Original Research Article

To analyse pattern of changes in neutrophils specifically in pregnant women and compare with healthy non pregnant women, so that it can be establish as surrogate marker of impending pathophysiological changes during pregnancy

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ABSTRACT

Background & Methods : 400 consecutive blood samples of pregnant women's as study group and 400 consecutive blood samples of non-pregnant women's as control group, were included in the study. Each blood sample was mixed well and then approximately 20 μL was aspirated by allowing the analyzer's sampling probe into the blood sample and depressing the start button. Results of the analysis were displayed after about 30 seconds, after which the analyzer generated a paper copy of the results on thermal printing paper.
Study Designed: Observational Study.
Result: Significant difference was seen between the pairs first trimester - second trimester; and second trimester - third trimester, while non-significant difference was seen between first trimester – third trimester pair. One-Way ANOVA test was used. F value = 16.09, P value = 0.000, Significant The F value obtained was 16.09 with a P value of < 0.05, which is statistically significant. Thus, neutrophil values in all the three groups are statistically different.
Conclusions: More direct dependence on hemoglobin for pregnant women in their second and third trimesters, along with a more aggressive approach to the level of iron stores at which iron supplementation should be prescribed. The references provided in this study should prove useful for diagnostic and research purposes.

1. Introduction

Pregnancy alludes to the treatment and advancement of at least one posterity, known as a hatchling or undeveloped organism, in a lady's uterus. The term undeveloped organism is utilized to depict the creating posterity during the initial two months following origination, and the term hatchling is utilized from around 2 months of improvement until birth.[1] In a pregnancy, there can be various incubations, as on account of twins or trios. Labor typically happens around 38 weeks after origination; in ladies who have a monthly cycle length of about a month, this is roughly 40 weeks from the last ordinary feminine time frame. The World Health Organization (WHO) characterizes typical term for conveyance as between 37 weeks and 42 weeks.[2]

Pregnancy is normally isolated into three periods, or trimesters, each of around a quarter of a year. In medication, pregnancy is regularly characterized as starting when the creating incipient organism gets embedded in the endometrial coating of a lady's uterus. The initial 12 weeks of pregnancy are considered to make up the principal trimester. As per the American Pregnancy Association, before the finish of the main trimester, the embryo will be around 3 inches (76 mm) long and will weigh roughly 1 ounce (28 gm).[3] Weeks 13 to 28 of the pregnancy are

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known as the subsequent trimester. Before the second's over trimester, the extending uterus has made a noticeable "infant knock". The third trimester of pregnancy ranges from week 28 to the birth. The lady's tummy will change fit as a fiddle as the paunch drops because of the hatchling turning in a descending position prepared for birth.[4]

2. Materials and Methods

400 consecutive blood samples of pregnant women's as study group and 400 consecutive blood samples of non-pregnant women's as control group, were included in the study. Each blood sample was mixed well and then approximately 20 μL was aspirated by allowing the analyzer's sampling probe into the blood sample and depressing the start button. Results of the analysis were displayed after about 30 seconds, after which the analyzer generated a paper copy of the results on thermal printing paper.

2.1. Inclusion criteria

1. Women's of 20 to 40 years attending antenatal clinic.
2. Women's giving urine pregnancy test positive or are positive for live fetus in ultrasonography was included in our study as study group and who are negative for the same was taken as control group.

2.2. Exclusion criteria

Patient with

1. Bleeding disorders
2. Splenomegaly
3. Connective tissue disease such as systemic lupus erythematosus
4. Hypertension
5. Human immunodeficiency virus (HIV)
6. Hepatitis B infection
7. Women on non-steroidal anti-inflammatory drugs such as aspirin were also excluded.

3. Results

Table 1: Comparison of Mean HGB between the groups (N=800)

Parameter	First Trimester (n=156) (Mean ± SD)	Second Trimester (n=155) (Mean ± SD)	Third Trimester (n=89) (Mean ± SD)
HGB	10.56 ± 1.74	9.98 ± 2.06	10.28 ± 1.82

Significant difference was seen between the pair first trimester and second trimester, while non-significant difference was seen between first trimester – third trimester and second trimester – third trimester pairs.

One-Way ANOVA test was used. F value = 3.77, P value = 0.024, Significant

The F value obtained was 3.77 with a P value of < 0.05, which is statistically significant. Thus, HGB values in all the three groups are statistically different.

Table 2: Comparison of Mean MCV between the groups (N=400)

Parameter	First Trimester (n=156) (Mean ± SD)	Second Trimester (n=155) (Mean ± SD)	Third Trimester (n=89) (Mean ± SD)
MCV	78.37 ± 9.15	76.44 ± 10.17	77.05 ± 8.93

One-Way ANOVA test was used. F value = 1.64, P value = 0.194, Not Significant

The F value obtained was 1.64 with a P value of > 0.05, which is statistically not significant. Thus, MCV values in all the three groups are comparable. As the ANOVA value was found to be non-significant, Post-hoc Tukey test has not been applied.

Table 3: Comparison of Mean Neutrophil between the groups (N=400)

Parameter	First Trimester (n=156) (Mean ± SD)	Second Trimester (n=155) (Mean ± SD)	Third Trimester (n=89) (Mean ± SD)
Neutrophil	70.79 ± 7.18	75.69 ± 7.22	72.44 ± 9.22

Significant difference was seen between the pairs first trimester - second trimester; and second trimester - third trimester, while non-significant difference was seen between first trimester – third trimester pair.

Table 4: Post-hocTukey Test was applied to see the difference between the pairs

Pair	Mean Difference	't' Value	P Value
First trimester – Second Trimester	4.89	5.61	0.000*
First Trimester – Third Trimester	1.65	1.62	0.238
Second Trimester – Third Trimester	3.24	3.17	0.004*

One-Way ANOVA test was used. F value = 16.09, P value = 0.000, Significant

The F value obtained was 16.09 with a P value of < 0.05, which is statistically significant. Thus, neutrophil values in all the three groups are statistically different.

4. Discussion

Pregnancy causes critical changes in digestion, liquid equilibrium, organ capacity and blood course which are driven by estrogen and the presence of the feto-placental unit.[5] These sensational changes impact a wide assortment of hematological boundaries. Recognize of these progressions is fundamental when deciphering the aftereffect of hematological examination to analyze or screen disease pregnant lady.[6] The death rate during pregnancy and a month and a half after conveyance just as the newborn child death rate are relied upon to be expanded in the following not many years, more probable because of pregnancy entanglements.[7] This will no uncertainty force a possible weight on the well being area and on the relatives. Prognostic appraisal of entanglements went with pregnancy as far as blood testing might be of analytic and helpful qualities throughout pregnancy confusions. Such technique may empower us to lighten as well as to forestall such intricacies to secure ladies to have an effective pregnancy.

Each year, according to the WHO, ill-health as a result of pregnancy is experienced by more than 20 million women around the world. Furthermore, the lives of 8 million women are threatened, and more than 500,000 women are estimated to have died as a result of causes related to pregnancy and childbirth.[8] The world mortality rate has declined 45% since 1990, but still 800 women die every day from pregnancy or childbirth related causes. According to the United Nations Population Fund (UNFPA) this is equivalent to "about one woman every two minutes and for every woman who dies, 20 or 30 encounter complications with serious or long-lasting consequences. Most of these deaths and injuries are entirely preventable. While there has been a decline in world-wide mortality rates much more has to be done. High rates still exist particularly in impoverished communities with over 85% living in Africa and Southern Asia. At a country level, India (19% or 56,000) and Nigeria (14% or 40,000) accounted for roughly one third of the maternal deaths in 2010. Democratic Republic of the Congo, Pakistan, Sudan, Indonesia, Ethiopia, United Republic of Tanzania, Bangladesh and Afghanistan comprised between 3 to 5 percent of maternal deaths each. Women living in rural areas experience higher maternal mortality than women living in urban and suburban centers because those living in wealthier households, having higher education, or living in urban areas, have higher use of healthcare services than their poorer, less-educated, or rural counterparts.[9]

Enormous cross sectional investigations done in pregnancy of the ladies (explicitly barring any with hypertension) shown that is named gestational thrompocytopenia (Shehlata et al., 1999 and Yerushalmi, 2007).[10,11] It is part of the way because of hemodilution and halfway because of expanded platelet enactment and quickened freedom (Shehlata et al., 1999 and McCrae,

2010).[12] Gestational thrombocytopenia doesn't have complexity identified with thrompocytopenia and children don't have serious thrompocytopenia (Margaret, 2010).[13]

5. Conclusion

More direct dependence on hemoglobin for pregnant women in their second and third trimesters, along with a more aggressive approach to the level of iron stores at which iron supplementation should be prescribed. The references provided in this study should prove useful for diagnostic and research purposes.

6. Source of Funding

7. Conflict of Interest

The authors declare they have no conflict of interest.

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