Original article

Biological features of breast carcinoma in postmenopausal women

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Abstract

Background: Breast carcinoma is the most common cancer in females , its incidence increase with age . The aim of this study is to analyses the biological features of breast carcinoma in postmenopausal women .

Methods: Our study included 68 postmenopausal patients who underwent modified radical mastectomy in King Hussein Medical Center during the period between January 2012 and December 2014.

We divided our patients into two groups : the first group was 46 Young postmenopausal patients (YPM) their ages from 50 to 64 years. The second group consisted of 22 elderly postmenopausal patients (EPM) who were 65 years of age and above .

Results: Both age groups (YPM and EPM) had the same range of tumor size which is 2 cm and above.Tumor size was found in 80 % and 81 % respectively .

YPM patients were found to have greater lymph node involvement 76 % in comparison to EPM which was 63 % . They also showed that the incidence of peritumor vascular invasion in YPM is 60 % while in the EPM patients is 50 %.Both age groups showed similar Estrogen and Progesterone receptor expression 80 % and 77 % respectively .

Conclusion: Although both groups showed almost the same range of tumor size , older patients were found to have tumors with more favorable biologic characteristics in comparison to younger age group in regard to lymph node involvement and peritumor vascular invasion . Tumor responsiveness to hormonal therapy was similar in both groups .

Keywords: *Breast cancer , Biologic features , Postmenopausal women*

Introduction

Breast cancer is the most common type of cancers in female , the incidence of breast cancer in United States is 1 over 8 female patients (12 %) who will develop an invasive breast cancer during their life , it second most common cancer cause of death in female after lung cancer . In last two decades , the mortality from breast cancer decreased and this back to development in medical treatment and early screening and increased awareness in population (1) (2) (3) .

Risk factors which can stimulate breast cancer include : Age , Sex , obesity , smoking , early age of menarche , late age of menopause , using hormonal replacement therapy , late age childbearing and genetic aspect , etc. (3) (4) , In addition to previous risk factors the family history one of the most predictor factors to have breast cancer where it is approximately doubled in patients with first-degree relative diagnosed with breast cancer (5) .

As mentioned above the age is considered important risk factor to develop breast cancer . In this study , our aim is to analyse the biological features like tumor size , lymph nodes involvement

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, peritumor vascular invasion and hormonal receptor expression of breast cancer in specific age group , in postmenopausal women .

The axillary lymph nodes status consider one of the most important prognostic factors for patients with breast cancer (6) (7) (8) .

Concerning hormonal effect on development of breast cancer , Estrogen is one of the most important and primary carcinogen for breast cancer , where decrease production or inhibition of this hormone will lead to significantly decrease the development of breast cancer , estrogen it is produced by help of aromatase enzyme , which in it is role convert the androgens hormone to estrogen (9) .

Breast cancer can be diagnosed using triple assessment plan , starting by history and physical examination then by using breast imaging which include breast ultrasound specially for patients younger than 40 years old and mammogram which used for older patients due to difference in breast tissue density , in some literature were found that there is a relationship between mammographic density and risk of development breast cancer and effectiveness of treatment (10) , lastly the diagnosis is completed with breast biopsy by fine needle aspiration (FNA) and core biopsy which different from FNA by giving information about grade of tumor and if it is invasive or not (11) (12) (13) .

Treatment of breast cancer depend on the stage of the tumor and divided to invasive (different types of mastectomies and axillary clearance) and noninvasive with chemotherapy or radiotherapy and hormonal therapy (14) (15) .

Method

This study conducted in King Hussein medical center during the period between January 2012 and December 2014 in Amman . The study Included 68 postmenopausal patient who underwent modified radical mastectomy (MRM) as surgical treatment for breast cancer .

Patients profile and data about the biological features of their tumors were collected from patients files and from Princess Iman Center for Research and Laboratory Sciences in Amman .

Those patients were divided for two groups depending on their age : first group included 46 young postmenopausal patients (YPM) aging from 50 to 64 , second group included 22 elderly postmenopausal patients (EPM) who are 65 years old and above .

The biological features which were including in the study are : tumor size , lymph nodes involvement , vascular invasion and estrogen and progesterone receptor expression .

Results

Both age groups (YPM and EPM) had the same range of tumor size , that is 2 cm and above were found in 80 % , 81 % respectively .

In the YPM group of patients found that they have greater lymph nodes involvement (76 %) comparing to EPM patients group which had (63 %) .

Also the YPM patients showed more incidence of peritumour vascular invasion (60 %) than the EPM patients group (50 %) .

Finally both age groups had similar Estrogen and Progesterone receptor expression (80 %) in YPM and (77 %) in EPM .

	YPM	EPM
Number of patients	46	22
Tumor size >= 2 cm	80 %	81 %
Lymph nodes mets	76 %	63 %
ER and PR positive	80 %	77 %
Lymph-Vascular Invasion	60 %	50 %

Discussion

Biological features including the tumor size , lymph nodes involvement , vascular invasion and hormonal receptor that's considered very important in discussion of the prognosis in patients with breast cancer as it is important in treatment aspect . Axillary lymph nodes dissection to assess the axillary lymph nodes status is essential in the treatment of invasive breast carcinoma and the dissection is the most accurate way to assess axillary status (6) .

There is few data which discuss these features in postmenopausal age group specifically .

Starting with the tumor size as one of the biological features , our study reveals that both age groups (YPM and EPM) had same range of size (2 cm) , 80 % and 81 % respectively .

This result was similar to study done in 2009 by group of researchers which discussed the relation between testosterone and biological features of breast cancer in postmenopausal patients , they revealed that tumor size is 2 cm or above in postmenopausal women and it is strongly appearing in patients with age 65 years old and more . The study confirms that the biological features of breast cancer are different between YPM and EPM patients (16) .

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In another study in united states conducted between 1992 and 2003 included 49,616 women age 67 years or older to discuss the biological characteristic of breast cancer in these age group , revealed that the tumor size increase with age and increase more dramatic in patients older than 80 years old (17) .

Considering the lymph nodes involvement and vascular invasion they are also important as prognostic factors for breast cancer patients , our study reveals that the younger age group had more lymph nodes involvement and vascular invasion than the older group .

This appear different from the result in study done by Mara A. Schonberg and colleagues on 49,616 patients who are 67 years old and above , where they confirmed that patients 80 years old and above have more risk to have positive lymph nodes comparing to patients age between 67 and 79 years old (17) .

In other hand one of studies done in university hospitals Leuven in Belgium between 2000-2005 on 2227 patients to find the relationship between age and axillary lymph nodes involvement in women with breast cancer their result almost similar to ours where they reveal that the positive axillary lymph nodes decreasing up to age of 70 almost , after that the incidence of involvement lymph nodes increase (18) .

What about relationship between vascular invasion of tumor and postmenopausal age , there is no data which discuss the aspect specifically , considering our study we find that the younger age group have more vascular invasion (60 %) comparing to older age group of patients (50 %) .

Finally looking the receptor status (estrogen and progesterone) , which important to decided the medical management, also it plays a role as prognostic factor we found that both age groups have similar estrogen and progesterone receptor expression (80 % and 77 %) respectively .

This result supported by study done in united states on 49616 patients with age group 67-79 and another group older than 80 years old , they reveal that no difference in progesterone receptor expression between two groups , and a little difference about estrogen receptor expression (less 5 %) between both groups.(17) .

Another study conducted in India-Kashmir in 2012 on 132 patients with breast cancer m aim was to find the relationship between receptor status of estrogen and progesterone and age . They median age group was 48,2 years old , they showed up that the estrogen and progesterone receptor status were positive and increase with increasing the age (19) which supported our findings .

In one of the largest studies on this topic conducted at the European Institute of Oncology (Milan , Italy) from 1997 to 2002 , study done on 2999 patients whom divided for 2 groups (YPM 50-64 years old , EPM 65-74 years old) , their results considering the size were the size of tumor is larger in EPM than YPM , also the lymph nodes involvement were more in EPM than YPM patients and about the estrogen and progesterone receptor expression the EPM shows more expression for these receptors than YPM , which differ from our results in these aspects .

In peritumor vascular invasion , the YPM shows more invasion than EPM which similar to our results .

As the conclusion for their study , they found that the EPM patients despite the largest size at the time of presentation they had favorable biologic features comparing to YPM (20) .

Conclusion

There are some differences in biological features in both age groups , especially in axillary lymph nodes involvement and pretumor vascular invasion , we found that EPM patients have more favorable biological features than the YPM patients .

Considering the tumor size , estrogen and progesterone receptor expression and tumor responsiveness to hormonal therapy there was similar in both groups .

So the goals of treatment in elderly patients should be the same as those in younger patients.

The elderly patients and the overall status of the patient should be considered in the treatment options more than the age itself.

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