FLOWCYTOMETRY DNA PLOIDY STUDY IN FEMALE PATIENTS WITH EARLY BREAST CANCER IN CORRELATION WITH PROGESTERONE RECEPTORS

Thesis

Submitted For Partial Fulfillment Of M.D. Degree In

GENERAL SURGERY

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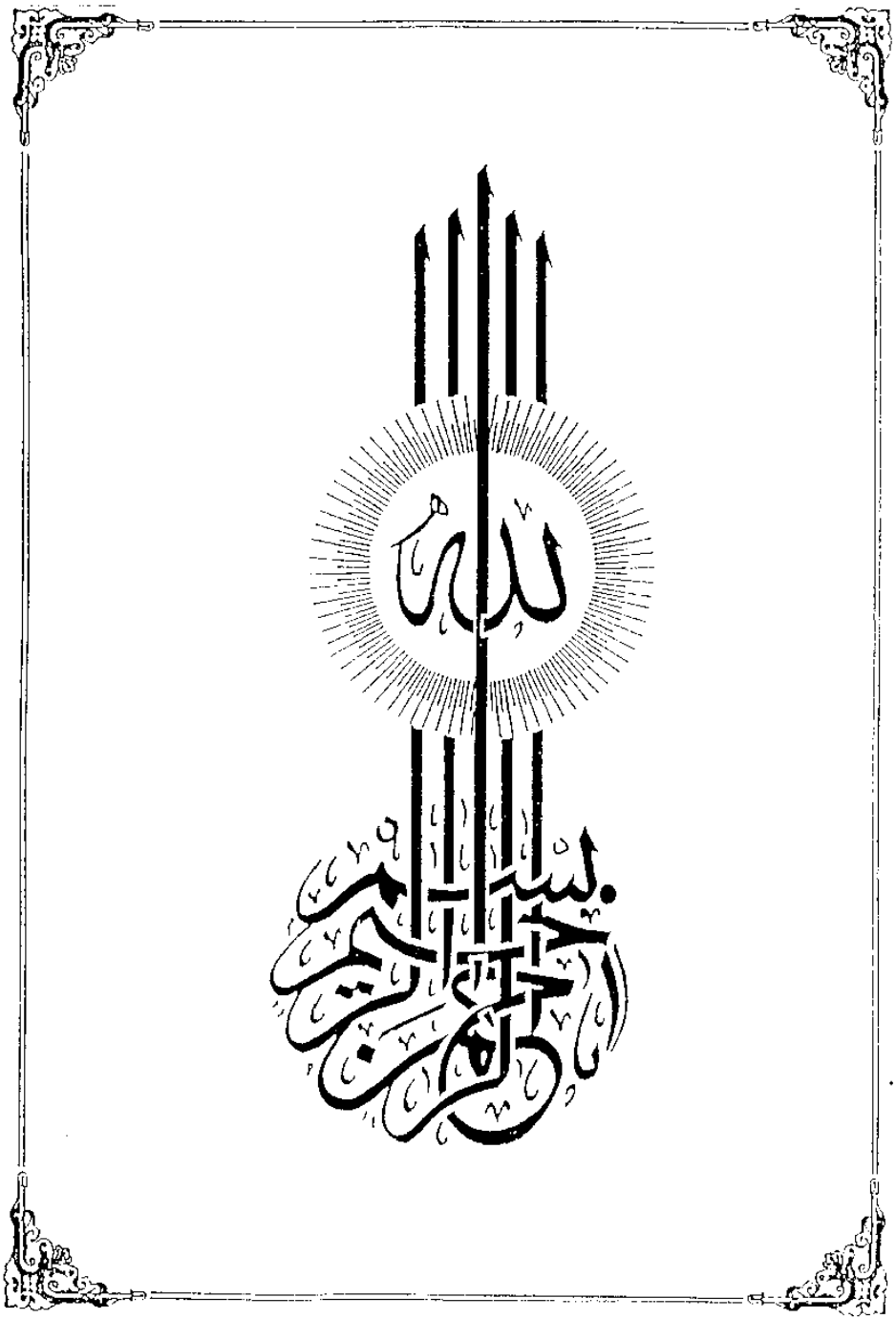
Dr.Ali Khalifa Ali , *Professor Of Biochemistry , Ain-Shams University , has been like a father to me . I can never describe my feelings towards his kindness , precious advice and endless patience which I have found whenever needed or expected . Without his ceaseless support , this study would have never been completed . I will always feel indebted to him .*

Fortunately , this study has been meticulously revised and advised by ***Dr.Alaa Osman ,*** *Assist. Professor Of General Surgery , Ain-Shams University . He read every word , elaborated every idea and has offered me a really distinguished guidance and superb care . I owe him much for the time and effort he generously provided .*

I was indeed on honour to have been supervised by ***Dr.Hesham Zietoon ,*** *Assist.Professor Of General Surgery , Ain-*



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TO MY MOTHER , FATHER ,
BROTHERS AND SISTERS

CONTENTS

INTRODUCTION AND AIM OF THE WORK

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Identification of the risk factors predictive of recurrence after surgical removal of a breast cancer is of prime interest . The aim is to define groups presenting a high recurrence risk for which adjuvant treatments can be designed .

Flow cytometry is a modern method of studying cells . By means of which a quantitative cell analysis at the single cell level is available . Also , cell population and subpopulation can be determined by cell surface antigen using flow cytometry . In addition , flow cytometry allows the rapid screening of large numbers of cells , far beyond the capability of traditional cytopathological methods *(Wheeless , 1991)* .

Estrogen receptors and progesterone receptors measurements have introduced too recently and , therefore , it is too early to be able to rely on their prognostic value . Although it is generally agreed that metastasis in breast cancer frequently respond to hormonal therapy in cases with positive estrogen and / or progesterone receptors , there remains some uncertainty as to the specific prognostic value of estrogen and progesterone receptors levels and their predictiveness of disease free survival and overall survival *(Chevallier et al ., 1988)*.

The aim of the present study is to improve the usefulness of the available prognostic parameters by evaluating recent biological parameters as progesterone receptors and genetic markers as DNA & cell cycle .

REVIEW OF LITERATURE

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Anatomy

The adult female breast is located within the superficial fascia of the anterior chest wall . The base of the breast extends from the second rib above to the sixth rib or seventh below , and from the sternal border medially to the mid-axillary line laterally . Two thirds of the base of the breast lie anterior to the pectoralis major muscle , the remainder lies anterior to the serratus anterior muscle . A small part may lie over the aponeurosis of the external oblique muscle *(Donegan , 1980)* .

In about 95 percent of women , there is a prolongation of the upper lateral quadrant toward the axilla . This tail (of spence) of breast tissue enters a hiatus (of langer) in the deep fascia of the medial axillary wall . This is the only breast tissue found beneath the deep fascia *(Skandalakis et al ., 1983)* .

The virginal breast of the female assumes a typical hemispheric configuration with distinct flattening above the nipple . Unlike the prepubertal breast , the multiparous breast has experienced pituitary and ovarian stimulation , is much larger , and has a denser stroma and ductal component . Breast size is a correlate of genetic , dietary and hormonal influences . The postmenopausal breast consistently reveals a disappearance of parenchymal fat involution of the active

proliferative glandular components , both resulting due to cessation of ovarian stimuli *(Edward et al ., 1977)* .

Skin :

The epidermis of the areola and nipple is characterized by the pink colour imparted by blood vessels carried close to the surface in long dermal papillae . Further darkening of the area occurs at puberty and with each pregnancy . The dermis of the skin merges with the superficial fascia , which envelops the parenchyma of the breast *(Skandalakis et al ., 1983)* .

Superficial Fascia :

The superficial fascia enveloping the breast is continuous with the superficial abdominal fascia (camper's fascia) below and superficial cervical fascia above . Anteriorly it emerges with the dermis of the skin.

Deep Fascia :

The deep pectoral fascia envelops the pectoralis major muscle . It attaches to the sternum medially . It is continuous with the deep abdominal fascia below and attaches to the clavicle and axillary fascia above and laterally .

The clavipectoral fascia envelops the pectoralis minor and part of the subclavius muscles deep to the pectoralis major muscle . It

extends between the axillary fascia , clavicle and the corocoid process. Laterally , it units with the anterior layer of the pectoralis major fascia . Both layers cover the serratus anterior muscle .

The axillary fascia is an extension of the pectoralis major fascia across the base of the axilla . It continues as the fascia of latissimus dorsi . It forms the dome of the axilla .

The prevertebral fascia gives off a sheet that covers the floor of the posterior triangle of the neck , where the axillary vessels and the nerves to the arm pass through it . They take with them a tubular fascial sleeve the axillary sheath .

So , the clavipectoral fascia is formed of four compartments :

1- The attachment to the clavicle and the subclavius muscle .

2- The costocorocoid ligament between the subclavius and the pectoralis minor muscle .

3- The envelops for the pectoralis minor muscle .

4- The suspensory ligament of the axilla attaching to the axillary fascia.

Axilla :

It is described as a pyramidal space with :

1- Anterior wall : Composed of the subclavius , pectoralis minor and pectoralis major muscles , and also the clavipectoral fascia.

2- Posterior wall : Formed by the scapula , subscapularis , latissimus dorsi and the teres major muscles .

3- Medial wall : Formed by the lateral chest wall from the second to the sixth ribs and the serratus anterior muscle .

4- Lateral wall : It is the bicipital groove of the humerus .

5- Apex : At the junction of the clavicle , the upper border of the scapula and the first rib .

6- Base : Consists of the axillary fascia beneath the skin of the axillary fossa .

Muscles :

Muscles and nerves with which the surgeon must be familiar are :

1- Pectoralis major muscle : The nerve supply is lateral anterior thoracic nerve . The clavicular portion of pectoralis major forms the upper extent of radical mastectomy , the lateral border forms the medial boundary of modified radical mastectomy .

2- Pectoralis minor : The nerve supply is medial anterior thoracic nerve .

3- Serratus anterior : The nerve supply is long thoracic nerve . Its injury produces winging of the scapula .

4- Latissimus dorsi : The nerve supply is thoracodorsal nerve . The anterior border forms the lateral extent of radical mastectomy . Injury of its nerve supply results in weakness of rotation and abduction of the arm .