CORRELATION BETWEEN FOLLICULAR FLUID ESTRADIOL (E_2) AND FOLLICULAR MATURATIONAL STATES

THESIS

Submitted in partial fulfilment of the

Master Degree in Gyn. and Obst.

54863

By

618.178
M.A

MAGDA ABD EL KADER SHIHATA
M.B., B.Ch.
Faculty of Medicine
Ain Shams University

Under the Supervision of

PROF. DR. AHMED RASHED
Professor of Gyn. and Obst.
Faculty of Medicine - Ain Shams University

DR. MOHAMED ADEL EL NAZER
Assistant Professor of Gyn. and Obst.
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University
1994

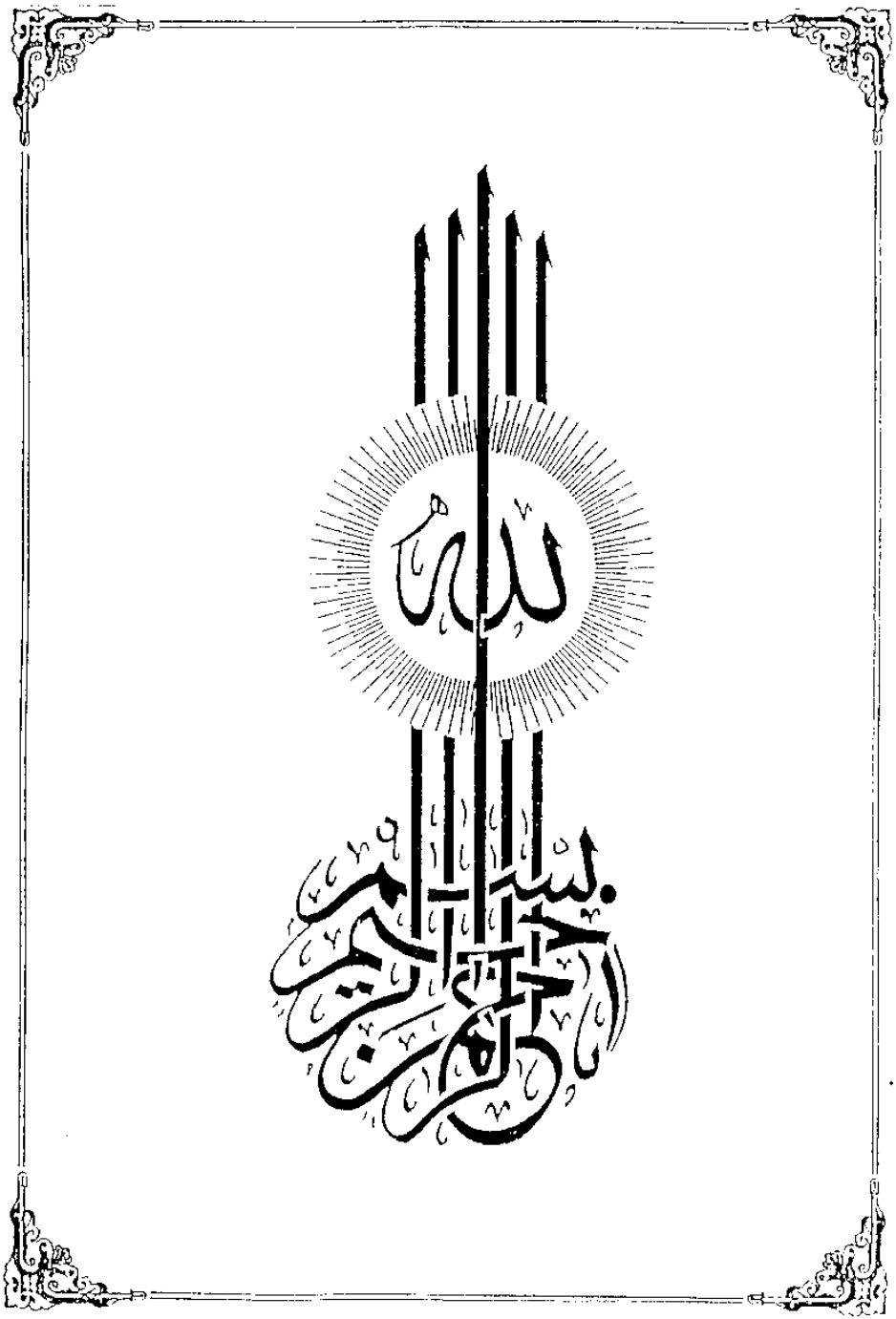
بسم الله الرحمن الرحيم

« وعلمك ما لم تكن تعلم

وكان فضل الله عليك عظيما »

صدق الله العظيم

(سورة النساء آية ١١٣)



Central Library - Ain Shams University

CONTENTS

	Page
Introduction	1
Aim of the Work	3
Review of Literature	4
Causes of Infertility	4
The Physiology of the Normal Ovulatory Cycle	19
Induction of Ovulation	38
Monitoring of Ovulation	55
Material and Methods	85
Results	91
Discussion	103
Summary	109
Conclusion	111
References	112
Arabic Summary	

LIST OF TABLES

		Page
Table (A):	Indications for introduction into the program.	86
Table (1):	Comparison between morphology, oocyte maturity and follicular size.	91
Table (2):	Comparison between morphology, oocyte maturity and follicular fluid E_2 (pg/ml).	93
Table (3):	Comparison between morphology, oocyte maturity and serum E_2.	95
Table (4):	Comparison between morphology, oocyte maturity and serum E_2 / follicle.	97
Table (5):	Correlation between follicular size and serum E_2 / follicle.	99
Table (6):	Correlation between follicular fluid E_2 and serum E_2 / follicle.	101

LIST OF FIGURES

		Page
Fig. (1):	Comparison between morphology, oocyte maturity and follicular size.	92
Fig. (2):	Comparison between morphology, oocyte maturity and follicular fluid E_2 (pg/ml).	94
Fig. (3):	Comparison between morphology, oocyte maturity and serum E_2.	96
Fig. (4):	Comparison between morphology, oocyte maturity and serum E_2/follicle.	98
Fig. (5):	Correlation between follicular size and serum E_2/follicle.	100
Fig. (6):	Correlation between follicular fluid E_2 and serum E_2/follicle.	102

ACKNOWLEDGEMENT

Sincere thanks and gratitude are due to all those who have helped this thesis to come into being.

My thanks especially go to ***PROF. DR. AHMED RASHED****, Professor of Gynaecology and Obstetrics, Faculty of Medicine, Ain Shams University, whose supervision, encouragement and fatherly guidance inspired me to carry on this work with keen interest and to whom no words can express my gratitude.*

I am very grateful to ***DR. MOHAMED ADEL EL NAZER****, Assistant Professor of Gynaecology and Obstetrics, Faculty of Medicine, Ain Shams University, for his valuable advice, fatherly guidance, help and encouragement.*

Finally, sincere appreciation is attributed to all my colleagues in Dr. Abdel Kader Fahmy, IVF Center.

Introduction

INTRODUCTION

The field of infertility has undergone a dramatic change over the past 15 years. The challenges in providing care to the infertile couple have traditionally been related to the step-wise analysis of individual factors which may be interfering with a given couple's ability to establish a pregnancy and the use of medical and surgical means to correct their impediments to conception. The problem of infertility is one of the major problems endangering the family and it occurs in about 15% of all unions. Infertility in women, asthenooligospermia in man as well as infertility of unknown causes, form some of the problems which are among the most important interests of many researchers, and many publications have been written in this field. In vitro fertilization (IVF) and embryo transfer (ET) are now effective therapy in the management of certain types of infertility.

Several investigators (*Steptoe and Edward,* 1978) attempted IVF of human oocytes which had been recovered from excised ovaries and

matured in vitro. These efforts met success although the percentage of fertilization was very low and there was a corresponding high rate of abnormal fertilizations. The application of laparoscope or ultrasound to oocyte retrieval allowed the collection of human oocytes which had been matured in vivo. Insemination of these oocytes resulted in a much higher fertilization rate (*Edward and Steptoe,* 1975).

Aim of the Work

AIM OF THE WORK

Since ultrasonic folliculometry can detect the morphological growth of the ovum while it doesn't supply us with enough knowledge about the biological efficiency of the ovum, we found it logical to correlate the morphological growth with the functional activity and the power of hormone production against follicular growth.

Review of Literature

CHAPTER 1

CAUSES OF INFERTILITY

A couple is considered infertile when pregnancy does not occur after one year of coitus without contraception (*Edward,* 1989).

Infertility represents a major social problem especially in our society, so great efforts are done by gynecologists to overcome such a problem.

Causes of infertility vary between countries, and even regions and a knowledge of local disease patterns is essential if appropriate investigations are to be performed and inappropriate ones omitted.

Ovulatory Disorders

Ovulatory disorders are present in about 15% of infertile couples. These disorders include anovulation, infrequent ovulations, ovulation with a defective luteal phase, polycystic ovarian diseases, aluteal cycle and luteinized unruptured follicle (LUF syndrome). Disorders of ovulation may result from problems arising at any of the three levels of the hypothalamic pituitary ovarian axis.

Documentation of ovulation are either by direct means as:

1. Establishment of pregnancy which is considered the only proof for ovulation.
2. Recovery of an ovum at laparoscopy or laparotomy from the fallopian tube.
3. Observations of ovulation at laparoscopy or laparotomy (*Edward*, 1989).

Or indirect means as:

1. Basal body temperature (BBT) graphs (*Quagliarello and Army*, 1986).
2. Changes in cervical mucus (*Leader et al.*, 1985).
3. Follicular phase estradiol (E_2) levels (*Bryce et al.*, 1982).
4. The LH surge as detected in plasma or urine is generally accepted as the standard method to predict impending ovulation (*Seibel*, 1986).

Classification of Anovulatory Patients

Classification of anovulatory patients according to (WHO Scientific Group Meeting, Hamburg, 1976).

- Group I: Hypothalamic-pituitary failure. Amenorrheic women with