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REPRODUCTIVE SCIENCE

A Prospective Randomized Trial Comparing Urinary Luteinizing Hormone and Basal Body Temperature Graphs for Timed Sexual Intercourse in Unexplained Infertility

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ABSTRACT

Objective To investigate the influence of simple methods for timed sexual intercourse in natural menstrual cycles between the two groups of patients with unexplained infertility. Group 1 : timed sexual intercourse by conventional basal body temperature graphs. Group 2 : timed sexual intercourse by urinary luteinizing hormone or urine LH home kit.

Design A prospective randomized study.

Setting University Hospital.

Subjects A total of 77 couples with unexplained infertility more than 2 years' duration who attended the infertility clinic for the investigation and treatment of infertility.

Main outcome measures Number of conceptions and monthly fecundability rates.

Results Patients in group 1, of the 39 patients with 194 cycles of follow up who timed sexual intercourse using BBT graphs, 12 (30.77%) conceived which gave the monthly fecundability rate of 0.06. In group 2, of the 38 patients with 183 cycles of follow up using urine LH home kit 20 (52.63%) conceived. The monthly fecundability rate was 0.11. The monthly fecundability rates between these two groups were not statistically significant.

Conclusion This prospective randomized study demonstrated using urine LH home kit for timed sexual intercourse had the trend for higher monthly fecundability rate comparing to BBT graphs and it would require a larger sample size to explore a significant difference.

Key words : unexplained infertility, urinary luteinizing hormone, BBT graphs

It is obvious that precise knowledge of the time of ovulation would be of immense value in both promoting and controlling fertility. Ovulation is the key event in the ovarian cycle, and methods for its identification are critical to the physician caring for the infertile couple. Timed sexual intercourse is a frequently prescribed component in the treatment for infertile couples. Timing of insemination is known to be related to pregnancy rate.[1] A variety of methods for predicting ovulation have been described, including conventional basal body temperature (BBT) graphs,[2,3] measurement of serial plasma luteinizing hormone concentration,[4] and high technology ultrasonic imaging of the ovaries from early in the follicular phase.[4,5] Recently, patients performed urine LH immunoassays have gained widespread acceptance for this purpose.[6,7] Several studies have shown these urine LH immunoassays to be simple, rapid and clinically reliable in predicting the time of ovulation.[3,8-11] We have decided to perform a prospective randomized study to analyse the influence of simple methods for timed sexual intercourse in natural cycles between the two groups of patients with unexplained infertility. Group 1 : timed sexual intercourse by conventional basal body temperature graphs. Group 2 : timed sexual intercourse by urinary luteinizing hormone or urine LH home kit.

Materials and Methods

From January to December 1991. A total of 77 couples with unexplained infertility were recruited in this prospective randomized study at the infertility clinic of the Royal Free Hospital. The age range of the female patients was 20-38 years (mean age 33.5). All couples were randomized for timed sexual intercourse in natural menstrual cycles either by urine LH home kit and basal body temperature graphs for six months to compare the monthly fecundability rate between these two groups. Study participants were randomized into one of the two treatment arms by the last digit of the patient's hospital number to determine the choice of treatment. The criteria for those with the diagnosis of unexplained infertility, the patients must meet the following criteria : all couples had infertility of at least 2 years' duration, the women should have normal basic hormone profile, midluteal phase progesterone, laparoscopy with dye insufflation, hysterosalpingogram, serum antisperm antibody and a post coital test and the male partner should have normal semen analysis, negative antisperm antibody and normal hamster egg penetration testing.

BBT graph was measured from day 5 of the menstrual cycle. The patients were instructed to record oral temperature with a basal thermometer every morning on awakening. The temperature charts were interpreted with the nadir as the predictor point of ovulation. Patients using the urine LH home kit (First Response, Tambrands Ltd, Havant, UK) were asked to check their morning urine starting from day 10 of the menstrual cycle. In group 1 timing for sexual intercourse was planned for the estimated day of ovulation based on the women's previous month BBT graphs. In group 2 timing for sexual intercourse was the following day after positive result of urine LH. All patients were asked to bring either their BBT records or LH tests for consultation monthly at onset of menstruation.

Clinical pregnancy will be determined by the appearance of gestational sac (s) on the ultrasound scans at 6-7 weeks' gestation using abdominal or vaginal techniques. Biochemical pregnancy, which means positive urinary hCG will not be included.

Data are presented in number and fecundability rate. Statistical comparisons were performed with Chi-square analysis. P value < 0.05 was defined as statistical significance.

Results

Patients in group 1, of the 39 patients with 194 cycles of follow up who timed sexual intercourse using BBT graphs, 12 (30.77%) conceived which gave the monthly fecundability rate of 0.06. In group 2, of the 38 patients with 183 cycles of follow up using urine LH home kit 20 (52.63%) conceived. The monthly fecundability rate was 0.11. The monthly fecundability rates between these two groups were not statistically significant.

Discussion

The inability to conceive promptly can generate considerable stress in a mariage.[12-14] This anxiety is often exacerbated by advice from physicians regarding ideal coital frequency, technique, and timing of fertile period which is the time supposed to have ovulation. Conventionally, the time of occurrence of ovulation has been estimated from the thermal shift in the BBT. However, temperature records are subjective to a variety of interfering factors, and the BBT alone is not a reliable index for the timing of ovulation. Follicular collapse as visualized by ultrasonography has been claimed to provide the most direct evidence of ovulation but facilities for ultrasound are not always available and the procedure requires daily visit. The urinary LH assay which is a simple, clinically reliable and rapid method will definitely have important potential in fertility regulation both to assist in the timing of natural or artificial insemination and also as an adjunct to natural family planning. Data from several studies clearly suggest that urinary LH assay is an accurate method of predicting ovulation.[3,8-11,15]

Kossoy et al[16] in a retrospective analysis of 120 patients undergoing intracervical insemination with fresh donor semen, found similar fecundability rates in patients using urine LH home kit compared with a control group of patients scheduling insemination by traditional BBT methods. Federman et al[17] recently reported a prospective randomized study of 60 patients undergoing therapeutic donor insemination. They found a higher fecundability rate in patients utilizing LH kits compared with traditional BBT scheduling methods for therapeutic donor inseminations.

Our prospective randomized study of 77 patients to analyse the influence of methods for timed sexual intercourse in natural menstrual cycles in patients with unexplained infertility indicated that 12 out of 39 (30.77%) patients in group 1 who timed sexual intercourse by conventional BBT graphs became pregnant in a total of 194

Table 1. Comparison of number of conceptions and monthly fecundability rate between group 1 and 2

	No.of patients	Cycles of follow up	No. of conceptions	Monthly fecundability
Group 1 (BBT graphs)	39	194	12	0.06
Group 2 (urine LH)	38	183	20	0.11

cycles of follow up for a monthly fecundability rate of 0.06, and 20 out of 38 (52.63%) patients in group 2 who timed sexual intercourse by urinary luteinizing hormone or urine LH home kit became pregnant in a total of 183 cycles of follow up for a monthly fecundability rate of 0.11. Although the differences of monthly fecundability rate were not significant. However, patients in group 2 had the trend for higher monthly fecundability rate which was nearly doubled comparing to group 1. These findings suggest that sufficient advantage may be derived from use of an urine LH home kit to recommend its use as a method of choice for timing sexual intercourse.

In conclusion, this prospective randomized study demonstrated using urine LH home kit for timed sexual intercourse had the trend for higher monthly fecundability rate comparing to conventional BBT graphs and it would require a larger sample size to explore a significant difference.

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