Lymphedema risk factors and quality of life questionnaire in cancer breast patients

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List of Abbreviations

Breast ca	Breast cancer
QOL	Quality of life
ECOG	Eastern Cooperative Oncology Group
FACT-B	Functional Assessment of cancer Therapy-Breast
FACT-G	Functional Assessment of Cancer Therapy –General
EORTC-QLQ-C30	European Organization for Research and treatment of cancer – quality of life questionnaire-core questionnaire
BMI	Body Mass Index
FACT-B toi	FACT-B trial outcome index
BCS	Breast Cancer Subscale
FWB	Functional Well-being subscale
EWB	Emotional Well-being Subscale
SWB	Social/family Well-being subscale
PWB	Physical Well-being Subscale
AICD	Average interlimb circumference discrepancy
DVT	Deep Venous Thrombosis
NCI-CTCAE	National Cancer Institute-Common Terminology criteria For

	Adverse Events
WHO	World Health Organization
MPJ	Metacarpophalangeal joint
US	Ulnar styloid process
LE	Lateral epicondyle
SF-36	Short Form-36 Health Survey
TENS	Transcutaneous electrical nerve stimulation
Tis	Carcinoma in situ
ET	Endocrine treatments

RT	Radiotherapy
FDG/PET	Fluorodeoxy-glucose/positron emission tomography
CT	Computed tomography
CA15-3	Cancer Antigen 15-3
CEA	Carcinoembryonic Antigen
MRI	Magnetic resonance imaging
ER	Estrogen Receptor
PgR	Progesterone receptors
HER2	Human Epidermal Growth Factor receptor 2

UPAPAI1	Urokinase plasminogen activator,pasminogen activator inhibitor 1
PCR	Polymerase chain reaction
BRCA	Breast Cancer
RAD	Restriction site associated DNA markers
DCIS	Ductal Carcinoma Insitu
OS	Overall survival
AC	Adriamycin/Cyclophosphamide
CMF	Cyclophosphamide/methotrexate/fluorouracil
DFS	Disease free survival
ASCO	American Society of Clinial Oncology
G-CSF	Granulocyte colony stimulating factor
DEXA	Dual Energy X-Ray absorption
CYP2D6	Genome encoding cytochrome P450
AI	Aromatase inhibitors
GnRH	Gonadotrophin releasing hormone

CTH	Chemotherapy
LN	Lymph Node
IHC	Immune histochemistry
APBI	Accelerated partial breast irradiation
PMRT	Post Mastectomy Radiotherapy
WBRT	Whole Breast Radiotherapy
BCS	Breast Conservative surgery
RR	Relative Risk
CAP	College of American Pathologist
TNM	Tumour,Node,Metastasis
ALND	Axillary lymph node dissection

Abstract

Arm lymphedema is common complication of breast cancer treatment which once established cannot be cured. All women who have had surgical resection of the lymph channels are at risk for lymphedema (Ottini et al.2010). In Halsted's time, lymphedema occurred in up to 62% of patients. Few recent trials of modern therapies have addressed this problem. However little is known about lymphedema among Egyptian ladies who are having breast cancer. The aim of our study is to study the risk factors and assessment of effect of lymphedema in quality of life among breast cancer patients. The study was carried out in department of clinical oncology Kasr Alainy school of medicine included 102 Egyptian female breast cancer patients who attended our outpatient clinic who had previous breast surgery either modified radical mastectomy or conservative breast surgery 65 of them had ipsilateral arm lymphedema and 37 were with no lymphedema. Lymphedema was assessed clinically by our staff members in the clinic then by examination through arm circumference measurement at four certain points on both upper limbs then calculating the average inter-limb circumference discrepancy (AICD) of >5%. Lymphedema graded into three grades based on AICD into Grade 1,2,3 with difference 5%,10%,30% accordingly. Then assessment of 24 possible risk factors which were personal, disease and treatment related. Also assessment of QOL by FACT-B questionnaire.

According to definition and grading of arm lymphedema 60% of included cases had lymphedema grade1 20%, grade2 32% , grade3 9% of total number of patients. There were several risk factors that correlate significantly with lymhedema as age, BMI, presence of DVT, previous

trauma, poor mobility, bad nail hygiene, arm infection, radiodermatitis and fibrosis.

Also, lymphedema had direct effect on quality of life the physical well-being subscale of FACT-B is significantly lower in lymphedema patients, the emotional well-being subscale is significantly lower in lymphedema patients, the breast cancer subscale is lower in lymphedema patients and the FACT-B trial outcome index is significantly lower in lymphedema patients.

Also, the degree of lymphedema correlates significantly with the quality of life, the higher the lymphedema grade the lower the quality of life scores for all subscales/scales. Finally we can conclude that breast cancer and cancer related arm lymphedema is a major problem of cancer treatment which significantly affect the quality of life of breast ca survivors and it is better to be prevented than treated. The preventive measures include advocating minimal surgical procedures when feasible and breast conservative surgery should be encouraged in eligible patients. The use of advanced radiotherapy techniques with good treatment planning and quality control. Also, advising the patients to avoid the precipitating risk factors as bad nail hygiene, repeated infections and so on.

INTRODUCTION AND AIM OF WORK

Breast cancer is the commonest female cancer worldwide forming almost 30-35% of all female malignancy and Secondary lymphoedema(LE) is arguably the most problematic and dreaded complication of breast cancer treatment(Gartner, et al. 2010). Although the incidence is generally accepted at approximately 30%, reported rates vary greatly, ranging between2% and 83%.(Clark, et al. 2005)..As the survival rate among breast cancer patients has increased, LE has emerged as an important long-term morbidity that can cause functional, cosmetic, and psychological problems and which can impair survivors' quality of life. Lymphoedema may present immediately or years after treatment, although the majority of cases occur during the first 18 months(Williams, et al. 2005).The reported incidence of LE after breast cancer treatment varies widely, from less than 5%with lumpectomy alone to more than 60% when treatment includes mastectomy with ALND and radiation therapy (RT) (McLaughlin, et al. 2008). Little is known about lymphoedema prevention, and it is regarded as an incurable, progressive, disfiguring, and disabling disorder that is difficult to treat.

Our understanding is further complicated by inconsistent relationships reported for a range of potential personal, disease, and treatment-related risk factors.(Sener, et al. 2001).

The aim of work of our study is studying the risk factors of arm lymphedema among female patients with breast cancer and its impact on quality of life.

Cancer breast

Incidence and epidemiology

In 2012, the estimated age-adjusted annual incidence of breast cancer in 40 European countries was 94.2/100 000 and the mortality 23.1/100 000. The incidence increased after the introduction of mammography screening, and continues to grow with the ageing of the population. The most important risk factors include: genetic predisposition, exposure to oestrogens (endogenous and exogenous), ionising radiation, low parity and a history of atypical hyperplasia. The Western-style diet, obesity and the consumption of alcohol also contribute to the rising incidence of breast cancer(McTiernan 2003) .There is a steep age gradient, with about a quarter of breast cancers occurring before age 50, and <5% before age 35. The estimated 5-year prevalence of breast cancer in Europe in 2012 was 1814572 cases (McTiernan 2003) .

Prevalence is increasing, as a consequence of increased incidence and due to improvements in treatment outcomes. In most Western countries, the mortality rate has decreased in recent years, especially in younger age groups, because of improved treatment and earlier detection (Autier, et al. 2010) However, breast cancer is still the leading cause of cancer-related deaths in European women.

Breast cancer in males is rare, contributing to 1% of cases. The major risk factors include clinical disorders carrying hormonal imbalances (especially gynaecomastia and cirrhosis), radiation exposure and, in particular, a positive family history and genetic predisposition (Ottini, et al. 2010).