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A Comparative Study of Total Leucocytes Count on Different Segments of Menstruation Cycle of Endurance Runners

Dr. Vinita Bajpai Mishra[1] Parul Shukla[2]

[1]Assistant Professor, L.N.U.P.E., Gwalior

[2]Ph.D. Scholar

Abstract – The aim of the study was to compare the status of Total leucocytes count of blood in different phases of menstruation cycle such as luteal phase, menstrual phase and follicular phase. The subjects selected for this study were randomly selected from track and field match practice long distance runners. The total no. of 15 long distance female athlete was selected. The age of the subject ranged from 18-25years. The investigation about the Total leucocytes count associated with the different phases of menstruation cycle, blood sample (3-5ml) was taken on 2nd day (Menstrual Phase), 11th day (Follicular Phase) and 22nd day (Luteal Phase) by the help of reputed and registered Pathologist and their well trained technicians. To analyze as changes associated in Total leucocytes count in blood, during Luteal, Menstrual and Follicular Phases of menstrual cycle two way repeated measures ANOVA (within-within) was used at 0.05 level of significance. There is significant effect was found in the follicular and luteal phase of menstural cycle..

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INTRODUCTION:-

Women, definitely, have played a vital role in history of mankind. But the traditional restrictions have always curbed their initiative to that event in annals of civilization where they lost their grip on matter sundry and had been treated as a prey to social restrictions and evils.

Fortunately, we have passed the era when menstruations are less than positive. All one has to do is to consider the euphemism we use to describe menstruation to realize that rather than taking freely about menses, sick the cause, our period, the monthlies, our visit from our friend. All of these move to the sickness to the burden or to the uncomfortable nuisance of menstruation.

Whether or not female athletes should train and or compete during their menstruation flow is again an individual matter. Interestingly it is seen that mostly all world class female athlete used to participate during the cycle and also were trained during the menstruation cycle

MATERIAL AND METHODS

Subject

The subjects selected for this study were randomly selected from track and field match practice group of endurance runner of lakshmibai national university of physical education Gwalior. The total no. of 15 female athletes was selected. The age of the subject ranged from 18-25years.

Blood Sampling

To investigate the Total leucocytes count in different phases of menstruation cycle blood samples were taken in three phases known as Menstrual Phase, Follicular Phase and Luteal Phase. The investigation about the Total leucocytes count associated with the different phases of menstruation cycle, blood sample (3-5ml) was taken on the following days by the help of reputed and registered Pathologist and their well trained technicians.

The days were:

- ✓ 2nd day of Menstruation (Menstrual Phase),
- ✓ 11th day from Menstruation (Follicular Phase)

✓ 22nd day from Menstruation (Luteal Phase)

Statistical Analysis

To analyze as changes associated in Total leucocytes count in blood, during Luteal, Menstrual and Follicular Phases of menstrual cycle One Way ANOVA was used at 0.05 level of significance.

TABLE 1

MAUCHLY'S TEST TO CHECK THE SPHERICITY OF THE DATA FOR TOTAL LEUKOCYTE COUNT

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	p value	Epsilon	
					Greenhouse-Geisser	Huynh-Feldt
Phase	.333	14.30	2	.001	.600	.625
Time	1.000	.000	0	.	1.000	1.000
Phase * Time	.844	2.209	2	.331	.865	.976

In the above table 1, the chi-square value of total leukocyte count was found significant at 0.05 level of significance with 2 df for phases as p value was less than 0.05. However, for interaction (Phase * Time) it was found insignificant at 0.05 level of significance with 2 df, as p value was more than 0.05. Hence, the assumption of sphericity was violated for phase and fulfilled for interaction, that's why for 'F' table, the value of "greenhouse geisser" was used for the phase because epsilon value is less than 0.75 and "sphericity assumed" was used for the interaction.

Table 2 represents the 'F' table for testing the significance of within subjects effect of phases, Time and their interaction on total leukocyte count.

TABLE 2

'F' TABLE FOR TESTING THE SIGNIFICANCE OF WITHIN SUBJECTS EFFECT OF PHASES, TIME AND THEIR INTERACTION ON TOTAL LEUKOCYTE COUNT

Sources		SS	df	MSS	F	p value
Phases	Greenhouse-Geisser	7268762	1.20	6058977	2.94	.069
Error (phases)	Greenhouse-Geisser	3.456E7	16.79	2057993		
Time	Sphericity Assumed	503254	1	503254	40.26	.000*
Error (Time)	Sphericity Assumed	174995	14	503254		
Phases * Time	Sphericity Assumed	25428	2	12714	1.348	.276
Error (Phases * Time)	Sphericity Assumed	1.044	28	9431		

*The mean difference is significant at the 0.05 level

There was a significant main effect of time on total leukocyte count.

It was found that there was no significant effect on phases and interaction between phases and Time on total leukocyte count.

The analysis shows that there was a significant mean difference between time as F is significant (p=.000).

Table 3 represents the marginal means of phases irrespective of time for total leukocyte count.

TABLE 3

ESTIMATES OF MARGINAL MEANS OF MENSTURAL PHASES FOR TOTAL LEUKOCYTE COUNT

Surface	Mean	Standard Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Mensuration phase	8763	506.1	7677	9848
Follicular phase	8757	425.8	7843	9670
Luteal phase	8157	385.1	7331	8983

The total leukocyte count was higher on mensuration phase than follicular and luteal phase.

There was a significant main effect of time. Table 3 represents the marginal means of time irrespective of phases for total leukocyte count.

TABLE 4

ESTIMATES OF MARGINAL MEANS OF TIME FOR TOTAL LEUKOCYTE COUNT

Surface	Mean	Standard Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Pre	8634	412.9	7748.2	9519.7
Post	8484	406.7	7611.9	9356.9

To further analyze, Bonferroni correction was applied for pairwise comparison was done in the table

Table -5

PAIRWISE COMPARISON OF TOTAL LEUKOCYTE COUNT AMONG DIFFERENT PHASES OF MENSTRUATION CYCLE

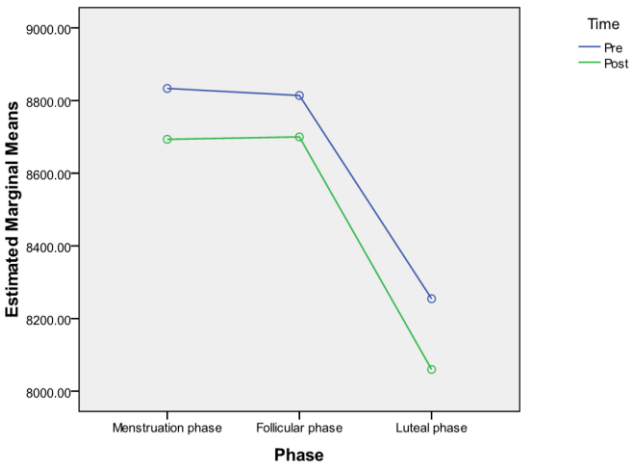
(I)phases	(J)phases	Mean Difference (I-J)	Sig.[a]
Menstruation phase	follicular phase	6.333	1.000
	Luteal phase	606.0	.222
follicular phase	Luteal phase	599.6	.001*

* a. The mean difference is significant at the .05 level.
b. Adjustment for multiple comparisons: Bonferroni.

There was a significant difference was found between Follicular and luteal phase and there is no significant difference were found between menstruation and follicular phase and menstruation and luteal phase.

ILLUSTRATION 1

MEAN COMPARISON OF TLC COUNT AMONG PHASES IRRESPECTIVE OF TIME



DISCUSSION AND CONCLUSION

The results of total leukocyte count showed significance difference in the follicular and luteal phase of menstural cycle. This might be due to increase in all the subpopulations of leukocytes. The changes in the circulating leukocyte count during the menstrual cycle is associated with the presumptive changes in blood estrogen and the possibility that they are influenced by blood gonadotrophic hormone at the time of ovulation, or by blood progesterone or body temperature during the latter half of the cycle. So the menstrual blood loss does not affect the complete blood count.

REFERENCES

1. A. Herbert De-vries (1986). *Physiology of Exercise,* p.165.

2. Keizer HA & Rogol A.D. (1990). *Physical Exercise and Menstrual Cycle Alterations. What Are The Mechanisms?* Sports Medicine. Oct;10(4):218-35.

INTERNET

1. *Menstruation cycle (13 may 2014).* Website:http://en.wiki *cycle* (13 may 2014). website: http://en.wikipedia.org/wiki/Menstrual_cycle

2. *Menstruation cycle* (2014, January 1) retrieve from web http://en.wikipedia.org/wiki/Menstrual_cycle

3. Menstruation (2014, January 5). Website: http://en.wikipedia.org/wiki/Menstruation/

4. *Leukocyte Count* (2014,June20). Retrieved from website http://medical dictionary.thefreedictionary.com/leukocyte+co unt .