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Effect of fasting on female fertility

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Abstract
Abstract: The study aimed to evaluate the effect of Ramadan fasting on serum levels of progesterone and prolactin in women. The study included thirty fertile women, their mean age (31.32±1.09 years) and twenty infertile women, their mean age (35.15±1.19 years) for the period from July 2012- August 2012 at the fertility and IVF center in Al-Batool Teaching Hospital. Measurement of serum progesterone and prolactin concentrations for all women was done using ELISA technique.
There was a significant increase in serum progesterone level after Ramadan fasting while no significant increase in serum prolactin level after Ramadan fasting was noticed. Concerning effect of Ramadan fasting on serum progesterone and prolactin levels in infertile women there was no significant change after fasting.
Conclusion: Ramadan fasting affect serum prolactin and progesterone in fertile women while have no effect in infertile women.

Keywords: Ramadan fasting, progesterone, prolactin

Introduction
In Islam, fasting is a compulsory for healthy adult Moslems in the month of Ramadan. Moslems who fast avoid eating, drinking and intercourse from sunrise to sunset. The exception is for women who do not fast during menstruation. In Islamic fasting during the month of Ramadan it is unclear if it causes a variation in the function of the body's hormonal system [1, 2] In Islam, it is recommended that abstinence from eating and drinking leads to an improvement in both physical and psychological health during holy Ramada [3]. Undoubtedly, fasting has many versatile benefits were confined to be the spiritual and emotional aspects. But modern science has come to unveil a proof after the other on the physical and mental benefits one gains, when abiding by Islamic teachings. Moreover, it was recently proven that fasting healthy benefits on the immunity system, circulatory system, the digestive system and the reproductive system, but the impacts of Islamic fasting on women's ovulatory hormones have not been totally evaluated [3]. Some studies have demonstrated that the frequency of LH pulses depends on body energy status or the female reproductive axis and is more resistant to an acute caloric deprivation [4]. In this research, we studied the effect of Islamic fasting on serum prolactin and progesterone.

Subjects, Materials and Methods: This study was carried out on fifty women attending the female infertility clinic at Al- Batool Teaching Hospital in Mosul for the period between July 2012- September 2012 and informed consent was obtained for all the subjects before entry into the study. Twenty infertile females were recruited for this study, mean age (35.15±5.32) years). The fertile population consisted of thirty females, mean age (31.23±5.99 years). Two blood samples were taken, one before Ramadan fasting and the second immediately after Ramadan, measurements of serum progesterone and prolactin was done at AL- Duaa clinical lab using ELISA.

Statistical analysis: It was carried out using Minitab Version 13. A descriptive statistic, mean and standard deviation (SD) were given for the data. A p- value < 0.05 was considered significant. Paired t-test was used to compare means of serum level of hormones in fertile and infertile females.

Result: Table 1 shows that the mean progesterone concentration in fertile females after fasting of Ramadan is higher than its level before fasting, the 95% confidence for difference: (1.60; 5.97) while prolactin concentration not varied significantly after fasting, the 95% confidence for difference (-1.79; 4.30).

Table 1: Variation in serum progesterone and prolactin before and after Ramadan fasting in fertile females (mean±S.E).

Parameter	Before fasting	After fasting	t- value	p-value
Progesterone ng/ml	8.597±0.912	12.380±0.877	3.55	0.001
Prolactin ng/ml	10.58±1.20	11.84±1.43	0.84	0.4(N.S)

*Paired t-test was used.

Table 2 depicts that there was no statistical significant difference in serum progesterone level before and after fasting in infertile females, the 95% confidence for difference (-3.33; 2.25). Also there was no significant difference in mean serum prolactin before and after Ramadan fasting, the 95% confidence for difference: (-4.13; 4.30).

Table 2: Serum progesterone and prolactin before and after Ramadan fasting in infertile females (mean±S.E).

Parameter	Before fasting	After fasting	t-value	p-value
Progesterone ng/ml	4.73±0.77	4.19±1.27	-0.40	0.690
Prolactin ng/ml	12.12±1.42	12.20±1.99	0.04	0.967

*paired t-test was used.

Discussion: The psychological effects of fasting may bring about rhythmic changes in the secretion of most of the body's hormones. [5, 6] An increase in concentration of progesterone was observed immediately after fasting of Ramadan and it was statistically significant which means that fasting improves ovulation and fertility in women; this result agrees with the study of Kiyama *et al.* 2004 [7] who claimed that feed restriction may alter the metabolic clearance of progesterone. Nonetheless, some studies have reported impairment of LH release by acute fasting and this decreases the secretion of progesterone [8] Other studies [9, 10] showed that fasting had no effect on serum progesterone concentration in fertile women. Concerning serum prolactin concentration in fertile women, our study showed mild increase although it does not reach significance and this in agreement with Andre *et al.* 200 [10] who found an increased prolactin level in fasting women. Other studies [11, 12] disagree with our finding who found decreased prolactin level.

Conclusion

We found that the fasting of Ramadan produces an increase in the secretion of progesterone and no change in the secretion of prolactin, while there was no effect of fasting on serum levels of these hormones in infertile females.

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