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**Antimullerian hormone as a predictor of ovarian
reserve after laparoscopic ovarian drilling**

Protocol of thesis
Submitted for partial fulfillment of Master degree in
Obstetrics and Gynecology

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ABBREVIATIONS

ASRM: American society for reproductive medicine.

AFC: Antral follicle count.

AMH: Antimullerian hormone.

BMI: Body mass index.

BOWR: Bilateral ovarian wedge resection.

E2: Estradiol.

ESHRE: European society of human reproduction and embryology.

FAI: Free androgen index.

FSH: Folliclestimulating hormone.

GnRH: Gonadotropin releasing hormone.

IVF: In vitro fertilization.

LH: Luteinizing hormone.

LOD: Laparoscopic ovarian drilling.

NIH: National institute of health.

NICHD: National institute of child and human development.

PCO: Polycystic ovaries.

PCOS: Polycystic ovary syndrome.

TVS: Transvaginal sonoraphy.

TSH: Thyroid stimulating hormone.

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INTRODUCTION

Polycystic ovary syndrome(PCOS) is a common reproductive endocrinological disorder in females which is characterized by abnormal menstruations and hyperandrogenism (*Jultanmas et al., 2007*).

It is very important to distinguish between polycystic ovaries(PCO) and polycystic ovary syndrome(PCOS). Having PCO does not mean necessarily you have PCOS. A syndrome is usually defined as a pattern of symptoms belonging to a particular disease. The main features of PCOS are male hormone excess and PCO. Some of the problems that women with PCOS may complain excess hair on the body(hirsutism), acne, and other skin problems, scalp hair loss, irregular or missing periods, heavy periods, fertility problem, insulin resistance and weight issues. PCOS is diagnosed only when two of the following three symptoms are present and other causes are excluded: Irregular periods (usually <6 periods/year), Blood tests or symptoms suggesting male hormone excess, PCO (*Adams et al., 1986*).

Despite the prevalence of PCOS, its etiology has yet to be clearly elucidated. Evidence suggests there are familial and genetic roles in becoming predisposed to PCOS from birth, while an additional event such as puberty brings about the fully developed syndrome. Treatment for an adolescent with PCOS include diet and exercise, metformin and oral contraceptive pills. Each of these options has been shown to be

effective in improving certain aspects of PCOS and probably the best treatment plan involves some combination of them (*Darren et al., 2004*).

Laparoscopic ovarian drilling (LOD) is one of the treatments of choice for the clomiphene citrate resistant PCOS woman. Not only does it have good results with ovulation and pregnancy rates, but it also has several advantages including having a long term effect after one operation, inducing one follicle ovulation, not needing extensive monitoring, and having no ovarian hyperstimulation syndrome. However, this method has some disadvantages including risks from anesthesia and operative complications. Consideration of substantial damage to the ovarian tissue during LOD operation has been always mentioned too. The premature failure of one ovary has been reported after LOD using diathermy. However, there have also been reports which showed no great diathermal effect on ovarian tissue. The number of follicles developed and the number of ova picked up were not different between PCOS women with and without LOD. Recently, there have been reports of ovarian reserve after LOD using hormonal markers including inhibin B, follicle stimulating hormone (FSH) and estradiol with contradicting results (*Jultanmas et al., 2007*).

Anti-mullerian hormone (AMH) is a dimeric glycoprotein, a member of the transforming growth factor(TGF) superfamily. It is produced exclusively in the gonads and is involved in the follicular growth and development. In the ovary AMH is produced by the granulosa

cells of early developing follicles and seems to be able to inhibit the initiation of primordial follicle growth and FSH induced follicle growth. As AMH is largely expressed throughout folliculogenesis, from the primary follicular stage towards the antral stage, serum levels of AMH may represent both the quantity and quality of the ovarian follicle pool. Compared to other ovarian tests, AMH seems to be the best marker reflecting the decline of reproductive age. AMH measurement could be useful in the prediction of the menopausal transition. It could also be used to predict poor ovarian response and possibly the prognosis of in vitro fertilization(IVF) cycles. AMH has been shown to be a good surrogate marker for PCOS. Finally, its use as a marker for granulosa cell tumours has been proposed (**La Marca, Volpe., 2006**).

AMH correlates better than age, FSH, LH, Inhibin B and estradiol with number of retrieved oocytes, Receiver operating characteristic curves estimated that AMH accurately predicts ovarian responsiveness to controlled ovarian stimulation with high sensitivity and specificity (**Baker et al., 2008**).

AIM OF THE WORK

To measure ovarian reserve by AMH and transvaginal sonography in women with polycystic ovary syndrome (PCOS) undergoing laparoscopic ovarian drilling (LOD).

PATIENTS&METHODS

This study will be carried out at Ain Shams University maternity hospital starting from January 2009 till June 2009.

The patients will be included in this study will be the patients attending the reproductive endocrinology and infertility unit having

The inclusion criteria:

- 1-Age < 40 years.
- 2- Women having the criteria of PCOS as presence of irregular menstruation, oligomenorrhea (cycle lasting > 35 days) or amenorrhea (absence of menstrual cycle in the past 6 months), one or more signs of hyperandrogenism as acne and hirsutism, typical ultrasonographic appearance of bilateral PCO with ten or more follicles of 2-8 mm diameter and all causes of abnormal menstruation with hyperandrogenism which mimic PCOS will be ruled out.
- 3-No ovarian pathology detected by transvaginal sonography(TVS).
- 4-They did not receive progestins or oral contraceptive pills or metformin in the last 3 months before the study.

They will consist of 20 patients and they will be subjected to:

- 1- A written consent will be taken from them to be part of this study.
- 2- Full history and clinical examination.
- 3- Laparoscopic ovarian drilling will be done for them.