Monitoring Of Ovarian Response To Laparoscopic Ovarian Drilling In Polycystic Ovarian Disease

Essay

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BY

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الحمد لله الذي بنعمته تتم الصالحات

الحمد لله تبارك وتعالى العليم الخبير الذي وفقني

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Contents

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List Of Abbreviations

BMI	: Body mass index
CC	: Clomiphene citrate
DHEAS	: Dehydroepiandrosterone sulphate
FAI	: Free androgen index
FSH	: Follicular stimulating hormone
GnRH	: Gonadotrophin releasing hormone
HCG	: Human chronic gonadotrophin
HMG	: Human menopausal gonadotrophin
HOMA	: Homeostasis model assessment
ICSI	: Intra cytoplasmic sperm injection
IGF-1	: Insulin like growth factor-1
IVF	: in vitro fertilization
LH	: Luteinizign hormone
LOD	: Laparoscopic ovarian drilling
LOS	: Laparoscopic ovarian surgery
NIH	: National Institute of Health
OHSS	: Ovarian hyperstimulation syndrome
PCOD	: Polycystic ovarian disease
PCOS	: Polycystic ovarian syndrome
POF	premature ovarian failure
SHBG	: Sex hormone binding globulin
VEGF	: Vascular endothelial growth the factor.

Tables

Figures

Introduction

Historical Perspective:

Polycystic ovaries were first recognized at the beginning of the last century ***(Asthon, 1906).***

Stein and Leventhal (1935) first described a complex associated with amenorrhea, hirsutism, and enlarged polycystic ovaries. They reported the results of bilateral wedge resection, removing one half to three-fourths of each ovary; all 7 patients resumed regular menses and 2 became pregnant.

Goldzieher and Axetrod (1963) documented high urinary levels of both luteneizing hormone (LH) and follicle-stimulating hormone (FSH) in the women with the characteristics described by Stein and Leventhal. Later on, ***Yen et al. (1980)*** hypothesized that a gonadal dysfunction secondary to regulatory breakdown in the hypothalamic pituitary axis was the cause, as an elevation in the serum concentration of LH relative to that of FSH was demonstrated.

About 50% to 70% of women with PCOS have variable degrees of insulin resistance. This secondary hyperinsulinemia appears to underlie many of the endocrine features of the PCOS ***(Ovalle and Azziz, 2002).***

Polycystic ovarian syndrome (PCOS) was first described by Stein and Leventhal in 1935 as compromising amenorrhoea, hirsuitism, obesity and sclerotic ovaries. It is one of the most

common human endocrinopathies, affecting 5-10% of women of reproductive age ***(Dunaif, 1997).***

It is a complex metabolic endocrine disorder with severe long-term health consequences, such as a higher risk of diabetes and cardiovascular diseases ***(Carmina et al., 2001)***.

Although traditional concepts of PCOS as gynaecological/endocrine condition presenting with menstrual irregularities, anovulatory infertility, obesity, hirsuitism and acne still prevail, there have been several recent developments in the literature on the agreed definition, pathophysiology, treatment and possible long-term health consequences ***(Sharma et al., 2005)***.

Sonographic appearance of polycystic ovaries is considered an important criterion of PCOS diagnosis,the typical pattern was defined by the presence of >10 cysts measuring 2-8 mm in diameter arranged peripherally around a dense core of stroma or scattered through an increased amount of stroma ***(Adams et al., 1995).***

In the past, the specific problems of infertility, dysfunctional uterine bleeding and hirsutism have been treated. But now, there is an opportunity to have an impact on the quality and quantity of life to be experienced by these patients, by creating and supporting preventive health care attitude in anovulatory women ***(Speroff et al., 2005).***

Classically clomiphene citrate (CC) is the first approach to induce ovulation in patients with PCOS. Traditional alternative for CC-resistant patients include gonadotrophin therapy and laparoscopic ovarian diathermy ***(Amin et al., 2003).***

Incidence of PCOS:

Polycystic ovarian syndrome is the most common endocrinopathy in women and most common cause of anovulatory infertility, affecting 5-10% of the population ***(De Leo et al., 2003).***

The great majority of the PCOS patients are first seen between the age of 20 and 30 years, presumably due to the gradual appearance of the clinical manifestations of the PCOS in the postpubertal reproductive years. Also PCOS compromises approximately 70% of cases of ovulatory dysfunction while hypothalamic amenorrhea about 10% of cases, hyperprolactinemia 10% & of cases and premature ovarian failure (hypogonadotropic hypothalamic anovulation) 10% of cases ***(Knochenhauer et al., 1998).***

Phenotypic expression of PCOS appears to be dependent on racial origin. For example, Mexican American and South Asian women with PCOS are more likely to suffer insulin resistance compared with Caucasions ***(Wijeyaratne et al., 2002).***

South Asian women also have lower sex hormone binding globulin levels. European and Maori women with PCOS are more likely to present with hirsutism compared with other races ***(Williamson et al., 2001),*** and the prevalence has also been shown to be commoner in women with type II diabetes ***(Peppard et al., 2001)***.

Prevalence Studies:

Polycystic ovarian disease should not be confused with the PCOS. Polycystic ovaries may be diagnosed in the absence of any clinical syndrome ***(Polson et al., 1988).***

The PCOS refers to the presence of polycystic ovaries in a woman with a particular cluster of symptoms which usually includes amenorrhea, oligoamenorrhea, hirsutism, anovulation, and other signs of androgen excess such as acne and crown pattern baldness ***(Jacobs, 1996).***

Several other prevalence studies have been undertaken ***(Lowe et al., 2005),*** and a prevalence rate of between 16% and 33% was reported. Prevalence studies found that women with PCO were also more likely to have symptoms suggestive of the PCOS, namely hirsutism or menstrual disturbances.

Concept of a Spectrum:

It is was recognized that there is a continuum or spectrum of clinical presentations ***(Balen et al., 1995).*** At one end of the spectrum are the women who ovulate and who have no dermatological manifestations such as acne or hirsutism. These

women may have had an ultrasound scan for some other completely unrelated reason. At the other end of the spectrum there may be women with menstrual disturbances; oligoamenorrhea, increased hair growth, acne, crown pattern baldness, evidence of insulin resistance. The patients described by ***Stein and Leventhal (1935)***, probably represented one extreme of the clinical spectrum.

The presence of a woman in this continuum is likely to be predetermined by genetic factors but the position on the continuum is likely to be related to lifestyle and in particular, body mass index (BMI). Although the exact ‘‘trigger’’ that ‘‘causes’’ the expression of the syndrome is unknown, it seems likely that BMI is involved**,** and women at the PCO end of the spectrum (without PCOS) may move to the other end of the spectrum if they have an increase in body weight ***(Homburg, 1996).***

Weight reduction in a woman with PCOS will often return her to the other end of the spectrum with ovulatory cycles and improved hirsutism ***(Clark et al., 1995).***

In clinical practice there is a tendency for only women at the severely affected end of the scale (with PCOS) to be referred to infertility or endocrine services. An asymptomatic none obese woman who is diagnosed with PCO on ultrasound should be counseled about the advisability of maintaining a normal BMI in the future ***(Vrbikow et al., 2003)***.

AIM OF THE WORK

The aim of this study is to collect and summarize the recent trends for monitoring the ovarian response to laparoscopic ovarian drilling in polycystic ovarian disease.

Polycystic Ovarian Syndrome

Definition of PCOS:

Polycystic ovarian syndrome sometimes called hyperandrogenic chronic anovulation ***(Balen, 1999). The Rotterdam ESHRE/ASRM (2003)*** sponsored PCOS consensus workshop group agreed that PCOS was a primarily condition of ovarian dysfunction whose cardinal features were hyperandroginism and polycystic morphology on ultrasound. The workshop agreed that two of the following three criteria were required in order to diagnose the condition after exclusion of the other causes of androgen excess. These three criteria were: (i) oligo-and/anovulation, (ii) clinical and/or biochemical signs of hyperandrogenism; and (iii) polycystic ovary morphology on ultrasound scan, defined as the presence of 12 or more follicles in each ovary (with one ovary being sufficient for diagnosis) measuring 2-9 mm in diameter, and/or increased ovarian volume (>10 ml) ***(Sharma et al., 2005)*** .

Androgen Excess Society (2006) defined PCOS to include all of the followings:

(i) Hirsutism and/or hyperandrogenaemia.

(ii) Oligo- or anovulation and/or polycystic ovaries.

(iii) Exclusion of androgen excess or related disorders.

Table 1: Proposed criteria for the definition of PCOS.

NIH, 1990
To include all of the following:
1. Hyperandrogenism and/or hyperandrogenemia
2. Chronic anovulation
3. Exclusion of related disorders
ESHRE/ASRM (Rotterdam), 2003
To include at least two of the following, in addition to exclusion of related disorders:
1. Oligo-anovulation
2. Hyperandrogenism and/or hyperandrogenemia
3. Polycystic ovaries
Modified NIH criteria[a]
To include all of the following:
1. Androgen excess (clinical and/or biochemical hyperandrogenism)
2. Ovarian dysfunction (oligo-anovulation and/or polycystic ovarian morphology)
3. Exclusion of other androgen excess or ovulatory disorders

PCOS, polycystic ovary syndrome; NIH, National Institutes of Health; ESHRE, European Society for Human Reproduction and Embryology; ASRM, American Society for Reproductive Medicine.

(AES, 2006).

Pathology of PCOS:

The characteristic changes of the ovary in PCOS reflect the dysfunctional state. These are grossly:

1- The surface area is doubled giving an average volume increase of 2.8 times and the ovary is covered by a smooth pearly white capsule ***(Speroff and Fertiz, 2005).***

2- The thickness of the tunica is increased by 50 %.

3- A one-third increase in cortical stromal thickness and a 5-fold increase in subcortical storma are noted.

4- A gross morphologic heterogenicity of polycystic ovaries was also recognized as ***Bernard (1985)*** found normal appearing ovaries in 40 % of their patients with clinical