

ORIGINAL

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## LACTATING WOMEN; SERUM & MILK PROGESTERONE LEVEL IN LACTATIONAL AMENORRHEA



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**ABSTRACT ... Objectives:** To determine the serum & milk progesterone level in lactational amenorrhea and to compare this with the menstruating women (both the lactating & non-lactating). **Setting:** This study was carried out among the relatives, friends' families and some volunteers. As such, subjects do not usually visit Hospital. **Period:** one year. **Method:** The study was conducted on 35 women , 25 lactating & 10 non-lactating (control) , none of them were taking hormonal contraceptive. Progesterone estimation was carried out in milk & serum of lactating and in the serum of non-lactating. **Results:** Significantly low level of serum & milk progesterone was found in non-menstruating lactating . **Conclusion:** During lactational amenorrhea , serum & milk progesterone level remains low.

**Key words:** Lactational amenorrhea , menstruating , non-menstruating , progesterone .

### INTRODUCTION

To monitor ovarian function, scientists & clinicians have used various biological fluids. Two fluids that have received attention are saliva & breast milk<sup>1-4</sup>. Hartman and Proser<sup>5,6</sup> have described important & significant changes of Na & Glucose in the milk of ovulatory women. Breast-feeding is the most widely adopted method of birth spacing & assumes major demographic importance & guidelines can be developed for the mothers which will allow them to maximize the birth spacing through the effect of breast feeding<sup>7</sup>. Breast feeding also delays the return of fertility, thus reducing exposure to maternal health risks associated with short birth intervals<sup>8</sup>, Pervez et al<sup>9</sup>, found in their study that 78% of the first postpartum menstruation was ovulatory & figure rose to 85%, when the menstrual flow

appeared the 60<sup>th</sup> postpartum day , with the exception of women on full breast feeding. According to Lethbridge<sup>10</sup>, in non-western culture, breast feeding has been shown beneficial for spacing births. Unrestricted & un-supplemented breast feeding maybe responsible for as much as 20% reduction in birth<sup>11</sup>. The purpose of this study was to determine the serum & milk progesterone level in lactational amenorrhea & to compare with the serum/milk of the lactating (menstruating) and with the serum of non-lactating (control).

### MATERIAL AND METHOD SELECTION OF THE SUBJECTS

25 Lactating (17 menstruating, 8 non-menstruating & 10 non-lactating (control), healthy women , aging from

18-35 years (mean 29 years) were selected & registered. None of them was taking hormonal contraceptive.

## COLLECTION OF SAMPLES

### Lactating

- a. Menstruating
- b. Non-menstruating

### MENSTRUATING

Milk: Once a week starting from 1<sup>st</sup> week of menstruation on 1<sup>st</sup> or 2<sup>nd</sup> day of each week (4 samples). Each woman collected her owns (2-4ml) by manual expression, directly in the sterile vials & stored at -15 °C until analyzed for progesterone.

Blood: 2-4ml of blood was drawn (mid-menstrual) by plastic disposable syringe & kept at 37°C for clotting & centrifuged for serum separation. Serum was kept in sterile screw capped bottle at -15 °C until analyzed.

### NON-MENSTRUATING

Milk: 4 samples once a week ,starting from any week ,other procedure was the as mentioned above.

Blood: Same procedure , but collected at any time.

Non-lactating:

Blood: Samples of blood were collected by the same procedure.

## ANALYSIS OF SAMPLE

Hormonal estimation i.e. progesterone in serum & milk was carried out by radio immuno-assay (World Health Organization Procedure<sup>12</sup>, WHO matched reagent program, manual for the radio immuno-assay of hormones in reproductive physiology.

## RESULTS

Details of the results for individual cases are given in (Table I-IV). For milk progesterone only for 2<sup>nd</sup> and 3<sup>rd</sup> weeks , sample results are given (Table III & IV). The results are expressed in terms of Mean and Standard error mean ( $\pm$ sem). Table V shows significantly low ( $P < 0.01$ ) for serum progesterone ng/ml in lactating as compared to non-lactating (control) and significantly

low ( $P < 0.05$ ) in lactating menstruating as compared to non-menstruating.

S.No.	Progesterone (ng/ml)
1	5.49
2	9.57
3	7.06
4	3.32
5	9.16
6	3.39
7	7.91
8	8.10
9	8.79
10	3.51
Mean $\pm$ Sem	6.63 0.75

Progesterone (ng/ml)	Progesterone (ng/ml)
2.16	1.31
8.22	1.09
1.28	1.16
3.20	1.16
2.70	1.19
2.57	2.32
1.31	5.24
2.70	8.54
3.20	10.18
2.32	9.56
2.32	3.51
3.20	2.00
1.60	
mean $\pm$ Sem	3.36 $\pm$ 0.54

**Table-III. Milk progesterone value of lactating women (menstruating)**

S.No.	2 <sup>nd</sup> week	3 <sup>rd</sup> week
1	0.56	0.73
2	0.94	1.00
3	1.60	4.45
4	1.94	5.33
5	3.17	9.01
6	3.01	6.28
7	1.60	1.94
8	1.26	2.04
Mean±Sem.	1.76 0.30	3.84 0.97

**Table-IV. Milk progesterone values of lactating women (non-menstruating)**

S.No.	Progesterone (ng/ml) 2 <sup>nd</sup> week	Progesterone (ng/ml) 3 <sup>rd</sup> week
1	0.94	1.00
2	1.94	5.87
3	0.69	0.62
4	0.53	0.70
5	0.60	0.62
6	0.40	0.53
7	0.94	0.97
8	0.51	1.00
9	0.56	0.81
10	0.68	1.44
11	0.62	0.72
12	0.62	0.62
13	0.50	0.50
14	0.31	0.37
15	0.62	0.84
16	0.72	0.89
17	0.65	0.72
Mean±sem.	0.69 0.084	1.07 0.29

**Table-V. Serum progesterone values of non-lactating (control) and lactating (Menstruating), non-menstruating women.**

	Progesterone (ng/ml)
Non-Lactating (Control 10)	6.63 + 0.75
Lactating (25)	3.36 + 0.54**
Lactating Menstruating (08)	5.31 + 1.20*
Lactating Non-Menstruating (17)	2.44 + 0.39
** P<0.01, * P<0.05 The values are expressed as Mean, ± Sem.	

Table VI shows significantly low ( P< 0.01) for milk progesterone ng/ml of lactating non-menstruating as compared to lactating menstruating of both 2<sup>nd</sup> and 3<sup>rd</sup> week sample.

**Table-VI. Milk progesterone values lactating women, menstruating & non-menstruating**

	Progesterone (ng/ml) 2 <sup>nd</sup> week	Progesterone (ng/ml) 3 <sup>rd</sup> week
Lactating Menstruating (08)	1.76 + 0.30	3.84 + 0.97
Lactating Non-Menstruating (17)	0.69 + 0.084**	1.07 + 0.29**
** P<0.01		

## DISCUSSION

Breast-feeding is an ideal way of feeding the infant & a unique biological & emotional basis for child development. This together with its other important effects on the prevention of infection, on the health & well being of the mother, on child spacing on family health, national economic and on food production makes it a key aspect of self-reliance, primary health care and current development approaches<sup>13</sup>. Study carried out by M.D Mc Kee et al<sup>14</sup> reports that mother perception of closeness to their infants was greater among breast-feeders compared to bottle feeders. Alex McConnachie et al<sup>15</sup> carried out a study & compared the bottle fed children with that of breast fed ones and conclude that breast feeding reduces morbidity in infants. Shah & Khanna<sup>16</sup> stated that the rapid return of

fecundity following child birth in women not breast-feeding and also not using any contraceptive method, adversely effect the health of not only the mother but also of her children. Breast feeding is associated with enhanced physical & mental health of an infant<sup>17</sup>. Present work focus to see the effect of lactation on fertility by estimating serum & milk progesterone in lactational amenorrhoea & comparing it with the non-lactating (control) & lactating menstruating women. Out of 25 lactating women, only 8(32%), were found to be menstruating while 9 out of 10 non-lactating were found menstruating (90%). Kennedy<sup>18</sup> states, that menses can be considered a reasonable indication for fertility. Klaus<sup>19</sup>, stated that a frequency of breast feeding plays a significant role in increasing the period of lactational amenorrhoea. The recent study shows that median duration of lactational amenorrhoea is 8.25 months & amenorrhoeic status is significantly related to breast-feeding & exclusive breast feeding<sup>20</sup>. Present study fully supports the suggestion of Labbok<sup>21</sup>, that if the woman not fully lactating, she should be considered at a higher risk of fertility & contraception should be introduced. Fertility in lactating woman can be defined in various ways. A subsequent pregnancy during breast-feeding is considered definitive evidence of fertility. However, determination whether ovulation has occurred and whether progesterone production is sufficient to sustain a pregnancy can also be made by assay of ovarian steroids & gonadotrophins in sequential urine & serum samples<sup>18</sup>. In present study hormonal estimation done by measuring progesterone in serum & milk, many workers have employed these specimen for estimating steroid glucuronides in order to determine ovarian function<sup>2,7,22</sup>. Present study shows serum progesterone  $6.63 \pm 0.75$  ng/ml in non-lactating as compared to  $3.36 \pm 0.54$  ng/ml in lactating which is highly significant ( $P < 0.01$ ) and in lactating menstruating  $5.31 \pm 1.20$  ng/ml as compared to  $2.44 \pm 0.39$  ng/ml ( $P < 0.05$ ), while milk progesterone was found low in both 2<sup>nd</sup> and 3<sup>rd</sup> week sample ( $P < 0.01$ ) in lactating non-menstruating.

## CONCLUSION

Breast-feeding is still the most important natural way of birth spacing, it effects the period of lactational amenorrhoea and serum/milk progesterone remains low.

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The supreme happiness  
of life  
is the conviction of being  
loved  
for yourself, or more  
currently,  
being loved in spite of  
yourself.

Victor Hugo