Current Medical Research

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Natural Family Planning
Diocesan Activity Report
SUPPLEMENT

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"Hormonal Profiles of Natural Conception Cycles Ending in Early, Unrecognized Pregnancy Loss." D.D. Baird, C.R. Weinberg, A.J. Wilcox, D.R. McConnaughey, P.I. Musey, and D.C. Collins. *The Journal of Clinical Endocrinology & Metabolism* April 1991 72:793-8OO.

Very often women lose an early pregnancy without knowing that they were pregnant. A very sensitive hCG (human chorionic gonadotrophin) assay can identify pregnancy very close to the time of implantation. The conception cycles of women who succeeded in initiating a successful pregnancy were compared with conception cycles which were followed by early spontaneous pregnancy loss. Levels of estrogen were unaffected, but in loss cycles pregnanediol-3-glucuronide (PdG), the breakdown product of progesterone,rose considerably later, suggesting late implantation. Ten (1O) of the pregnancies with early loss implanted after luteal day 1O while only one of the successful pregnancies implanted that late. Ordinarily hCG rescues the corpus luteum to prevent its deterioration, insuring its active support of the early pregnancy. Early pregnancy loss is not caused by a defective corpus luteum, but a defective corpus luteum may reflect a late implantation *[BBT might yield similar information. Ed.]*

"Circulating Bioactive Inhibin Levels during Human Pregnancy." J. Qu, L. Vankrieken, C. Brulet, and K. Thomas. *The Journal of Clinical Endocrinology & Metabolism* April 1991 72:862-866.

Inhibin is the hormone of the ovarian follicle which inhibits FSH and regulates its production in the anterior pituitary. Like estrogen, it is produced by the granulosa cells in the ovary and controls follicular growth. Recently it has been found that there is a peak level of inhibin in the mid-luteal phase of the cycle suggesting that it may also be secreted by the corpus luteum. Most recently, it has been found to be produced in the placenta in very high levels during human pregnancy increasing at a rate of 14.5% every 2-4 weeks and rising to a peak at 38 weeks. It may become a marker for normal pregnancy.

"Variable Ovarian Response to Gonadotropin-Releasing Hormone Antagonist-Induced Gonadotropin Deprivation during Different Phases of the Menstrual Cycle." M.R. Fluker, L.A. Marshall, S.E. Monroe, and R.B. Jaffe. *The Journal of Clinical Endocrinology & Metabolism* April 1991 72:912-919.

Fluker studied the dependence of the ovarian follicle and of the corpus luteum on gonadotropin by using a powerful drug which opposes gonadotropin-releasing hormone. The drug Detirelix was found to have rapid and consistent suppression of pituitary gonadotropin secretion. Suppression was greater on LH than FSH. This was constant throughout the cycle. However, ovarian response varied. The emerging dominant follicle and the emerging corpus luteum respond to a three-day long loss of gonadotropin by ceasing to function and involuting. Following this, follicular recruitment begins again. However, the mature preovulatory follicle is less susceptible to acute gonadotropin withdrawal and is capable of resuming growth rapidly, producing steroids and proceeding to ovulation once gonadotropin support is reinstituted. *[If this is confirmed, this may be a legitimate treatment for women who have been raped during the fertile phase of their cycle, but before ovulation. The presence or absence of the follicle can be established by ultrasound examination during the medical evaluation. Ed.]*

"Inhibition of Follicular Development by a Potent Antagonistic Analog of Gonadotropin-Releasing Hormone (Detirelix)." L.A. Marshall, M.R. Fluker, R.B. Jaffe, and S.E. Monroe. *The Journal of Clinical Endocrinology & Metabolism* April 1991 72:927-933.

Detirelix was administered to six volunteers by injection. Similar findings as reported by Fluker [previous abstract] were reported. The authors suggest that the drug may have some use as intermittent contraceptive or interoceptive agents.

"Unwanted Sexual Experiences Among Middle and High School Youth." P.I. Erickson and A.J. Rapkin. *Journal of Adolescent Health* June 1991 12:319-325.

Fifteen percent of almost 2,OOO middle and high school students reported that they had participated in unwanted sexual experiences in an anonymous health survey. Females were more likely than males and older students more likely than younger to report such experience. Experiences were divided into force/rape, child abuse, influence by drugs or alcohol, partner pressure, regret, and peer pressure. Males tended to report peer pressure and regret more often than females, who tended to report forced situations and child abuse. Gender distribution was similar regarding partner pressure under the influence of drugs and alcohol. Students who reported having had unwanted sexual experience were more likely to report being currently engaged in risk-taking

behaviors, school problems, and health problems. Those who had been physically forced were less likely to be currently sexually active and scored lower on a measure of current substance use than those who were not forced.

"Current Concepts of Beta-Endorphin Physiology in Female eproductive Dysfunction." D.B. Seifer and R.K. Collins. *Fertility and Sterility* November 1990 54:757-771.

Beta-endorphin has been studied since endogenous opioids were first isolated in 1975. Endorphins are a class of proteins called neuro-peptides which relate to reproductive function and dysfunction. The highest concentration of the precursor from which endorphins are produced are found in the pituitary gland, but they are found in the brain, in the sympathetic nervous system, adrenals, gastrointestinal tract, and placenta. Beta-endorphin has a role in the normal menstrual cycle and possible in the onset of puberty. Elevated or high levels of beta-endorphin have been associated with exercise associated amenorrhea, stress-associated amenorrhea, and polycystic ovarian syndrome. Depressed or low levels of beta-endorphin have been associated with premenstrual syndrome and menopause. Changes in the level of beta-endorphin, particularly alternating changes may bring about a change in the pulsatile release of gonadotropin-releasing factor, either through the pathways which release adenaline or dopamine. Other endorphins besides beta-endorphin may also be involved. Studies are still in progress to elucidate whether the changes in beta-endorphins are causal or are merely associated with the causes of the states described.

"Endurance Training Decreases Serum Testosterone Levels in Men without Change in Luteinizing Hormone Pulsatile Release." G.D. Wheeler, M. Singh, W.D. Pierce, W.F. Epling, and D.C. Cumming. *The Journal of Clinical Endocrinology & Metabolism* February 1991 72:422-425.

The role of physical exercise, especially endurance training, has inhibited the hypothalmo-pituitary-ovarian axis and resulted in reduced or absent menses or ovulation inadequate luteal phase and delayed puberty. In men, reduced levels of serum testosterone have been associated with high mileage endurance running, resistance training, low body fat, and "making weight" by wrestlers. The present study measured luteining hormone (LH) pulsatile release and serum testosterone in men who participated in a six month running training in which they progressed from a prior sedentary state to running, eventually 50 kilometers. It was found that even though the pulsatile LH release was not changed, there was considerable decrease in both free and bio available testosterone. Prolactin also declined. It is suggested that a peripheral mechanism such as increased tissue utilization or clearance by the liver may be responsible for the changes in serum testosterone without triggering any change in gonadotropin release.

"Effects of Various IUDs on the Composition of Cervical Mucus." B. Jonsson, B.M. Landgren and P. Eneroth. *Contraception* May 1991 43:447- 458.

Cervical mucus composition was studied when three different intrauterine devices were in place. The amount of mucin, albumin, and immuno-globulin G (IGG) was estimated. After an inert IUD, a decrease in mucin was observed. When a copper IUD was present, the mucin, albumin, and IGG increased but the weight was not affected. A levonorgestrel IUD, which releases levonorgestrel, inhibited ovulation in two out of eight women. Mucus weight was increased. The amounts of mucin, albumin, and IGG were not changed. The authors also studied the effect of copper on auto-oxidation of cholesterol. There was extensive conversion of the cholesterol, but the addition of albumin stopped the oxidation. This suggests that the increased secretion of albumin induced by copper IUD users may offer protection against copper-induced cell damage. *[See next article.]*

"New Insights on the Mode of Action of Intrauterine Contraceptive Devices in Women." F. Alvarez, et al. *Fertility and Sterility.* May 1988 49:768-773.

The uterus and tubes of 115 women using no contraception and of 56 women using IUDs were examined at the time of surgical sterilization. Even though the women had been cautioned against sexual intercourse during fertile phase, preoperative examination of the cervical mucus found spermatozoa in a number of subjects. Surgery was performed between 48 and 120 hours after mid- cycle peak of LH. Ova were found in 39% of the IUD users, compared with 56% of non-IUD users, suggesting that the IUD affected the ova before they reached the uterus. Half of the women who used no contraception produced ova which appeared to have been fertilized while no fertilized ova were found among the IUD users. No ova were recovered from the body of the uterus of any of the IUD users. Alvarez concludes that the principal mode of action of IUDs is by a method other than the destruction of live embryos. Inert IUDs, copper IUDs, and progesterone or levonorgestrel-releasing devices were tested. The recovery of ova among the three devices was identical. However, the copper device was associated with far more destruction of ova. *[Foreign body reaction, particularly to copper IUDs, has been described in the uterus and in the tubes by other authors. Ed.]*

"Adult Sexual Behavior in 1989: Number of Partners, Frequency of Intercourse and Risk of AIDS." T.W. Smith *Family Planning Perspectives* May/June 1991 23:102-107.

In 1988 and 1989, the National Opinion Research Center of the University of Chicago added questions about sexual behavior to their General Social Survey. They found that by age 18, 97% of adult Americans have had sexual intercourse. They reported an average of 1.2 sexual partners during the year preceeding the survey and nearly 7.2 partners since the age of 18. Men claimed considerably more partners than women. One-fifth of adult Americans had no partners during the previous year. Only 1.5% of married people reported having had a sexual partner other than their spouse in the previous year. The average number of acts of intercourse reported by adults were 57 times per year. Two percent (2%) of sexually active adults reported being exclusively homosexual or bisexual, 5-6% reported being exclusively homosexual or bisexual since the age of 18. Seven percent (7%) of adults

are at relatively high current risk of contracting AIDS; 3% because they have had multiple partners, 3% because they have had unfamiliar partners, and 1% because of their sexual orientation. Relatively risky behavior has been engaged in sometimes since the age of 18 by 33% of respondents.

Sexual abstinence reported by 22% of adult Americans in the previous year was more prevalent among women than men and lowest among the currently married. It was highest among the widowed. The ages of respondents ranged from 18 to over 70 and included all races, all levels of education, and all regions and communities. The relationship between age and abstinence is curvilinear beginning at 13% below the age of 30, falling to 7% at ages 30-39 and rising steadily to 68% among those aged 70 and older. Abstinence is higher among the less educated, but is not related to race or region and has only a weak association with the type of community in which the respondent lived.

"Patterns of Contraceptive Use in the United States: The Importance of Religious Factors." C. Goldscheider and W.D. Mosher. *Studies in Family Planning* March/April 1991 22:102-115.

Religious affiliation and religiousity (religious observance) continued to be important factors in the contraceptive paths to reduced number of pregnancies and in the context of secularization. Analysis of the 1988 National Survey of Family Growth for emerging contraceptive patterns among specific religious denominations and major ethic groups found that the overall pattern of secularization (reduced religious observance) does not preclude the continuing influence of some forms of religious values on family fertility and contraceptive use. Major shifts included narrowing of the gap in contraceptive practices between Protestants and Catholics. By 1988, 77% of Protestants and 75% Catholics were either sterilized or using some contraceptive. Natural Family Planning methods grouped under rhythm accounted for only 2% of usage among Protestants and 4% among Catholics. Church attendance and reception of Communion was examined and the range among Communicant Catholics who used any method of Natural Family Planning ranged from 2-4%. The effect of attendance at Catholic religious school by 1988 on contraceptive patterns was nil except for a lower level of female sterilization (21% vs. 30%). Blacks who had received Protestant or Catholic religious education had a higher percentage of sexual abstinence and condom use but reduced pill use and female sterilization. Hispanics who had religious education were also lower on pill and condom use, but not on abstinence. *[Clearly the education - or lack of it - in the schools is translated into practices. Ed.]*

"Contraceptive Use at First Premarital Intercourse: United States, 1965-1988." W.D. Mosher and J.W. McNally *Family Planning Perspectives* May/June 1991 23:108-116.

Mosher and McNally analyzed the 1988 National Survey of Family Growth to evaluate the use of contraception at first premarital intercourse between 1975-1979 and 1983-1988. The overall use rose from 47%-65%. Among non-Hispanic white women, this change resulted entirely from an increase in the use of condoms for their partners. The breakdown is as follows: Whites increased from 24%-45%; Blacks from 24%-32%; and pill use rose from 15%-23%. Among all women, the method most often used at first intercourse during every period in the study was condom followed by the pill and withdrawal. Thirty-two percent (32%) of Hispanic women and 68% of Jewish women used a method at first intercourse; Whites were more likely to use one than Blacks; Fundamentalist Protestants were less likely to use a method than other Protestants or Catholics. The mother's education related positively with the likelihood of using a method. Daughters of mothers who had completed high school were more likely to use a method than those whose mothers had not.

"Second-Trimester Maternal Serum Alpha-Fetoprotein Levels and the Risk of Subsequent Fetal Death." D.K. Waller, L.S. Lustig, G.C. Cunningham, M.S. Golbus, and E.B.. Hook. *The New England Journal of Medicine* July 4, 1991 325:6-10.

In the face of almost routine screening of pregnant women for alpha-feto protein, there were findings of unexplained elevated levels. Case control studies showed that unexplained elevated levels were associated with a higher risk of fetal death, especially when the mothers had hypertension or infarction of the placenta. An infarct is death of a portion of an organ due to blockage of the blood supply.

"Exogenous Estrogen Therapy for Treatment of Clomiphene Citrate-Induced Cervical Mucus Abnormalities: Is It Effective?" B.G. Bateman, W.C. Nunley, Jr. and L.A. Kolp. *Fertility and Sterility* October 1990 54:577-579.

Clomiphene citrate is administered to induce ovulation. Clomiphene is an anti-estrogen and suppresses cervical mucus. To offset this, 12 women were given various formulations of estrogen along with clomiphene. There was no change in cervical mucus quality or quantity.

"Adverse Infant Outcomes Associated With First-Trimester Vaginal Bleeding." M.A. Williams, R. Mittendorf, E. Lieberman, and R.R. Monson. *Obstetrics & Gynecology* July 1991 78:14-18.

Bleeding in the first trimester of pregnancy occurs at times without obvious explanation. Williams analyzed pregnancy outcomes in women carrying singleton pregnancies. Eleven thousand four hundred forty-four (11,444) non-diabetic women's records were studied. Neo-natal death occurred almost twice as often in women who had first trimester bleeding. Women who carried their pregnancies despite early bleeding had one and a half times as high a risk of delivering babies with low birth weight. First trimester bleeding may indicate clinically undetectable partial placental separation and should not be ignored.

"Outpatient Microsurgical Reversal of Tubal Sterilization by a Combined Approach of Laparoscopy and Minilaparotomy." P.D. Silva, A.N.

Schaper, J.K. Meisch, and C.W. Schauberger. *Fertility and Sterility* April 1991 55:696-699.

Until now, tubal reanastomosis after tubal sterilization required extensive hospitalization. Silva et al. report 17 women who were treated either as outpatients or who required only an overnight stay. Of the 17 women, 15 were available for comparative studies: 71% conceived 13 intrauterine pregnancies; there was one ectopic pregnancy. These results compare favorably with the more expensive hospitalization employed previously.

"Characterization of Subendometrial Myometrial Contractions Throughout the Menstrual Cycle in normal fertile women." E.A. Lyons, P.J. Taylor, X.H. Zheng, G. Ballard, C.S. Levi, and J.V. Kredenster. *Fertility and Sterility* April 1991 55:771-774.

It is now possible to study the contraction waves of the myometrium by means of vaginal ultrasound. Three-hundred twenty-eight (328) ultrasound scans were studied throughout the menstrual cycle in 18 healthy ovulatory volunteers with proven fertility. It was found that contractions begin at the cervix and go upwards towards the fundus in the estrogenic phase of the cycle while the reverse is true in the progestational phase. *[Evidently, the direction of contraction is intended to facilitate upward movement of the sperm and downward movement of the embryo. Ed.]*

"The Effect of Cigarette Smoking on Ovarian Function and Early Pregnancy outcome of In-Vitro Fertilization Treatment." H.A. Pattinson, P.J.Taylor, and M.H. Pattinson. *Fertility and Sterility* April 1991 55:78O-783.

It is known that cigarette smoking reduces fertility and increases the frequency of spontaneous abortion of chromosomally normal fetuses. The authors studied pregnancy outcomes in assisted reproduction (in vitro fertilization) and found that although there were no differences in fertilization and pregnancy rates between smokers and non-smokers, the incidence of spontaneous abortion was 42% in smokers, compared with 18.9% in non-smokers. As a result, the live birth rate among smokers was only 9.6%, while it was 17% in the non-smokers. The effect was noted only if the woman smoked. Smoking by the husband did not change the outcome.

"Exercise Induces Two Types of Human Luteal Dysfunction: Confirmation by Urinary Free Progesterone." I.Z. Beitins, J.W. McArthur, B.A. Turnbull, G.S. Skrinar, and B.A. Bullen. *The Journal of Clinical Endocrinology & Metabolism* June 1991 72:135O-1358.

Twenty (2O) university students who had well established menstrual function entered a summer exercise program. They had previously ovulated regularly as demonstrated by biphasic BBT. Hormones were studied at baseline and throughout the program. Twenty (2O) of the 53 students showed abnormal luteal phase cycles associated with insufficient progesterone secretion and decreased luteal phase length. Despite increased estriol excretion, the ovulatory luteinizing hormone peak was delayed. There was less LH during the luteal phase. It is concluded that there is a lack of positive feedback of estrogens which accounts for the decreased LH secretion. This disruption may well be a function of neurotransmitters as a result of the extra exercise stress. The effect of such strenuous exercise on fertility later on is not known, but the authors recommend building up to strenuous exercise gradually with long initiation and adaptive periods in order to preserve normal menstrual function and fertility.

"The Endocrine Effects of Long-Term Treatment with Mifepristone." (RU 486) SWJ Lamberts, JW Koper, and FH de Jong. *Journal of Clinical Endocrinology and Metabolism* July 1991 73:187-191.

Meningiomasare brain tumors which contain a high number of progesterone receptors but do not have estradiol receptors. Treatment with mifepristone (RU 486) was attempted in 1O patients over a 12-month period to study the effect of blocking progesterone. Of the three male and seven female patients, only one woman was premenopausal. Mifepristone blocks not only progesterone but cortisol receptors. Nearly all the patients became quite ill at the beginning of treatment, three requiring cortisone supplementation. Studies of multiple steroid parameters led to the conclusion that long-term administration of mifepristone in female patients with meningiomas resulted in a biochemical syndrome previously described as cortisol receptor resistance. Long-term therapy with RU 486 required concomittant steroid supplementation in some patients, but turned out to be otherwise without clinically adverse side effects. The single premenopausal woman who received the drug developed endometrial hyperplasia requiring curetage for heavy bleeding. *[Endometrial hyperplasia results when unopposed estrogen is allowed to affect the endometrium. The effect of RU 486 on the tumors is described by the authors in a separate paper which is not yet published. Ed.]*

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