes between primigravid and multigravid women.

MATERIALS AND METHODS

This cross sectional study involving two hundred and fifty (250) women was conducted at Aminu Kano Teaching Hospital (AKTH), Kano. Ethical clearance was obtained from the Hospital research ethics committee. Subjects were fully informed prior to the enrolment and were selected at random. One (100)hundred primigravidae women between the age range of 18 and 26 years and one hundred (100) multigravidae of age range between 26 and 38 years were studied. Fifty (50) non pregnant, none lactating and non-menstruating women were used as controls. Blood sample was collected from each subject by venepuncture from the antecubital vein of the forearm using disposable syringes. Three milliliters (3mls) of blood in each case was delivered into Ethylene diamine tetraacetic acid (EDTA) tubes. The samples were analyzed for white blood cell count (WBC), differentials, packed cell volume (PCV), Haemoglobin (Cyanmethaemoglobin technique) and Platelet count using standard manual method as described by Cheesbrough (2009).

Student t- test was employed as a tool of analysis using Instat Graph pad software.

RESULTS

Table 1 shows significant difference ($p<0.05$) between pregnant women and controls on mean lymphocyte (30.43±5.63%) and (32.52±5.43), PCV (29.69±3.09%) and (38.28±5.43%), Haemoglobin (9.94±1.09 g/dL) and (12.91±1.02 g/dL), Platelets (245.06±72.47 x109/L) and 274.72±63.03 x109/L) respectively. There is no significant difference ($p>0.05$) in WBC, Neutrophils, Eosinophils, Basophills and Monocytes.

Table 2 shows significant difference ($p<0.05$) between Primigravidae and Multigravidae on mean WBC (8.70±2.3 $x10^9$/L) and (7.51±2.29 $x10^9$/L), Eosinophil (1.50±1.83%) and (2.09±2.05%), PCV(30.40±3.53%) and (29.33±2.66%), Haemoglobin (10.17±1.24 g/dL) and (9.71±0.95 g/dL), Platelet (259.15±81.11 x109/L) and (230.97±63.83 x109/L) respectively. There is no significant difference in Neutrophils, Basophils, Monocytes and Lymphocytes.

Table 1: **Haematological Parameters of the Pregnant Women and Control in the Study Population.**

Parameters	**Pregnant women (mean ±SD) n=200**	**Control (mean ±SD)n=50**
WBC (x 10^9/L)	8.11±2.56	7.31±1.58
Neutrophil (%)	66.66±5.85	64.72±6.29
Eosinophil (%)	1.79±1.94	1.36±1.34
Basophil (%)	0.26±0.56	0.24±0.43
Monocyte (%)	0.78±1.06	1.16±1.27
Lymphocyte (%)*	30.43±5.63	32.52±5.43
PCV (%)*	29.69±3.09	38.28±2.19
Haemoglobin (%)*	9.94±1.09	12.91±1.02
Platelets x10^9/l) *	245.06±72.47	274.72±63.03

Parameters with * significant difference ($P<0.05$) , N=250

Table 2: Haematological Parameters of Primigravidae and Multigradae in the Study Population

Parameters	Primigravidae (Mean±SD) n=100	Multigravidae(Mean ±SD) n=100
WBC* ($x10^9$/L)	8.70±2.83	7.51±2.29
Neutrophils (%)	66.27±6.42	67.05±5.27
Eosinophil* (%)	1.50±1.83	2.09±2.05
Basophil (%)	0.25±0.63	0.26±0.49
Monocyte (%)	0.76±1.08	0.80±1.04
Lymphocyte (%)	31.04±6.54	29.81±4.71
PCV* (%)	30.40±3.53	29.33±2.66
Haemoglobin*(g/d1)	10.17±1.24	9.71±0.95
Platelet* (x109/L)	259.15±81.11	230.97±63.83

Parameters with * significant difference (P<0.05) , N=200

DISCUSSIONS

In this study, the observed significant difference ($p<0.05$) in Haemoglobin and PCV which is lower in pregnant women than controls agrees with the study of Okpokam *et al.* (2015) in cross rivers state of Nigeria. This could be due to the increase demand of iron during pregnancy which may lead to anaemia if supplement or proper diet is not taking (Abu-Ouf and Jan 2015).The observed significant difference in mean lymphocytes between pregnant women and controls which is higher in controls did not agree with the work of Ichipi-Ifukor *et al*. (2013).

The Haemoglobin and PCV in primigravidae is higher than that of multigravidae, which shows that multigravidea is more at risk of anaemia as described by Patil (2017).This is because, low hemoglobin level has been identified as the commonest haematological abnormality and is associated with adverse pregnancy outcome. As the pregnancy advances so also hemoglobin levels continue to fall (Inam-ul-Haq *et al.,* 2013). This indicates that previous pregnancies affect the level of the haemoglobin concentration due to decreases of iron associated with repeated pregnancies (Scholl, 2011). Chandra (2012) found that, WBC count increase to as much higher level during pregnancy which is in contrast to this study as both group have normal WBC count. In comparing the white blood cells count of primigravidae and multigravidae, the significant difference ($p<0.05$) observed may be due to first exposure to the pregnancy. According to this study, Basophil, Monocyte, Eosinophil and Lymphocyte were within the normal range. However, different researchers have reported an increase, decrease or no change in, Neutrophil, Monocyte, Basophil, Eosinphil, Lymphocyte which may be attributed to the variation of methodology and study population (Papadopol, *et al.*, 2001).

CONCLUSION

The level of some Haematological parameters in multigravidae and primigravidae differs with increasing risk of Anaemia in muiltigravidae.

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