Significance of Metastatic Positive Lateral Group of Lymph Nodes in Patients undergoing Axillary Dissection for Breast Carcinoma

Thesis

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By

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List of Abbreviations

Abb.	Meaning
ACOSOG	*American College of Surgeon Oncology Group*
AJCC	*American Joint Committee on Cancer*
ALND	*Axillary Lymph node dissection.*
AMAROS	*After mapping of the axilla: radiotherapy or surgery*
APC	*Antigen presenting cells*
ASCO	*American Society of Clinical Oncology*
AUS	*Axillary Ultrasound.*
BCS	*Breast conservative surgery.*
CNB	*Core Needle biopsy*
CT	*Computed tomography*
DCU	*Deep cortical units*
DNA	*Deoxyribonucleic acid*
ER	*Estrogen receptor.*
FNA	*Fine needle aspiration*
FNAC	*Fine needle aspiration cytology*
FRC	*Fibroblastic reticular cells*
H&E	*Hematoxylin and eosin*
HER2	*Human epidermal growth factor receptor 2*
IDC	*Invasive Duct Carcinoma*
L/S	*Longest-to-shortest axis ratio*
LAR),	*Luminal androgen receptor*
LIQ	*Lower Inner quadrant*
LN	*Lymph node*
LOQ	*Lower Outer quadrant*
MDT	*Multidisciplinary team*
MRM	*Modified radical mastectomy*

List of Abbreviations cont...

Abb.	Meaning
N/C	*Nuclear-cytoplasmic ratio*
NCCN	*National Comprehensive Cancer Network*
NOS	*Not-otherwise-specified*
NPV	*Negative predictive value*
pCR	*Pathological complete response*
PPV	*Positive predictive value*
RFS	*Recurrence- free survival*
RNA	*Ribonucleic acid*
SLNB	*Sentinel Lymph node*
TDLU	*Terminal duct lobular unit*
TNBC	*Triple negative breast cancer*
UICC	*International Union Against Cancer*
UIQ	*Upper inner quadrant*
UOQ	*Upper Outer*
US	*Ultrasound*

INTRODUCTION

Breast cancer is the most common malignancy in women around the world Incidence of breast cancer is 35% of total malignancies among Egyptian females with mean age 40-60 years, but it may occur at any age ***(Ferlay et al., 2010)***.

Worldwide differences in the percentage of risk of having breast cancer have been attributed to changes in body weight , fat intake, early age of menarche, reproductive patterns such as fewer pregnancies and age at first birth, late age at menopause, use of oral contraceptives, hormone replacement therapy, alcohol consumption and lack of physical activity ***(Pakin et al., 2002)*.**

The impact of environmental and cultural changes has been highlighted by studies of migration patterns to the United States, with the incidence rates of breast cancer being greater in second generation migrants and increasing further in third and fourth generation migrants ***(Pat price et al., 2015)*.**

Family history identifies a minority of patients at increased lifetime risk of breast cancer due to a mixture of shared environmental and genetic factors. Women with 3 or more first degree or second degree relatives with breast or ovarian cancer on the same side of the family, a history of bilateral tumors, male breast cancer or sarcoma or women aged

more than 40 years at diagnosis have a 25%-50% lifetime risk of breast cancer ***(Colditz et al., 2001)*.**

Women who inherit proven BRCA1 or BRCA2 mutations have a 60%-80% life time risk of breast cancer and a significance risk of ovarian cancer. Nevertheless, this leaves 95% of the female population with a life time risk of less than 12% including women with one first degree or second degree relative diagnosed with breast cancer at any age ***(Wamer et al., 2008)*.**

A systematic review of studies comparing screening magnetic resonance imaging (MRI) to mammography for women with high-risk breast cancer suggests that MRI is more sensitive but less specific technique than mammography in screening young women with a strong family history of breast cancer ***(Wamer et al., 2008)*.**

The review concludes that screening with both MRI and mammography might be better than mammography alone in women with an inherited predisposition to breast cancer ***(Pat price et al., 2015)*.** Surgery remains the primary curative treatment for the majority of patients with duct carcinoma in situ (DClS) or invasive breast cancer. Historically, radical mastectomy formed the basis of surgical breast cancer management until the late twentieth century when breast-conserving techniques were introduced in the United Kingdom in 1988, has subsequently detected an increased number of

early breast cancers, of which a significant proportion will receive breast conserving surgery ***(Pat price et al., 2015).***

Axillary surgery has also revolutionized in recent years with the use of sentinel node sampling to assess axillary node involvement, thus preventing patients from undergoing unnecessary axillary clearance, which can be associated with debilitating consequences ***(Pat price et al., 2015).***

Axillary staging is imperative in patients undergoing surgery for invasive breast cancer or extensive DCIS, for prognostication and consideration of additional surgical., cytotoxic and radiotherapy treatment. As clinical axillary assessment is unreliable, all patients should undergo preoperative axillary ultrasound assessment, with fine-needle aspiration or core biopsy of any suspicious nodes ***(Mansel et al., 2006).***

Historically, surgical assessment of the axilla entailed axillary lymph node dissection (ALND). This technique entails the removal of all tissue below the axillary vein within the boundaries of the axilla, sparing the long thoracic nerve ***(Pat price et al., 2015).***

In current practice, this procedure is reserved for patients who have positive lymph nodes diagnosed preoperatively. This procedure often carries significant morbidity, primarily lymphedema of the ipsilateral arm, stiffening or 'freezing' of the

shoulder and damage to the intercostobrachial nerve. The most common surgical method of assessing axillary involvement is sentinel lymph node biopsy (SLNB) ***(Giuliano et al., 2011)*.**

SLNB considers breast lymphatic drainage as a chain of lymph nodes. If the first lymph node in the chain is not affected with metastatic disease, the remainder of the chain should also be cancer free and no further treatment to the axilla is required, If the first lymph node shows evidence of metastatic spread (i.e._ tumour deposit >2 mm). Then complete ALND is indicated SLNB involves the injection of radiolabelled colloid into the breast preoperatively with patent blue V dye injected in the same region during initial breast surgery ***(Mansel et al., 2006)***.

The need for further axillary surgery after a positive SLNB is under debate. A 2011 randomized trial determining the erects of complete ALND on survival following positive SLNB suggests that for patient; with limited sentinel lymph node involvement who received breast conservation and systematic therapy using sentinel lymph node dissection alone versus ALND did not result in inferior survival ***(Giuliano et al., 2011)*.**

AIM OF THE STUDY

The study will be prospectively conducted on 50 cases for pathological evaluation of the lateral group of axillary lymph nodes together with assessment of the rest of axillary lymph nodes. Presence of positive lateral group of axillary lymph nodes while negative rest of axillary lymph nodes indicates that some cases with negative sentinel nodes may be missed and not treated while having axillary lymph node metastases. If lateral group of axillary lymph nodes is constantly negative despite of positivity of rest of axilla so, it could be spared during axillary dissection which may decrease incidence of lymphedema.

Chapter 1

ANATOMY AND PHYSIOLOGY OF FEMALE BREAST AND AXILLA

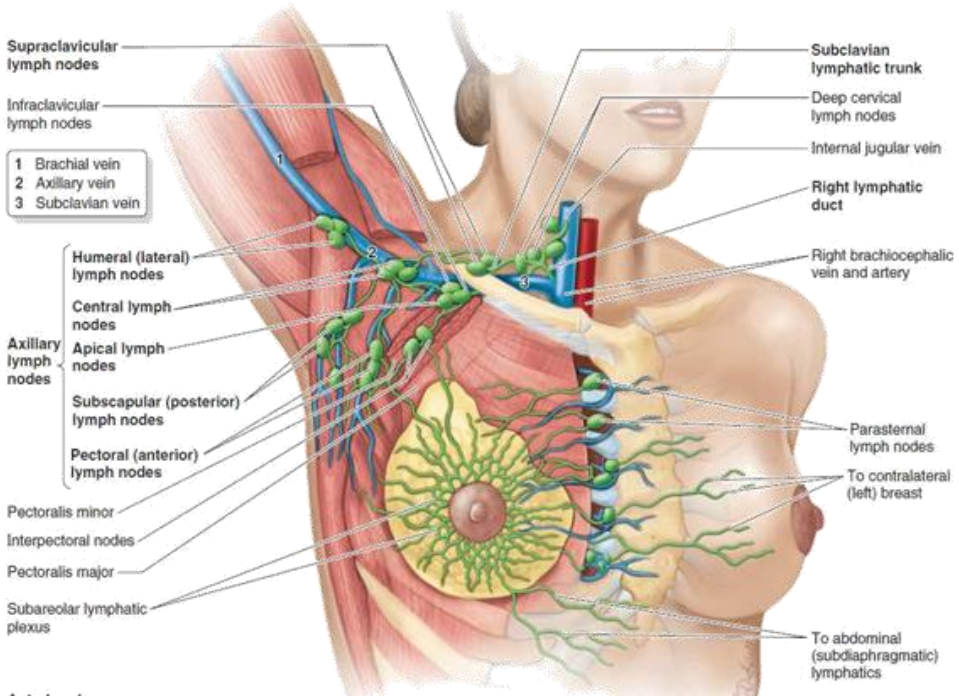

Figure (1): Anatomy and Lymphatic drainage of the female breast ***(Keith et al., 2015)***.

The adult female breast lies between the second and sixth/seventh ribs.

The base of the breast spans from the sternal border medially to the mid axillary line laterally and is encompassed by the superficial and deep fascia of the chest wall. Two-thirds of the breast lies anterior to the pectoralis major and the remainder lies anterior to the serratus anterior. A prolongation