ROLE OF TRANSVAGINAL ULTRASONOGRAPHIC MODALITIES IN THE DIAGNOSIS OF PELVIC MASSES

ESSAY

Submitted For Partial Fulfilment of
Master Degree of Radiodiagnosis

BY

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FACULTY OF MEDICINE

AIN SHAMS UNIVERSITY

1993

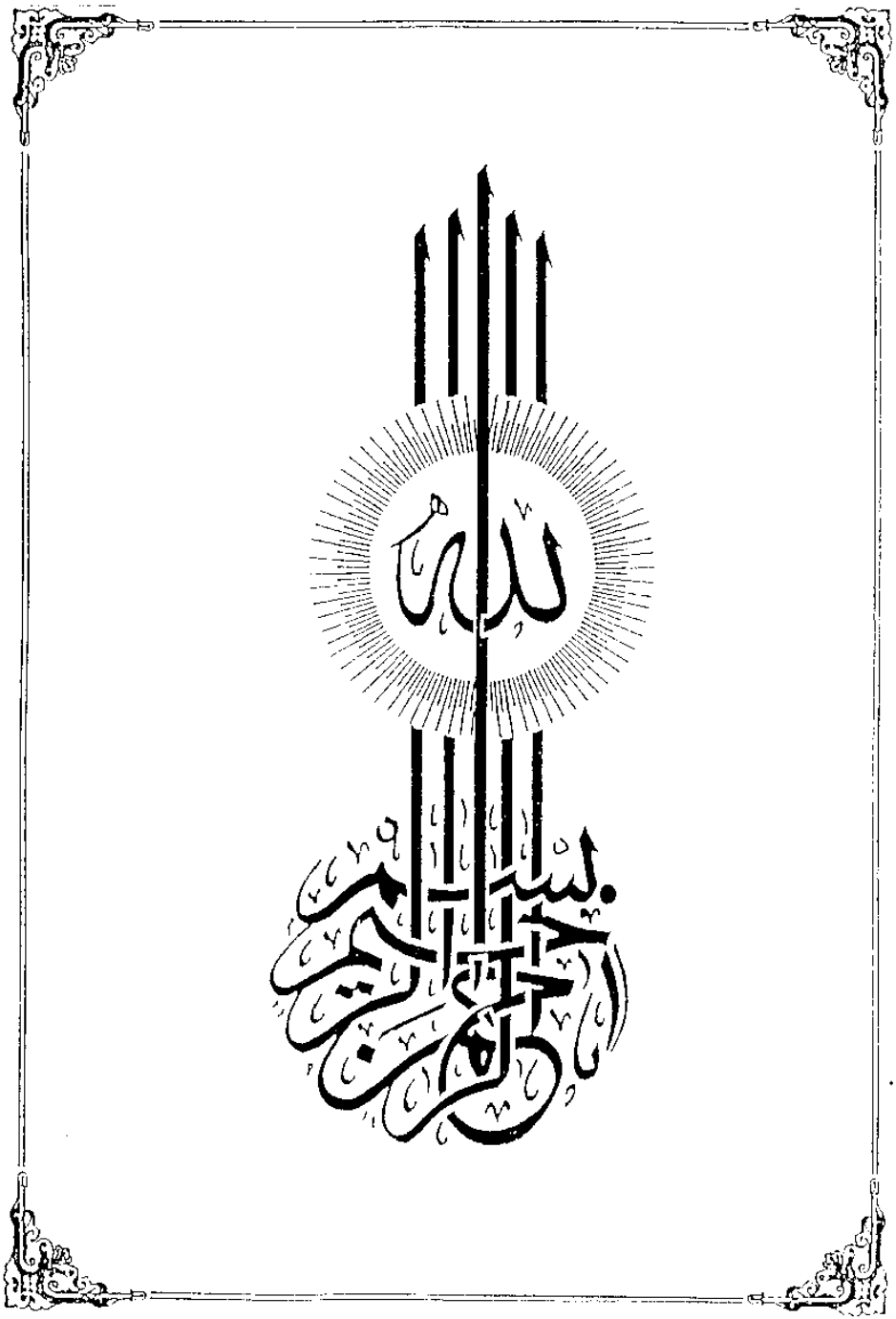
بسم الله الرحمن الرحيم

«قالوا سبحانك لاعلم لنا

إلا ماعلمتنا إنك أنت العليم الحكيم»

صدق الله العظيم

سورة البقرة/ اية ٣٢



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Finally, deep appreciation is expressed to my family for their support and kind help.

Kamal

CONTENTS :

List of Figures

INTRODUCTION AND AIM OF THE WORK

Introduction and aim of work:

Sonography is the diagnostic modality of choice for evaluation of patients with a pelvic mass. Transvaginal sonography (TVUS) affords improved resolution of the pelvic structures over that which can be obtained with the conventional transabdominal approach (TAUS). More information can be obtained using Doppler ultrasound than could previously be gained by morphological study. Color Doppler indicates direction, velocity, and type of blood flow, whereas pulsed Doppler enables quantification of such flow.

However, the combination of high quality B-mode images, pulsed Doppler and color coded Doppler flow imaging in the same vaginal probe produces a superb simultaneous picture of morphological and blood flow information from the female pelvic circulation to the pelvic mass.

Aim of this work is to emphasize the increasing importance of transvaginal sonographic modalities in the diagnosis of pelvic masses.

Equipments of Transvaginal Sonography And Doppler Systems

Equipments of Transvaginal Sonography And Doppler Systems

Introduction :

Transvaginal sonography is a recent innovation that requires knowledge of pelvic anatomy, clinical obstetrics and gynecology, and the instrumentations used to obtain diagnostic images. Improvements in sonographic (ultrasound) instrumentation have primarily resulted from more complete integration of high speed digital electroncs. Special purpose microcomputers are being used to steer and dynamically focus array transducers, allowing greater flixibility and control over image formation and producing images with both higher spatial and intensity resolution. Recent developments in real-time color Doppler systems have also been the product of high-speed special-purpose microprocessors.

(A.C.Fleischer and Ronald R.Price,1992)

The number of transvaginal ultrasound probes and machines has increased dramatically recently. A welcome side effect to this has been the development of new features for many of these machines. While the basic concepts of ultrasonography obviously do not change for the vaginal approach, there are a number of considerations, both practical and scientific, that affect the equipment for this diagnostic medium. **(D.B.Peisner,1991)**

Scanner Characteristics :-

Real-time instruments rapidly sweep the ultrasound beam through

a sector,rectangular,or trapizoidal area by either mechanical or electric means. Frame rates greater than 15 frames per second are required to produce flicker-free images and to observe moving structures. Because real-time probes are not attached to an articulated scanning arm, the sonographer has great flexibility in selecting the image plane orientation.

Ultrasound scanning systems typically consists of :

1 - A mechanical or electronic means of moving the ultrasound beam through an image plane.

2 - An electronic signal processing unit with constrols for varying the transducer power output, overall receiver gain, and other operational parameters such as time gain compensation (TGC).

3 - A gray scan display unit equipped with controls for varying the image brightness and contrast.

4 - A device for permanently recording the images (polaroid, multi-image format camera, paper printers, videotape, or disk).

The console also has a keyboard to superimpose patient identification, examination data, and study information on the recorded images. (**A.C.Fleischer and Ronald. R.Price,1992**)

Transducer Designs

Transducers are characterized by their frequency, size (effective apperture in the case of arrays), and degree of focusing .

The typical range of frequency for diagnostic ultrasound imaging