Prognostic and Predictive Factors of Early Metastasis in Breast Cancer Patients

Thesis

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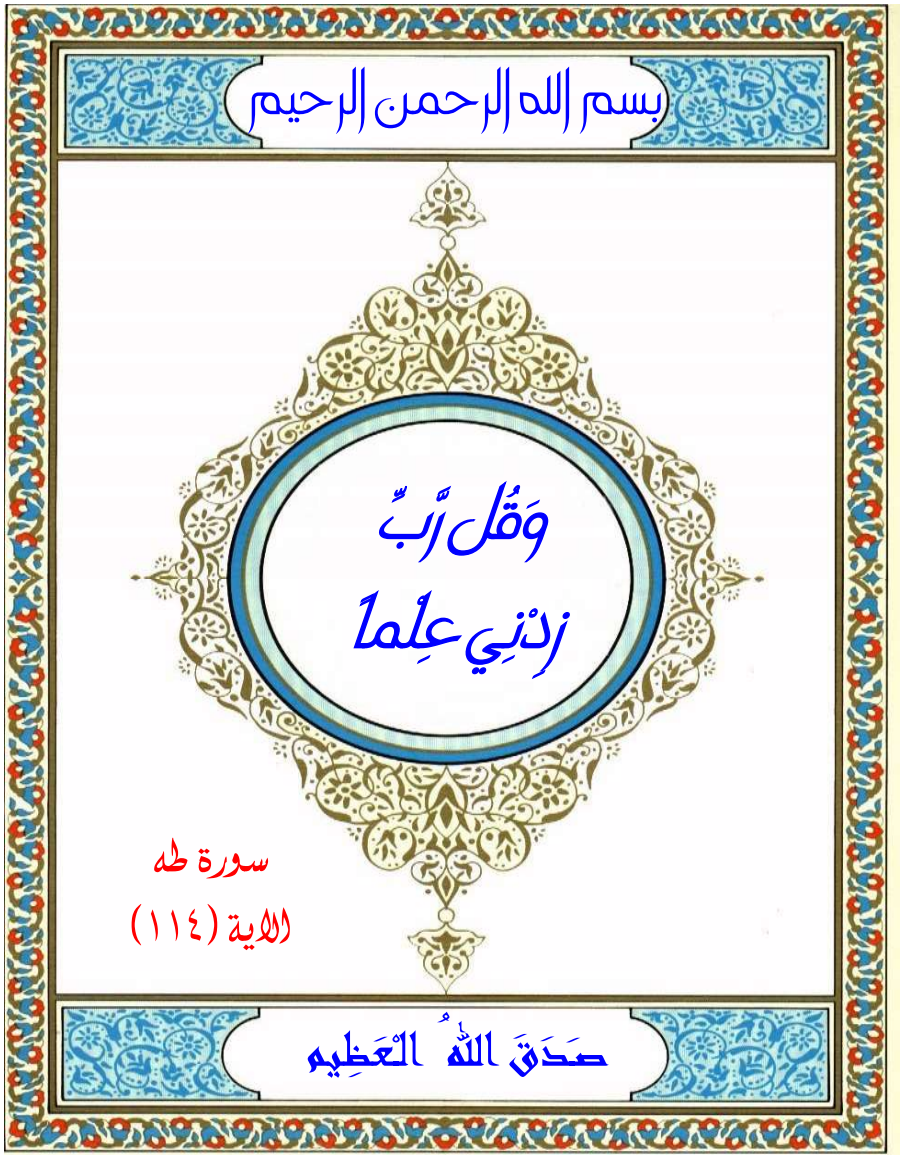
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✍ Hoda Sayed Elkhodary

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List of Abbreviations

Abb.	Full term
ACR	*The American College of Radiology*
AGO	*Arbeitsgemeinschaft Gynäkologische Onkologie*
AIs	*Aromatase inhibitors*
AJCC/UICC	*The American Joint Committee on Cancer/ International Union Against Cancer*
ALND	*Axillary lymph node dissection*
AR	*Androgen receptor*
ASCO	*American Society of Clinical Oncology*
Bcl-2	*B-cell lymphoma 2*
BCNF	*Breast carcinoma with neuroendocrine features*
BCS	*Breast conserving surgery*
BCT	*Breast-conserving therapy*
BI-RADS	*Breast Imaging Reporting and Data System*
BMI	*Body mass index*
CAP	*College of American Pathologists*
CDK	*The cyclin-dependent kinase*
CK	*Cytokeratin*
CNB	*Core needle biopsy*
CPM	*Contralateral prophylactic mastectomy*
CT scan	*Computerized tomography scan*
DCIS	*Ductal carcinoma in-situ*
DFS	*Disease free survival*
DSS	*Disease Specific Survival*
EBCTCG	*The Early Breast Cancer Trialists' Collaborative Group*
ECE	*Extracapsular extension*
EGFR	*Epidermal growth factor receptor*
EORTC	*The European Organisation for Research and Treatment of Cancer*
ER	*Estrogen receptors*
FNAC	*Fine needle aspiration cytology*
GnRH	*Gonadotropin-releasing hormone*

List of Abbreviations cont…

Abb.	Full term
HER2	*Human epidermal growth factor receptor 2*
HR	*Hormone receptor*
HRT	*Hormone replacement therapy*
IDC	*Invasive ductal carcinoma*
IHC	*Immunohistochemistry*
ILC	*Invasive lobular carcinoma*
Ki67-LI	*Ki67-labeling index*
LCIS	*Lobular carcinoma in-situ*
LIQ	*Lower inner quadrant*
LN	*Lymph nodes*
LNR	*Lymph node ratio*
LOQ	*Lower outer quadrant*
LVI	*Lymphovascular invasion*
MA	*Molecular apocrine tumors*
MAI	*Mitotic activity index*
MBC	*Metaplastic breast cancer*
MC	*Mucinous carcinoma*
MRI	*Magnetic resonance imaging*
MRM	*Modified radical mastectomy*
mTOR	*The mammalian Target of Rapamycin*
NCCN	*The National Comprehensive Cancer Network*
NGS	*The Nottingham Grading System*
NPI	*The Nottingham Prognostic Index*
NSABP	*The National Surgical Adjuvant Breast and Bowel Project*
NST	*No special type*
OC	*Oral contraceptives*
OS	*Overall survival*
pCR	*Pathological complete response*
PCR	*Polymerase chain reaction*
PET scan	*Positron emission tomography scan*
PFS	*Progression-free survival*

List of Abbreviations cont…

Abb.	Full term
PR	*Progesterone receptors*
PS	*Performance status*
RS	*The 21- gene recurrence score*
RT	*Radiation therapy*
SEER	*Surveillance, Epidemiology, and End Results Program*
SLNB	*Sentinel lymph node biopsy*
SRI	*Surgery radiotherapy interval*
TNM	*Tumor–node–metastases staging system*
UIQ	*Upper inner quadrant*
UOQ	*Upper outer quadrant*
WBI	*Whole breast irradiation*
WHO	*World health organization*

Abstract

Patients had intermediate to high LNR, and high prevalence of ECE and LVI.

The hormone receptor positive was the most common molecular subtype; however, higher incidence of HER2-overexpression and triple negative subtypes were observed.

On analysis of different prognostic factors, younger age at time of diagnosis was found to have worse disease free survival. Histopathological subtype and molecular subtype based on HR and HER2 was also found to influence OS.

Survival analysis was performed using Kaplan- Meier method for disease free survival (DFS) and overall survival (OS); median DFS was found to be 16 months and median OS of 24 months.

Keywords: *Sentinel lymph node biopsy- Surgery radiotherapy interv- Oral contraceptives- Polymerase chain reaction*

Introduction

Breast cancer is the second most common cancer in the world. It is considered the most frequent cancer among women with an estimated 1.67 million new cancer cases diagnosed in 2012. It represents 25% of all cancers ***(Ferlay et al., 2015).***

It is considered the fifth cause of cancer related death (522,000 deaths) overall ***(Ferlay et al., 2015).***

Death rates for female breast cancer have decreased by about 36% from peak rates, as a result of improvements in early detection and treatment ***(Howlader et al., 2016).***

In Egypt, breast cancer represented 32% of all cancers among Egyptian females from 2008 -2011, which makes it the most frequent cancer among females ***(Ibrahim et al., 2014).***

The development of breast cancer is associated with numerous risk factors, including genetic, environmental and hormonal influences, yet 75% of women with this cancer have no readily identifiable risk factors ***(Jardines, 2015).***

Risk factors for breast cancer include weight gain after age of 18 years, excess body weight (for postmenopausal women), using hormone replacement therapy (HRT), physical inactivity, alcohol consumption, long menstrual history, use of oral contraceptives, and nulliparity or older age at first birth.

Breastfeeding decreases the risk of developing breast cancer ***(Chlebowski et al., 2013).***

Breast cancer is a heterogeneous disease in terms of histology, therapeutic response, patterns of distant metastasis, and patient outcomes ***(Prat and Perou, 2011).***

Breast cancer is mainly categorized into in situ carcinoma and invasive breast carcinoma ***(Malhotra et al., 2010).***

Most breast cancers are invasive ***(American Cancer Society, 2015).*** Invasive ductal carcinoma (IDC) is the most common form of invasive breast cancer ***(Makki, 2015)***. It accounts for about 70-80% of invasive breast cancers ***(Howlader et al., 2014).***

Invasive lobular carcinoma of the breast comprises up to 15% of all cases ***(Reed et al., 2015).***

Most of the breast malignancies are adenocarcinomas, which constitute more than 95% of breast cancers ***(Coleman, 2010).***

Gene expression profiling studies have classified breast cancers into five subtypes: luminal A, luminal B, HER-2 overexpressing, basal-like, and normal breast-like ***(Turkoz et al., 2013).***

The 5-year relative survival is about 99% for localized disease, 85% in regional disease, and 26% for distant stage disease ***(American Cancer Society, 2015).***