VASCULAR IMPOTENCE

THESIS

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IN

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By

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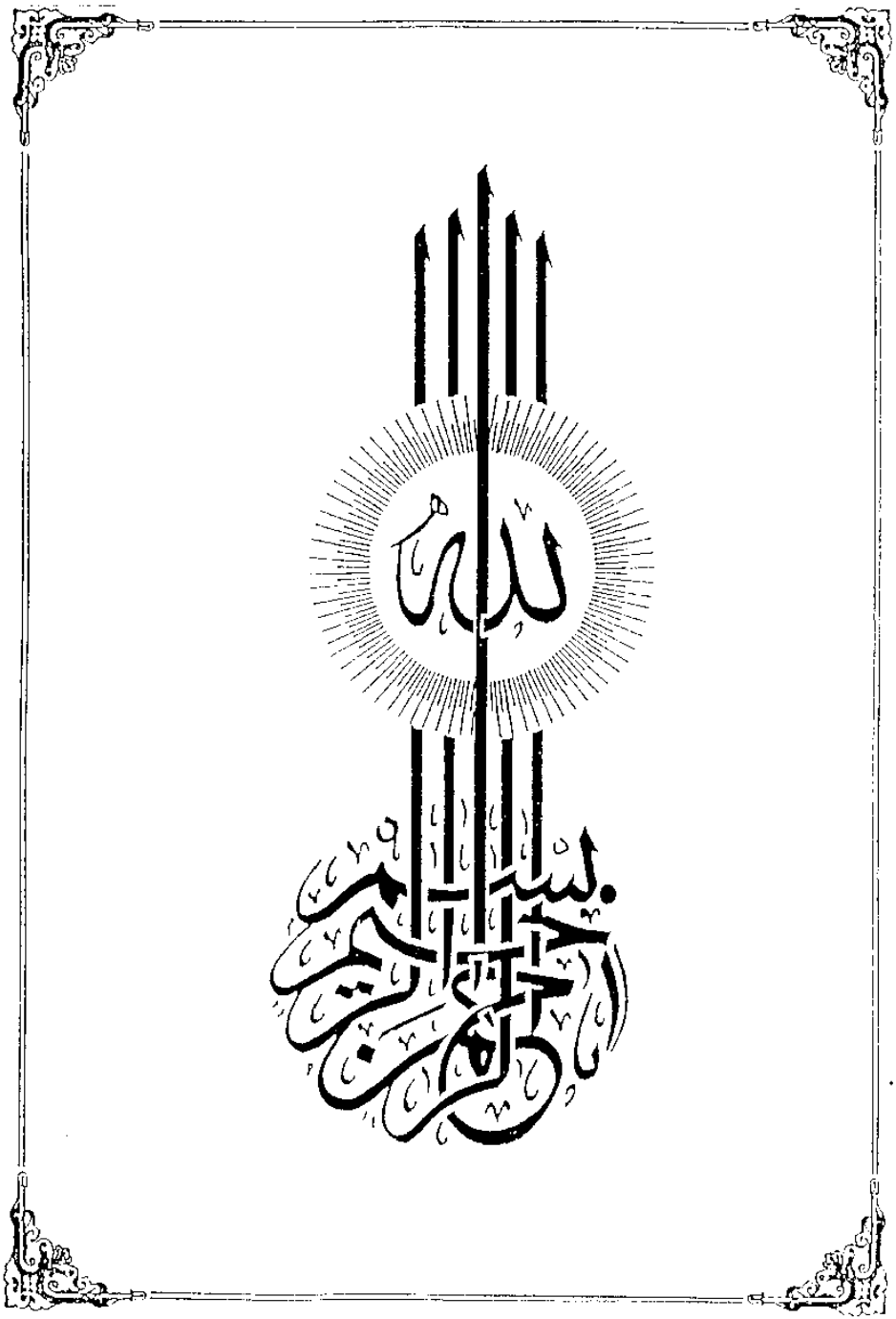
بسم الله الرحمن الرحيم

وَقُلْ رَبِّ زِدْنِي عِلْمًا

صدق الله العظيم



DEDICATION

TO

MY FATHER, MOTHER

AND

MY TWIN BROTHER

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ABBREVIATION LIST

C.C.	=	corpus cavernosum
EDRF	=	endothelium derived releasing factor
min.	=	minute
NPT	=	nocturnal penile tumescence
PBI	=	penile brachial index
REM	=	rapid eye movement
VIP	=	vasoactive intestinal polypeptide
<	=	less than
>	=	more than

INTRODUCTION

Introduction and Aim of the Work

Impotence is a commomn male sexual dysfunction which has far reached psychological and medical significance. This dysfunction is categorized into organic, psychological or mixed types based on etiology of the symptoms [Schmidt ,1983].

Erection is a complex physiological response controlled by neurological, psychological, vascular and hormonal factors [Smith ,1981 and Rivard ,1982].

The development and maintenance of erection depend on intact lower cord, adequate level of testosterone and intact peripheral vasculature as well as peripheral nerves [Schmidt ,1983].

Unfortunately, lack of scientific knowledge about the pathophysiology of erectile dysfunction, lack of precise objective examinations to document the erectile dysfunction, and lack of communications between physician and patient have all contributed to the common belief that erectile dysfunction is mostly of psychogenic etiology [Wabrek et al., 1983].

Only in recent years,attention has been focused on obstruction and dysfunction of the internal pudendal artery and its branches which can impede blood flow to the penis with resultant sexual dysfunction [Kedia ,1984].

The hemodynamics of erection depend not only on the integrity of arterial blood supply, but also on the integrity of corporal sinusoids and venous drainage [Cohen et al., 1980 and Zorgniotti et al., 1980].

Vascular lesions, either occlusion of the sexual arteries or venous leakage, are one of the most frequent causes of organic impotence [Buvat et al., 1986].

Pharmacologically induced penile erection can be achieved by injecting vasoactive substances into the corpus cavernosum. [Brindley ,1983 and Virag et al., 1984]. This became the best screening test for vasculogenic impotence. [Abber et al., 1986].

The aim of this work is to give a review of pharmacology, mechanisms and hemodynamics of erection, laying stress on the vascular causes of erectile failure together with the recent investigations to assess the penile vasculature.

Hopefully, with the aid of this thesis, increased awareness of the erectile dysfunction in patients with peripheral vascular disease and the ability to assess and improve the penile blood flow will be more achievable .

This thesis will include the following :

1- Introduction .

2- Review of literature :

a- Development of the penis.

b- Anatomy of the penis with its nerve and blood supply .

c- Physiology of erection .

d- Etiology of vasculogenic impotence .

e- Investigations to assess the vascular defects and pathology :

- Ordinary diagnostic tests .
- Advanced diagnostic tests .

f- Treatment :

- Medical .
- Surgical .

3- English summary .

4- References.

5- Arabic summary .

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CHAPTER 1

Development of the Penis

During the second month of embryonic life, at a time when the urogenital sinus has been divided, an elevation arises from the urogenital diaphragm called the genital tubercle [Wagner, 1981] . It appears in the cranial end of the cloacal membrane and lengthens to form the male phallus, within which is a longitudinal endodermal mass called the urethral plate. This plate grows forward from the wall of cloaca towards the tip ofthe organ [Williams and Warwick ,1980]. Below the tubercle, a groove appears (the primary urethral groove) the raised margins of which are the genital folds [Wagner, 1981] (fig.1-1). The lower aspect of the urethral plate is in contact with the ectoderm lining this primary urethral groove. The disintegration of the cells of the urethral plate and contiguous ectoderm results in the definitive urethral groove that begins to roll in ,as the urethral canal, forming the urethra [Wagner, 1981].

Another pair of prominent folds appears, one on each side of the base of the phallus called the genital swellings, and extends caudally (fig.1-1). Each genital swelling meets the other from behind forwards enclosing the phallic part of the urogenital sinus to form the bulb of urethra and also enclosing the definitive urethral groove to the front to form most of the spongy urethra. Thus, as the pnallus lengthens, the urogenital orifice is carried forward till it reaches the glans. At the tip