Comparative Study of Local Recurrence in HER2 Neu +ve Breast Cancer Between Patients Treated with Breast Conserving Surgery and Modified Radical Mastectomy

Thesis

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By

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List of Abbreviations

Abbreviation	*Meaning*
3D	Three dimensional image reconstruction
ACBS	American college of breast surgeons
ACOG	American college of Obstetricians and Gynecologists
AIS	Aromatase inhibitors
APBI	Accilirated partial breast irradiation
ASCO	American society of clinical oncology
BL1	Basal like 1
BL2	Basal like 2
BLIA	Basal like immune activated
BLIS	Basal like immune suppressed
BSE	Breast self exam
CBE	Clinical breast exam
CDK	Cytidine dependent kinase
CEA	Carcino Empryonic Antigen
CML	Chronic myeloid leukemia
CPM	Contralateral prophylactic mastectomy
CT	Compund tomography
DCIS	Ductal Carcinoma Insitu
DFS	Dissease free syrvival

Abbreviation	Meaning
DIEP	Deep inferior epigastric perforator
DMI	Dereviative of the microtubule
EFS	Event free survival
EGFR	Endothelial growth factor
ER	Estrogen receptor
FEA	Feature
FISH	Fluorescent insitu hypiridization
FNAB	Fine needle aspiration biobsy
FTIS	Farnesyltransferase inhibitor
H&E	Hematoxylin and eosin
HER	Human epidermal growth factor
HSP90	Heat shock protein 90
IBC	Inflammatory breast cancer
IDC	Iniltrating Ductal Carcinoma
IHE	Immunohistochemistry
ILC	Infiltrating Lobular Carcinoma
IM	Immunomodularity
LAR	Luminal androgen receptor subtype
LCIS	Lobular Carcinoma Insitu
LGASC	Low grade adenosquamous carcinoma
M	Mesenchymal
MBA	Monoclonal antibody

Abbreviation	Meaning
MRI	Magnetic resonance imaging
MSL	Mesenchymal stem like
MTOR	Mammalian target o rabamycin
NAC	Nipple areolar complex
NSM	Nipple sparing mastectomy
NST	Non specific type
OS	Overall syrvival
PARP	Poly adenosine diphosphate ribose polymerase
PCR	Pathological complete response
PET	Positron emission tomography
PMRT	Post mastectomy radiotheraby
ROR	Risk o recurrence
RT	Radiotherapy
Rt-pcr	Real time polymerase chain reaction
SLN	Sentinel lymph node
SSM	Skin sparing mastectomy
SSRIS	Selectve serotonin reuptake inhibitors
TC	Tubular carcinoma
TKIS	Tyrosine kinase inhibitors
TN	Triple negative

Abbreviation	*Meaning*
TRAM	Transverse rectus abdominus myococutaneous
US	Ultrasound
USPSTF	US preventive service task orce
VEGF	Vascular endothelial growth factor
VEGFR	Vascular endothelial cell growth factor receptor

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Introduction

Cancer breast is the most common cancer in women worldwide, with nearly 1.7 million new cases diagnosed in 2012 (second most common cancer overall after lung cancer). This represents about 12% of all new cancer cases and 25% of all cancers in women. It is the fifth most common cause of death from cancer in women. (1) In Egypt, breast cancer accounts for 37% of women's cancer with an incidence rate of 49.6/100,000.2. (2)

In 1894, Halsted developed Radical mastectomy in which the breast is completly removed, including the nipple. The surgeon also removes the overlying skin, the muscles beneath the breast, and the lymph nodes .This lead to serious disfigurement and psychic trauma to the patients. So, Patey and WH Dyson developed Modified Radical Mastectomy which is a less traumatic and more widely used procedure. The entire breast is removed as well as the underarm lymph nodes. But chest muscles are left intact.

In 1927 Keynes developed breast conserving surgery which is to remove the cancer leaving as much intact of the breast as possible. (3)

Although survival rates with BCT are equivalent to mastectomy, local recurrence after BCT is higher than after

mastectomy (4). The studies showed that there was no significant difference in the survival and recurrence rate between the breast-conserving surgery plus radiation therapy and traditional modified radical surgery for early-stage breast cancer patients (5).

More than 10 years ago, gene expression profiling based on DNA microarray revealed the molecular heterogenecityof BC (6). A new molecular classification was defined, dividing BC in at least 5 biologically and clinically relevant subtypes: luminal A (LA), luminal B (LB), basal-like (BL), HER2-enriched and normal-like (NL). These subtypes are linked to major molecular alterations such as HR and HER2 expression and proliferation and to mammary cell types. (7)

During patient follow up, it was noticed that HR positive patints experienced more cancer relapse in the first 5 years than HR-negative patients. Interestingly, patients with HR-negative tumours were less likely to experience first recurrence in bone and more likely to recur in brain, compared to patients with hormone receptor-positive tumours. (8)

Studies showed that there was a lower local recurrence rate following mastectomy compared to breast conservative treatement for Luminal and HER2/neu-overexpressing tumors. (9)

Aim of the Work

To determine the prognosis of HER2 +ve neu breast cancer regarding local recurrence in patients trearted with breast conservative surgery vs Modified Radical Mastectomy.

Chapter (1)

Anatomy of the Breast

Anatomy:

Embryology and Functional Anatomy of the Breast:

Embryology:

At the fifth or sixth week of fetal development, two ventral bands of thickened ectoderm (mammary ridges, milk lines) are evident in the embryo.16 In most mammals, paired breasts develop along these ridges, which extend from the base of the forelimb (future axilla) to the region of the hind limb (inguinal area). These ridges are not prominent in the human embryo and disappear after a short time, except for small portions that may persist in the pectoral region. (10)

Accessory breasts (polymastia) or accessory nipples (polythelia) may occur along the milk line when normal regression fails. Each breast develops when an ingrowth of ectoderm forms a primary tissue bud in the mesenchyme. The primary bud, in turn, initiates the development of 15 to 20 secondary buds. Epithelial cords develop from the secondary buds and extend into the surrounding