Is there a Difference in Sexual Behavior Between oral Contraceptive Users and Injectable Progestin users?

Thesis

Submitted for partial fulfillment of Master Degree
In Obstetrics and Gynecology

Presented by

Basem Mahmoud Hussein El Arby

Resident of Obstetrics and Gynecology
Luxor General Hospital- Luxor
M.B., B.CH.
Tanta University, 2004

Under Supervision of

Prof. Dr. Mohamed Sayed Ali
Assistant Professor of Obstetrics and Gynecology
Faculty of Medicine – Ain Shams University

Dr. Hayam Fathy Mohamad
Lecturer of Obstetrics and Gynecology
Faculty of Medicine – Ain Shams University

Faculty of Medicine
Ain Shams University
2013

First of all, all gratitude is due to **Allah** *for blessing this work, until it has reached its end, as a part of his generous help, throughout my life.*

Really I can hardly find the words to express my gratitude to **Prof. Dr. Mohamed Sayed Ali,** *Assistant Professor of Obstetrics and Gynecology, Faculty of Medicine – Ain Shams University for his supervision, continuous help, encouragement throughout this work and great effort he has done in the meticulous revision of the whole work. It is a great honor to work under his guidance and supervision.*

I am also grateful to **Dr. Hayam Fathy Mohamad,** *Lecturer of Obstetrics and Gynecology, Faculty of Medicine – Ain Shams University for her guidance, continuous assistance and sincere supervision of this work.*

Introduction

The need for methods of contraception and fertility regulation that are acceptable and widely used remains a worldwide problem of major proportions. The scope for developing new techniques for fertility regulation is considerable, and much research effort is currently being expended on this goal. However, the ultimate value of a method depends on its acceptability and usage ***(Tanfre et al., 2000)***.

Women's contraceptive use and choices are largely affected by their satisfaction with the specific methods, which is influenced by their personal subjective experience and impact on their quality of life as well as sexual life during the use of the contraceptive methods concerned. Currently available data support an impact of contraceptive use on the psychosocial well-being in women ***(Li et al., 2004).***

It has been proposed that endogenous androgen levels are significant independent determinants of sexual behavior in women ***(Bachmann et al., 2002) & (Miller et al., 2004)***.

Several studies over the past 30 years reported negatives effects of OCs on sexual function, including diminished sexual interest and arousal suppression of female-initiated sexual activity, decreased frequency of sexual intercourse, and sexual enjoyment ***(Panzer et al., 2006).***

Exogenous estrogen is associated with decreased levels of biologically active testosterone. This is due to its effect in increasing production of sex hormone binding globulin and the resultant increased binding of circulating testosterone. It would follow that estrogen-containing contraceptives would decrease free testosterone and potentially have a significant impact on sexual desire ***(Schaffir, 2006).***

The neurobiology of sexual behavior involves sex steroids and neurotransmitters, and includes central nervous system effects and peripheral effects in the genitalia. In women estrogen appears to be important in desire but is particularly in arousal, declining levels of estrogen associated with the menopausal transition and postmenopausal state may lead to vaginal atrophy and subsequent difficulty with

vasocongestion and lubrication. Testosterone appears to be the primary sex steroid influencing desire, and may involve initiation of sexual activity, while progesterone may mediate receptivity to partner approach ***(Frye et al., 2001).***

When oral contraceptives (OCs) were initially marketed, there was concern that they caused depression in some women, particularly those using high doses of ethinyl estradiol, with the introduction of lower doses pills, there has been less depressives illness, but a number of studies have looked at mood changes relevant to quality of life. Overall, the conclusions are some women experience improved mood with OCs; some, worse mood and largest proportion, no change ***(Greco et al., 2007)***.

Depomedroxyprogesterone actate (DMPA) was approved by the Food and Drug Administration as contraceptive in 1992 and is currently used by over 3 million women, including 7.9% of adolescents in United States who uses contraception. Medroxyprogesterone acetate inhibits gonadotropin and ovarian hormone synthesis, induces anovulation, enhances the cervical mucous barrier to sperm and causes loss of the endometrial glycogen needed for

blastocyst support in humans, amenorrhea occurs in over 90% of women who use DMPA for more than 2 years, and endometrial biopsies invariably show atrophic changes, serum estradiol (E2) levels are markedly reduced in human DMPA users, and evidence of decreased bone density and high- density lipoprotein levels occurs among long-term users ***(Miller et al.,2000).***

Peripheral effects on sexual functioning appeared to be even more complicated. Estrogen, testosterone, progestin released by ovaries or the adrenals maintain genital structure and function**.** They also influence the bioavailability and function of each other; for examples, increasing levels of estrogen may lead to increased sex hormone-binding globulin (SHBG) with subsequent binding of free testosterone, thus lowering bioavailable or free testosterone. In addition, progestin can be antiestrogenic. Vasocongestion of clitoral tissue appears to be positively mediated by nitric oxide and vasoactive intestinal polypeptide (VIP) once sexual stimulation occurs ***(Clayton, 2003).***

In fact, the authors of one recent study recommended the discontinuation of oral contraception to treat sexual dysfunction, given an improvement in sexual desire scores among women who discontinued their medication ***(Sarajari et al., 2004).***

In fact, very little has been published that specifically examines the effect of depomedroxyprogesterone actate (DMPA) on sexual behavior in women. A prospective analysis of sexual functioning in 80 Chinese women started on DMPA showed no difference from baseline after 4 months; this same study also confirmed no difference in sexual functioning after starting OC ***(Li et al., 2004).***

Research Question:

Does the female sexual function and hormonal concentrations differ in combined oral contraceptives and injectable progestin?

Research Hypothesis:

Injectable progestin had higher level of free testosterone, lower level of estradiol and fewer reports of decreased sexual desire in comparison to combined oral contraceptives.

Aim of the Work

The aim of this study is to evaulate sexual function(by female sexual function index questionnaire from ***Rosen et al. (2000)*** and hormonal concentration (total testosterone, free testosterone and estradiol) in injectable progestin (containing 150 mg depotmedroxyprogestrone acetate) in comparison to combined oral contraceptives(various type) to correlate effect of contraceptive method on sexual behavior.

Review of Literature

The phases of the sexual response cycle have been described in the Diagnostic and Statistical Manual of Mental Disorders (4thedition; DSM-IV), based on a motivational psycho-physiological model as desire, arousal, orgasm, and resolution. The current diagnostic classification of sexual dysfunction uses the first three phases of this response cycle, as resolution is a passive phase following orgasm and not associated with known sexual dysfunction. Sexual desire involves physiological, cognitive, and behavioral components manifested by sexual thoughts and fantasies and interest in participation in sexual activity. Sexual arousal involves cognitive excitement and the wish for sexual activity to continue as well as physiological arousal manifested in women by pelvic congestion, engorgement, and vaginal lubrication. Orgasm is the process of physiological release of sexual tension involving a cognitive aspect of pleasure, and rhythmic contraction of perineal and reproductive organ structures, and associated cardiovascular and respiratory changes. Because women do not have a post orgasmic refractory

period, they have the potential to experience multiple orgasms. Recent theoretical clarifications of women's sexual response during long-term relationships have suggested that desire is responsive to factors associated with the choice to participate in sexual activity, such as emotional closeness, commitment, and tolerance, which further enhances arousal with the awareness of the desire to continue the sexual experience ***(BassonR, 2000).***

Clinical and empirical studies, mainly of North American and European adult women without sexual complaints, have clarified sexual response cycles that are different from the linear progression of discrete phases already mentioned. Women describe overlapping phases of sexual response in a variable sequence that blends the responses of mind and body (Fig. 1) ***(BassonR, 2001).***

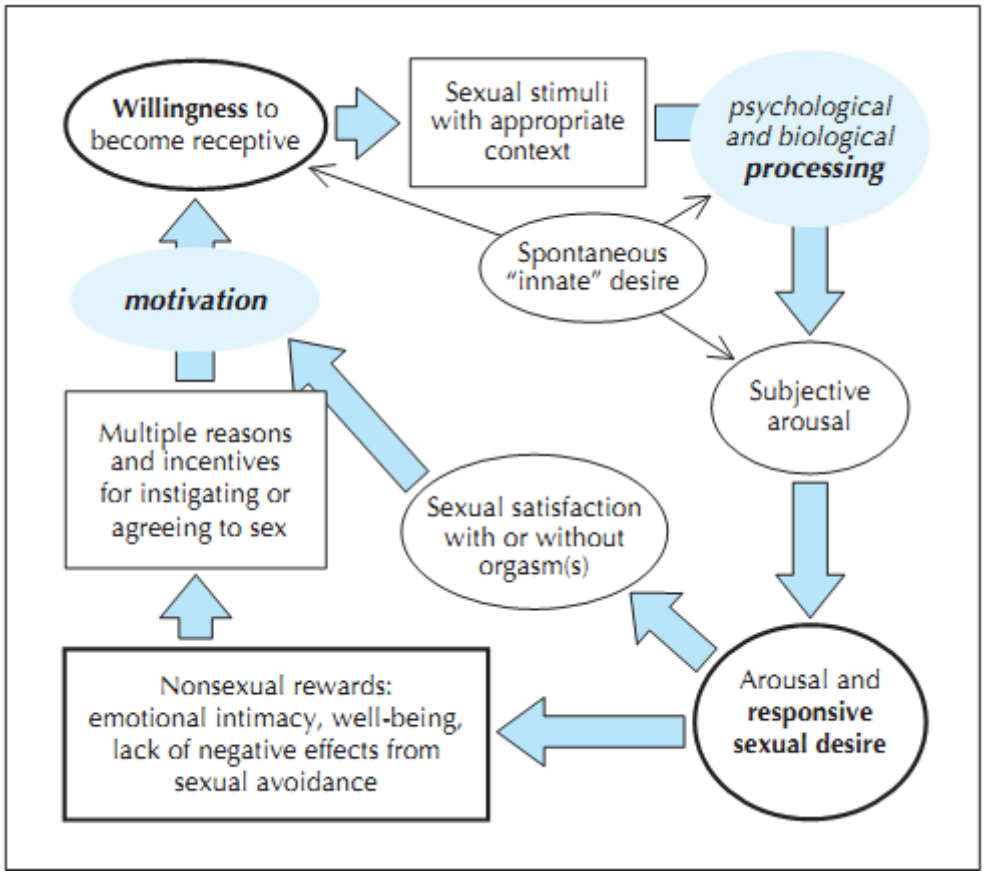

Figure (1): Sex response cycle, showing responsive desire experienced during the sexual experience as well as variable initial (spontaneous) desire. At the "initial" stage (left) there is sexual neutrality, but with positive motivation. A woman's reasons for instigating or agreeing to sex include a desire to express love, to receive and share physical pleasure, to feel emotionally closer, to please the partner and to increase her own well-being. This leads to a willingness to find and consciously focus on sexual stimuli. These stimuli are processed in the mind, influenced by biological and psychological factors. The resulting state is one of subjective sexual arousal. Continued stimulation allows sexual excitement and pleasure to become more intense, triggering desire for sex itself: sexual desire, absent initially, is now present. Sexual satisfaction, with or without orgasm, results when the stimulation continues sufficiently long and the woman can stay focused, enjoys the sensation of sexual arousal and is free from any negative out-come such as pain ***(BassonR, 2001).***

Recent baseline data from a longitudinal study of 3300 multi-ethnic, premenopausal North American women aged 42–52 who had not recently received medication affecting reproductive hormones and who had engaged in sexual activity with a partner during the past 6 months clarified their reasons both to engage sexually (to express love, for pleasure, because the partner wanted to, to relieve tension) and to refrain (lack of interest, tiredness or physical problems [their own or their partner's], or no current partner) ***(Cain et al., 2003).***

These findings and those from other studies are in keeping with the sexual response cycle illustrated in Fig. 1. At the beginning of a given sexual experience, a woman may well sense no sexual desire per se. Her motivations to be sexual are complex and include increasing emotional closeness with her partner (emotional intimacy) and often increasing her own well-being and self-image (sense of feeling attractive, feminine, appreciated, loved and/or desired, or to reduce her feelings of anxiety or guilt about sexual infrequency) ***(Cain et al., 2003 and Kulsemann, 2002).***

When a woman is willing to become aroused and enjoy a sexual experience, she focuses on the sexual stimulation she and her partner supply. If the stimulation is as she wishes, sufficient time is available and she can stay focused, her sexual excitement and pleasure intensify. Clearly, the type of stimulation, the time needed and the context (both erotic and interpersonal) are all highly individual. Emotionally and physically positive outcomes will increase subsequent motivation. Some women report desire that appears to be spontaneous, leading to arousal or to more enthusiasm to find or be receptive to sexual stimuli. This type of desire has a broad spectrum across women and may be related to the menstrual cycle ***(Nappi, 2003).***

It decreases with age, and at any age commonly increases with a new relationship ***(Dennerstei, 2004 and Klusmann, 2002).***

A normal sexual response is a complex process dependent on a neurotransmitter-mediated response that causes increased pelvic blood flow, labial and clitoral engorgement and increased vaginal lubrication ***(Berman et***

al., 2000). All physiological and psychological impairments that interfere with this process can lead to sexual dysfunction ***(Read, 2004).***

This newer model of female sexual function describes a circular relationship between sexuality and satisfaction, and is not linear. In 2002, Basson described a ‘‘Sexual Response Circle’’ that incorporates psychological and social aspects into female sexual function, such as emotional intimacy and emotional satisfaction as well as sexual desire and physical satisfaction ***(Basson, 2001).***

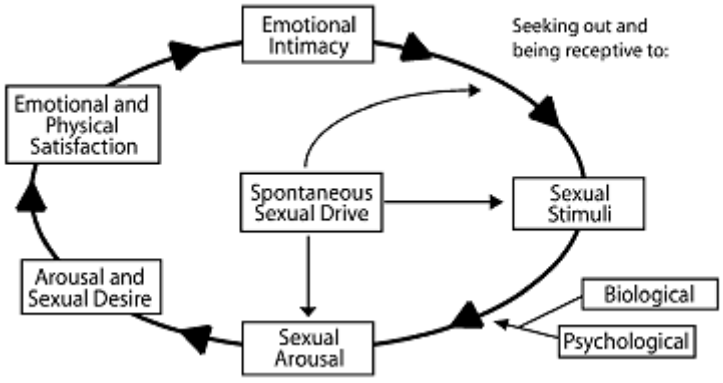

Figure (2): The interrelatedness of intimacy, sexual arousal, desire and satisfaction ***(Basson, 2001).***

This model recognizes that sexual function and response are different in men and women. Importantly, for women, desire does not always precede sexual arousal,

with many women participating in sexual activity out of love and affection for their partners. Once engaged in sexual activity, women may then become aroused, and then experience desire. For many women, the sexual response cycle is intimately intertwined with the overall relationship that they are in, and incorporates the societal and psychological milieu. Although prevalence and incidence data are scarce for rates of sexual activity, what data there are support the conclusion that women are sexually active throughout the lifespan. Data from the National Survey of Family Growth indicate that approximately 40% of females 15 to 19 years of age have had sexual intercourse within the last 3 months ***(Mosher, 2005).***

Female sexual dysfunction (FSD) is a highly prevalent and often underestimated problem in the general community. Improved knowledge about the female pelvic anatomy and recent advances in female sexual physiology have helped to classify FSD. Female sexual dysfunction is defined as a disorder of sexual desire, orgasm, arousal, and sexual pain that results in significant personal distress. It is