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Light Elimination Therapy for the Treatment of Infertility (LET)

ABSTRACT: Infertility remains a common and often unresolved condition afflicting certain couples. Numerous animal studies have demonstrated that alterations in the light-dark cycle can affect reproduction as mediated by the pineal gland and its hormone, melatonin. To examine whether a similar disruption could affect human fertility, a pilot study was conducted with infertile women enrolled in a Natural Family Planning program.

OBJECTIVE: To examine the association between illumination present during sleep, abnormal menstrual cycle parameters, and infertility.

STUDY DESIGN 1: Forty-eight women were studied over a 10-year period. They were taught to chart their menstrual cycle following standard Natural Family Planning methods on three consecutive cycles. At the last class, subjects were informed about the hypothesized effects of ambient light on their reproductive hormones. They were provided with a list of light sources and a rating system to gauge intensity, allowing each subject's total light score to be calculated. Subjects were then instructed to decrease their score as much as possible for six consecutive cycles. Their menstrual cycles were examined before and after light minimization looking at 6 parameters: menstrual flow; pre-follicular; follicular phase; ovulation; luteal phase; cycle length.

RESULTS: Initially, none (0%) of the subjects had all parameters within normal range in any of three consecutive cycles. An abnormal follicular phase was found in 96% of the women, followed by luteal (64%) and ovulation (58%) phase abnormalities. The mean light score was 37.5. Establishment of a darkened sleeping environment was associated with a significant reduction in abnormal parameters within 6 cycles. Twenty-six (54%) of the women became pregnant within that same time frame, a rate equivalent to a fertile non-contracepting population. Two of these women had a history of habitual miscarriages, and both completed the pregnancy. The mean light score at time of conception was 4.6, representing a reduction of over 87%. 15 conceived during the first 3 cycles of darkness; 11 others during cycles 4 to 6 of darkness. 11 were < 30 years old; and 15 > 30 years old. 8 pregnancies occurred during the months of April to September, and 18 between October and March. Darkness was maintained during the pregnancies. All had a healthy delivery. 30 women (62.5%) had previous physician fertility consultation. 25 then had infertility procedures, but it was after LET that 13 (52%) conceived. Among the 12 men with abnormal tests before LET, 6 conceived after LET.

26 Conceived after LET	4	9	6	1	2	2	1	1
Previously trying in months	12 - 17	18 - 23	24 - 29	30 - 35	36 - 40	41 - 45	46 - 50	84 months

Seven (32%) of the 22 subjects who failed to conceive had contributory medical factors determined during the study period; 4 male factors, 1 female, 2 both. The remaining 15 subjects

inconsistently applied light elimination. If this non-compliant group is excluded, the conception rate increases to over 78%. It was observed that as light sources were re-introduced, the abnormal parameters returned.

STUDY DESIGN 2: 9 mothers with previous miscarriage(s) were advised to apply strict LET during their next pregnancy. The Table below details the time of the previous miscarriage(s). All 9 mothers had a healthy delivery after LET.

Another woman had a previous miscarriage at 6 weeks; chose not to apply LET; had a second miscarriage with twins at 8 weeks. The next pregnancy she did apply LET and had a healthy delivery. Another woman chose not to apply LET and had a second miscarriage.

Study of previous miscarriages and LET during the next pregnancy

CASE	Number of miscarriages	Time in weeks or months	CASE	Number of miscarriages.	Time in weeks or months
1	2	7 and 3 weeks	6	1	12 weeks
2	3	8, 6, 10 weeks	7	3	Consecutive
3	1	7 weeks	8	1	2 months
4	2	1 month	9	1	1 month
5	3	Consecutive			

DISCUSSION OF STUDY 2: To accept this study it would be necessary to have a control group. For Joy DeFelice this requirement causes an ethical problem.

CLINIC CASE: USING LET (LIGHT ELIMINATION THERAPY) TO CONCEIVE

Patricia T. Age 39 Husband 43. They live in San Francisco. One son; 15 years old. **Trying to achieve 15 years.** Miscarriage 8 years ago.

Conceived 1st child on the Billings Method. Initial STM instruction many years ago with Couple to Couple League (CCL). Read about our light observations in “Fertility, Cycles and Nutrition” by Marilyn Shannon; then contacted Joy DeFelice by phone. Patricia was mid-cycle at the time. Had been diagnosed with PCOS by her first M.D.
Sperm checked 2 ½ years ago – Report was “excellent”. Post-coital 2 years ago.
HSP 13 mos. ago; both tubes were open.
Clomid 1 year ago. She stopped after 2 months.

INQUIRED ABOUT LIGHT SOURCES:

1. Light comes around the sides of her window shades.
2. Light comes through the bottom of their bedroom door.
3. She has two frosted glass doors into the bedroom. No covering on either door.
4. Houses around them in S.F. are close together. She has neighbors’ lights and porch lights. Their bedroom is toward the back of the house, so somewhat darker there.
5. Another window in the house has a bright streetlight two yards away.
6. Seldom has bright early morning light due to usually foggy weather.

1st STM charted cycle: She’s now aware of light from the sun-room windows in the back of their house (refer to 4 above). “She has started some darkening throughout the house.” “Both she and husband are sleeping better and feeling more rested.” “Less PMS this luteal phase.”

PATRICIA CHARTS

CHART NUMBER	1	2	3	4	5	
Complete darkness		1	2	3	4	
PHASES	DAYS of ANALYZED CYCLE					
Menstruation	1-7.5	1-7	1-5	1-5.5	1-5.5	
Dry days	10-11		6-8	7-8	7	
Slight Moisture	9	8-11	9-12	9	8-11	
Mucus	Clear	12-16	12-18		10-15	12-13; 14, 18
	Wet	12-16	12-18	13-16	10-15	
	Stretchy days	1-1 ½ 12-16 18-21		1 ½ 15-16		3-4 12-13; 17-18
	Slippery	18-21	12-18	15-16	10-15	12-13
Spotting	17				16-17	
Temperature median ° F.	97.5	97.4	97.4	97.4	97.4	
Peak Day	21	18	16	15	18	
	Moist	22-23	19-20	17-18	16	
Temperature shift	24	19	18	17	19	
Temperature median ° F.	98.4	98.2	98.0	98.0	98.2	
Dry Days	24-37	21-32	19-30	17-30	20...	
Luteal Phase	LENGTH in DAYS					
	By mucus	16	16	14	15	Pregnancy (boy)
	By temperature	14	16	13	14	
Length of the cycle		37	34	30	30	
Analysis	Day of the cycle*		25 (7 ht)	23 (6 ht)	24 (8 ht)	26 (8 ht)
	Progesterone		12	10.4	10.8	15.4
	Prolactin		30	35	27.2	17.4

*Notes: Day of the cycle and «7 ht » = 7th high temperature

2nd STM charted cycle: First cycle in complete darkness.

States “Had hormone tests—all turned out great.”

They’d been with a second M.D. “who specializes in infertility”.

3rd STM charted cycle: Second cycle in complete darkness.

“No PMS at all this cycle.”

4th STM charted cycle: Third cycle in complete darkness.

Another sperm analysis. Count 146 mil/cc. Motility only 23%; 30% large heads; 19% curly-tailed. Dr. wants to do post-coital next cycle on Day 15. I recommended Vitamin C Timed Release for husband for sperm motility.

5th STM charted cycle: Fourth cycle in complete darkness. Pregnancy cycle.

Day 15: No outward mucus. Post-coital today. Dr. reported: “Profuse mucus at the cervix.”

“Sperm swimming in a straight line, but not many of them.”

Day 16: Red spotting. She “thinks it was from the post-coital yesterday”.

Day 17: Brown spotting, and stretchy mucus. Day 18: clear, thin, stretchy

Advised bringing her temperature graph to her physician so a correct due date could be

determined, since ovulation occurred on Day 18 of that cycle. She relayed that “her infertility specialist was amazed at the pregnancy. He felt she would need Parlodel and Clomid several cycles ago, and had ‘pushed’ it for several months, but she’d declined.” Joy advised her to definitely maintain strict darkness throughout the pregnancy. Delivered a healthy baby boy.

DISCUSSION: It is known that the brain (specifically the hypothalamus and pituitary glands) is the cycling center for the hormones that govern the menstrual cycle. In early 1978, Joy gained particular insight into why and how these light influences might work within the brain from research conducted on laboratory rats by R.J Wurtman, and particularly two papers^{1, 2}. “The pineal gland has undergone extraordinary changes with evolution. It has developed into an unusual kind of gland, a neuro-endocrine transducer. This means that this gland can take an outward stimulus (light) which is relayed through a special optic (eye) nerve route to the pineal gland, which can then convert this light impulse to hormonal output (melatonin)”. Joy postulates that melatonin is stored in the hypothalamus and from that location influences the woman’s reproductive hormones. “Therefore, if the definite 24 hour rhythm of melatonin (normally low during the day and high during the night), is disrupted, then the normal progression of hormonal events of the menstrual cycle can also become disrupted.” Joy has collated formal details to evaluate the sleeping environment for light sources³.

- a) Artificial light sources located in the bedroom (with different scores if the light is white, green, blue, or red).
- b) Contributing factors that increase the level of light in the sleeping area (as thin window shades, large windows, mirrors, snow on the ground...) by artificial or natural light sources.
- c) Inside artificial light source reflecting into the bedroom (as a light on all night in the hallway or reflecting from another room...)
- d) Outside artificial light source reflecting into the bedroom (as streetlights or neighbor’s....)

Eliminate the light source itself for the best results. In situations where the light cannot be eliminated entirely, darker window coverings; or a sleep mask; or folded cool material placed snugly across the nose and eyes will block out the light. Other helpful ideas are available.

CONCLUSION: The presence of ambient light during sleep can have a fundamental and independent effect on a woman’s reproductive function. A simple regimen of adequate light exclusion can be an effective, economical and non-invasive treatment of a certain subset of infertile couples. Well-controlled studies are required to validate these results, including assays of reproductive hormones and melatonin to delineate the physiologic mechanisms involved. Couples can correctly identify their days of potential fertility in each cycle through STM instruction. A sufficient level of darkness during sleep, and then maintaining that darkness, helps to stabilize all the hormonal phases of the menstrual cycle. These phases can be observed in the woman’s STM charted patterns. Couples also report greatly improved sleep after darkening.

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