

AN EVALUATION OF 100 CASES OF FEMALE INFERTILITY
IN THE OUT-PATIENT CLINIC OF INFERTILITY IN
AIN SHAMS UNIVERSITY HOSPITAL

THESIS

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INTRODUCTION

I N T R O D U C T I O N

Infertility affects approximately 10 % of couples, which makes it one of the most common problems for which people seek medical advice.

A couple complaining of infertility deserves a sympathetic and systematic examination of all aspects of the reproductive tract to rule out pathology.

Infertility is usually defined as one year of unprotected coitus without pregnancy. It is estimated that the male factor is implicated in 40 % of infertility problems, failure of ovulation will account for another 10 - 15 %, 20 - 30 % will be caused by tubal pathology and in 5 % of cervical factor is associated with the infertility. The remaining 10 - 20 % of couples will have no known cause for their infertility. (Speroff et al., 1981a)

AIM OF WORK

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Infertility is one of the most common problems for which people seek medical aid. It is an accepted basis for divorce in many cultures.

The aim of this work is to assess the different aetiological factors in females attending the out-patient clinic of infertility at Ain Shams University hospital.

OVARIAN FACTOR

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Disorders of ovulation accounts for approximately 15 % of all infertility problems. These may be anovulation or severe oligo-ovulation (Speroff et al., 1981a).

(A) Prediction and Detection of Ovulation :

An important step in evaluation and management of female infertility is the detection and timing of ovulation (Moghissi, 1982).

Definite proof of ovulation is the establishment of pregnancy or the recovery of an ovum from the oviducts. Direct observation of a corpus luteum with the presence of a stigma by pelvic endoscopy or laparotomy may be considered strong evidence of ovulation. Presumptive evidence of ovulation may be obtained by steroid or gonadotropic hormone assays in the blood or urine or by observance of peripheral changes in the reproductive tract and other sites associated with ovulation (Moghissi, 1982).

I- Tests based on Hormone Assays :

(1) LH (Luteinizing Hormone) Assays :

Daily assay of serum LH in midcycle can detect the LH surge, which is presumed to occur before actual ovulation. The mean interval between the LH peak and the

estimated time of ovulation has been shown to be less than 48 hours in all cycles and less than 24 hours in 75 % of cycles (Yussman et al., 1970; Pauerstein et al., 1978 and World Health Organization Report, 1978).

(2) Estrogen Assays :

Serum estradiol (E_2) demonstrates a characteristic peak approximately 1 day before the LH surge and 37 hours before ovulation. Serial determinations of serum E_2 at midcycle thus can detect the time of ovulation with a fair amount of accuracy (Moghissi, 1982).

Recently, direct assays for determination of estrogen 3α -glucuronide and estriol- 16α -glucuronide have been developed (World Health Organization Report, 1978).

(3) Progesterone Assays :

Serum progesterone levels are usually less than 1 ng/ml during the follicular phase.

Co-incidentally with the LH surge, serum progesterone concentration begins to rise and reaches a peak of greater than 10 ng/ml approximately 10 days after the LH surge (Moghissi, 1982). A progesterone level greater than 5 ng/ml is considered to be consistent with ovulatory cycles by most investigators (Ross, et al., 1970).

Urinary assay of pregnandiol, a metabolite of progesterone, also would aid in ovulation detection. A

urinary level of 2 mg or greater is consistent with ovulatory cycles (Moghissi, 1972).

An radio immuno assay (RIA) for urinary pregnandiol-3 α -glucuronide has been developed and has demonstrated a significant rise of this metabolite in the urine 2 days after the LH peak (Samarajecwa, et al., 1979).

II- Tests Based on Peripheral and Systemic Changes :

Basal Body Temperature (BBT):

The (B B T) record does not predict the day of ovulation but rather provides evidence of ovulation 2 or 3 days after it has occurred (Morris et al., 1976; Vallman, 1977 and Samarajecwa et al., 1979).

A biphasic BBT is usually indicative of an ovulatory cycle, whereas a monophasic BBT may be observed in some ovulatory cycles (Johansson et al., 1972 and Moghissi, 1976).

A prolonged follicular phase and a short luteal phase (less than 12 days) may be contributing factors to infertility (Moghissi, 1982).

III- Tests Based on Physical Properties of Cervical Mucus :

Secretion of cervical mucus is regulated by ovarian hormones. Estrogen stimulates the production of large amounts of thin, watery, alkaline, acellular cervical mucus with intense ferning, spinnbarkeit, and

sperm receptivity. Progesterone inhibits the secretory activity of cervical epithelia and produces scanty, viscous, cellular mucus with low spinnbarkeit and absence of ferning which is impenetrable by spermatozoa.

Midcycle mucorrhea, ferning, spinnbarkeit, and lowered cell content and viscosity of cervical mucus are used commonly in ovulation detection and as an index of estrogenic response of cervical epithelium.

Intense ferning, high spinnbarkeit, and low viscosity do not necessarily indicate ovulation and are merely an index of an optimal amount of circulating estrogen, which may be observed in an-ovulatory cycles. Changes in the cervical mucus in the opposite direction are indicative of a post ovulatory progesterone effect.

In the presence of endocervicitis, assessment of cervical mucus tests may be difficult or impossible. (Moghissi, 1982).

IV- Tests Based on Chemical Contents of Cervical Mucus:

(1) Protein Constituents :

Current methods for determining these proteins are based on electrophoretic or immunologic techniques and are not as yet of clinical value. However, the availability of new techniques such as nephelometry should make it possible to assay cervical mucus proteins relatively easily (Moghissi, 1982).

(2) Enzymes :

Most enzymes found in cervical mucus show a cyclic pattern. Serial studies of these enzymes have demonstrated that its concentrations are high during the follicular phase and decrease precipitiously 3 to 4 days before the LH surge. The lowest enzyme level is usually reached on the day of the LH surge and may be caused by the peak in estradiol production on the preceding day.

On the day following the LH surge there is a significant and sudden increase in the concentration of these enzymes which is sustained during the luteal phase. Determinations of some of these enzymes are simple enough to be of clinical value. (Moghissi et al., 1976 and Takehisa, 1980).

(3) Glucose and Glucosamine :

Although the concentration of reducing substance is decreased in cervical mucus at midcycle, the amount of glucose reported is increased.

Birnberg et al., 1958 reported that in normal patients the maximal cervical glucose concentration occurred on the day of ovulation. They also reported that fresh hemorrhagic corpora lutea were observed in all women subjected to laparotomy who had positive cervical glucose test on the day prior to operation. Over 70 % of patients artificially inseminated on the day of the