

THE EFFECT OF ATMOSPHERIC TEMPERATURE ON THE OUTCOME OF INTRAUTERINE INSEMINATION

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ABSTRACT

Objective: The aim of the study was to determine the effect of temperature on the outcome of intrauterine insemination (IUI), if any.

Methodology: In this prospective study, 274 and 294 cycles of Intra Uterine Insemination (IUI) were done at two different time of the year (2005-2006), in the cold and hot weather. The minimum and the maximum range of temperature in the cold weather were 3°C to 17°C and 13°C to 27°C and in the hot weather were 25°C to 32°C and 43°C to 50°C respectively. The selected infertile couples were male factor infertility with abnormal parameters of semen, sexual dysfunction and abnormal post coital test and ovulatory factor and unexplained infertility. Pregnancy was confirmed by serum Beta HCG.

Results: Among 274 cycles in the cold weather, 24 patients got pregnant, (PR/cycle =8.75%) and among 294 cycles in the hot weather 18 patients were pregnant, (PR/cycle =6.12%) (P=0.23) There was no significant correlation between temperature and the outcome of IUI.

Conclusion: The finding of the study shows that the outcome of IUI is not influenced by temperature and weather is if no importance for IUI.

KEY WORDS: Temperature, IUI, Infertility.

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INTRODUCTION

Infertility is a common problem, affecting up to 15 percent of couples. In an attempt to improve conception rate, artificial insemination techniques in various forms have been practiced for almost 200 years.^{1,2}

Recently, intrauterine insemination (IUI) alone or in combination with controlled

ovarian hyper stimulation (COH) has been practiced with hopes of better out come. Indications for therapeutic insemination with husband / donor sperm are male factor, cervical factors and unexplained infertility. The likelihood for success with IUI depends on the age of women, ovulatory cycles, sperm density, motility and morphology. The results of IUI with husband's sperm are 3-15% per cycle.² Pronounced and persistent seasonal patterns in fertility are observed in virtually all human populations.³

Monthly birth and temperature data for a variety of states and countries are used to estimate the effect of temperature fluctuations on fertility. Summer temperature extremes reduce conception in the southern United States, explaining a substantial part of the observed seasonal birth pattern; extreme cold shows no evidence of affecting conceptions.⁴ Controls for monthly temperature do not explain the

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persistent spring peak in births in northern Europe. This finding suggests that other factors play an important role.³

The influence of latitude and cloud cover on the seasonality of human birth was studied and sub study results support the hypothesis that human birth seasonality may be influenced by environment light intensity and photoperiod.⁵ In a study it does not show any decrease in the fertility of pot room workers exposed to heat and static magnetic fields, when compared to other workers in the aluminum producing industry.⁶

There are different results of the effect of temperature on the conception. Thus this study was an attempt to find the effect of temperature on the conception based on the relationship between variation of temperature and IUI outcome.

METHODOLOGY

Between November 2005 to September 2006, sub fertile patients with an indication for IUI attending the IVF center-university hospital were recruited for the study. The selected time of performing of IUI was based on the coldest and hottest part of the year in the region. In the cold of temperature, 22 November to 19 February 2005, the minimum of the temperature was 3^oc to 17^oc and the maximum was 13^oc to 27^oc. In the hot weather, 15 June to 6 September 2006, the minimum of the temperature was 25^oc to 32^oc and the maximum was 43^oc to 50^oc.

Couples were included with male factor infertility due to abnormal parameters of semen, sexual dysfunction, unexplained infertility with history of 3 to 6 times of ovulatory

induction, poor post coital test and ovulatory factor infertility with history of 3 to 6 times of ovulation induction.

Patients under went controlled ovarian hyper stimulation they received clomiphen citrate and at least 75 IU HMG irrespective of whether they were ovulatory or anovulatory. In all of cycles, HCG (5000IU IM) was administered when at least a follicle reached a mean diameter of 18mm. Raw semen was processed for IUI using swim up technique and a single IUI was performed 36 hours later. If patient missed the period, serum B-HCG was performed. If serum B-HCG was positive, the result of IUI was positive.

Statistical Analysis: Data was expressed as the mean standard error of mean (SEM). Patients were matched on the basis of parameters of semen included the percent of the normal sperm morphology (<5%, 5-10% and >10%) and total motile count (5 x10⁶, 5-10x10⁶ and >10x10⁶), age of women and ovulatory cycles. Student's chi-square test was used. Statistical significance was set at P<0.05.

RESULTS

The study comprised 371 couples who under went 568 IUI treatment cycles. Demographic characteristics of couples included in the study are shown in Table-I.

The age range of women and men were 16-24 years, 19-73 years respectively, and the range of duration of infertility was 7-264 months. Patients presented with primary and secondary infertility 77.7%, 22.3% respectively. Two hundred-seventy-four IUI cycles was done in the cold weather and 294 IUI cycles was performed in the hot weather. In the cold

Table-I: Details of patients in the study

	<i>Cold weather</i> (N=274)		<i>Hot weather</i> (N=294)	
	<i>Mean</i>	<i>Range</i>	<i>Mean</i>	<i>Rang</i>
Age of women(year)*	27.32 ± 4.91	19-42	26.6 ± 5.52	16-44
Age of men (year)	32.45 ± 6.72	21-53	33.4 ± 7.07	19-73
Duration of infertility (month)	69.78 ± 45.09	9-228	79.48 ± 49.39	7-264

P = N S *

weather 24 patients become pregnant, the overall pregnancy rate (PR) was 24/274(8.75%) per cycles, and in the hot weather 18 patients were pregnant, PR was 18/294(6.12%) per cycle (P=0.23).

DISCUSSION

The rate of temperature of weather does not significantly affect IUI out come. Few studies have retrospectively examined the effect of temperature on the IUI out come. Proctor JG et al published a retrospective study and concluded that seasonality alters sperm motility parameters as well as morphology, but these changes are not significant enough to alter pregnancy rates.⁷

Interpretation of the study led to that spontaneous conception is independent of the weather, that Mur JM et al confirmed it, but no other studies.^{4,6} Studies show that overall pregnancy rate per IUI cycle was 7.3% that same as the range of the other studies (3-15%).

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