NEW TUMOUR MARKERS IN BREAST CANCER

M.D. THESIS

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By

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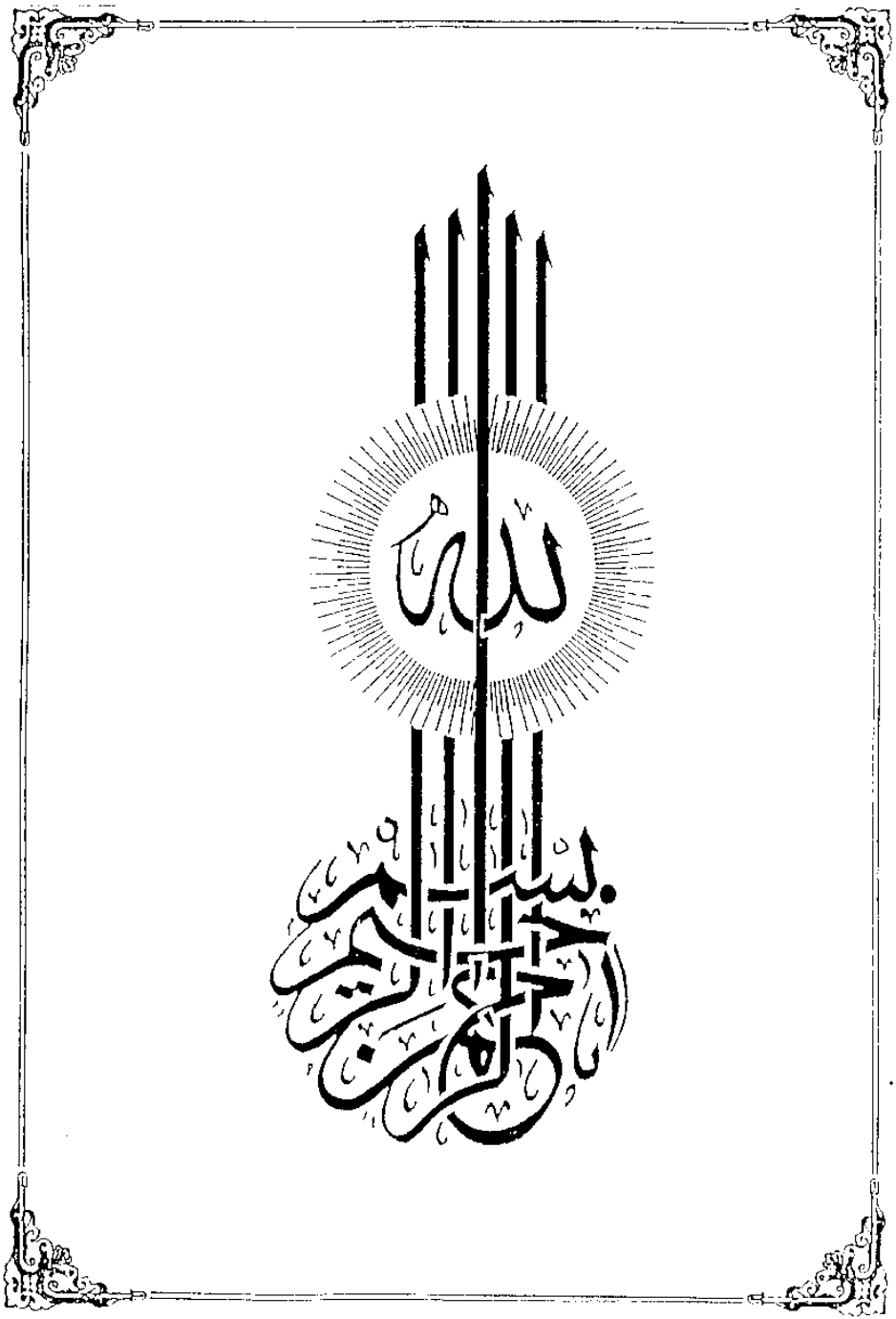
To My Parents



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ABBREVIATIONS

* CEA	Carcinoembryonic antigen.
* CA 15.3	Cancer Antigen 15.3.
* MCA	Mucin-like Carcinoma-associated Antigen.
* SD	Standerd Deviation.
* n	number.

INTRODUCTION

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Nearly a quarter of all publications in clinical oncology literature deal with cancer of the breast. This fact alone underlines the great importance of this disease, not only as a troubling and often a tragic event in woman's life, but also as an object of intense and wide-ranging research.

A ten year report (1971-1981) from the National Cancer Institute in Cairo showed that breast cancer is the most frequent malignancy among females presenting to the institute accounting for 34.7% of all female cancer cases, and 14% of all cases of cancer registered (Contesso & Tawfik, 1984).

Thanks to the many biological biomolecular and endocrinological implications, breast cancer appears to be one of the most promising fields of investigation, from which most of us expect fundamental discoveries to be made that can be then applied to other oncological areas. Although we all feel frustrated by the bitter knowledge that the real causes of breast cancer are still unknown and that very little can be done in terms of primary prevention, many other areas, like early detection and accurate staging, have undergone a real revolution in the last two decades that may

help in better management of breast cancer with ultimate increase in tumour free interval and possible survival. Thus, a tumour index substance with sufficient sensitivity that may help in early detection and accurate staging of the disease, at a stage when the more conventional imaging techniques show normal findings is needed. Tumour markers have been used by many investigators to help in diagnosis (*Eskelinen et al.,1988*), staging (*Tjandra et al.,1988*), monitoring patients response to different forms of therapy (*Nicolini et al.,1989*), and in predicting prognosis (*Theriaiut et al.,1989*) and early detection of recurrence (*Tommasi et al.,1986*).

The aim of this study is to evaluate two recently reported tumour markers; CA 15.3 and MCA; and compare them with the more traditionally used CEA as a tumour markers in breast cancer. Their value in tumour detection, staging and possible role in population screening for breast cancer are studied.

PATHOLOGY

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The human breast is the site of origin of a variety of tumours most of which are malignant. Of these, the majority are epithelial in nature and belong to the category of carcinomas; the minority are sarcomas. Pure epithelial and pure connective tissue benign tumours are very rare, whereas benign mixed epithelial and connective tissue tumours such as fibroadenoma are common (Silke, 1999).

CLASSIFICATION OF BREAST TUMOURS

Over the years a variety of classifications have been used. They are frequently confusing and non is totally satisfactory. Presented here are some of the more commonly employed classifications, the overall incidence of the various types as well as the incidence in Egyptian females are also presented.

Classification of Footte and Stewart (1946).

I - *Paget's disease of the nipple.*

II - *Carcinomas of mammary ducts :*

a. Non-infiltrating :

1. Papillary Carcinoma.
2. Comedo - Carcinoma.

b. Infiltrating :

1. Papillary Carcinoma.
2. Comedo - Carcinoma.
3. Carcinoma with productive fibrosis (schirrous carcinoma).
4. Medullary Carcinoma.
5. Colloid Carcinoma.

III- *Carcinoma of mammary lobules:*

a. Non-infiltrating.

b. Infiltrating.

IV - *Relatively rare carcinomas:*

1. Sweat gland carcinoma.
2. Intracystic carcinoma.
3. Spindle cell carcinoma.
4. Adenoid cystic carcinoma
5. Carcinoma with osseous and cartilaginous metaplasia.

6. Squamous cell carcinoma.
7. malignant variant of fibroadenoma and cystosarcoma phyllodes.

National Surgical Adjuvan Breast Project Classification (Fisher et al., 1975)

I - Pure Tumour groups :

* Infiltrating duct N.O.S. (not otherwise specified).	52.6 %
* Medullary	6.2 %
* Lobular invasive	4.5 %
* Mucinous	2.4 %
* Tubular	1.2 %
* Adenocystic	0.4 %
* Papillary	0.3 %
* Carcinosarcoma	0.1 %

II - Paget's disease:

Associated with intraductal carcinoma 2.3%, in 0.2% with infiltrating duct N.O.S. in 1.6% and with infiltrating duct N.O.S. in combination with other types in 0.5%.

III- Combination with infiltrating duct carcinoma N.O.S. (28%) :

The most important is with tubular carcinoma in 16.5%

and with lobular invasive in 3.3%.

IV - Other Combination of tumour types exclusive of N.O.S. 1.6% ;

It should be noted that the classification does not include in situ carcinoma.

Classification of Breast Carcinoma Arrogardi et al., 1979;

I - lobular Carcinoma;

a. In situ.

b. Invasive: i classic

ii. Variants : Alveolar, tubular solid and signet cell

II - Duct Carcinoma :

a. In situ . Solid comedo, cribriform, papillary, with Paget's diseaes.

b. Invasive : i.Invasive N.O.S. not otherwise specified;

ii.Special types :

1 Medullary.

2 Mucoid.

3 Infiltrating comedo.

4 Infiltrating cribriform.

5 Tubular.

6)Squamous.

7)Others:adenoidcystic, Apocrine, invasive, Paget's, Juvenile, secretory and inflammatory carcinoma.

III- Mixed invasive Lobular and Duct Carcinoma.

IV - Unclassified Carcinomas.

Classification of Ackerman and Rosai:

Ackerman and Rosai (1977) Classified carcinoma of the breast into four categories.

TYPE I : *Non-metastasizing (Non-invasive)*

* Intraductal carcinoma (with or without Paget's disease)
* Intraductal papillary carcinoma.
* Lobular carcinoma in situ.

TYPE II :*Rarely metastasizing (Invasive)*

* Pure mucinous carcinoma.
* Medullary carcinoma.
* Well differentiated adeno-carcinoma.
* Invasive papillary carcinoma.
* Adenoid cystic carcinoma.