ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 5, Issue, 06, pp. 4768-4770, June, 2015

International Journal of
DEVELOPMENT RESEARCH

CASE REPORT

CORRELATION BETWEEN HORMONES RECEPTOR (ER&PR) ANDTUMOR GRADE AMONG SUDANESE FEMALE BREAST CANCER PATIENTS

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ARTICLE INFO

Article History:
Received 31st March, 2015
Received in revised form
07th April, 2015
Accepted 18th May, 2015
Published online 28th June, 2015

Key Words:
Hormones receptor,
ER, PR,
Breast cancer,
Histological grade.

ABSTRACT

Background: A total of 88 women were selected retrospectively from this group the tissue samples of breast cancer had been analyzed using immunohistochemical techniques to understand the Hormones receptor (ER&PR)with histological grade.
Objective: To compare the expression of tumor markers (ER&PR) with tumorhistological grade.
Results: The histological grade 0 with ER +ve are (3.4%), whereas among ER – ve are (1.1%). While histological grade I with ER +ve are (2.3%), whereas among ER – ve are (2.3%). Histological grade II with ER +ve are (14.8%), whereas among ER – ve are (4.5%). Lastly, the histological grade III with ER +ve are (18.2%), whereas among ER – ve are (53.4%).Total histological grade with ER +ve are (38.6%), whereas among ER – ve are (61.4%).
The histological grade 0 with PR +ve are (4.7%), whereas among PR – ve are (1.1%). While histological grade I with PR +ve are (3.5%), whereas among PR – ve are (1.2%). Histological grade II with PR +ve are (12.8%), whereas among PR – ve are (5.8%). Lastly, the histological grade III with PR +ve are (124.4%), whereas among PR – ve are (46.5%).Total histological grade with PR +ve are (45.3%), whereas among PR – ve are (54.7%).
The correlation between ER and PR of study population among ER +ve & PR +ve are (32.6%) whereas among ER +ve & PR – ve are (5.8%). While, ER – ve & PR +ve are (12.8%), whereas among ER – ve & PR – ve are (48.8%).
Conclusion: In this study population, the expression of hormone receptors (ER, and PR)its relation with histological grade determined

INTRODUCTION

Globally, breast cancer is the most frequently diagnosed cancer and the leading cause of cancer death in women. In the United States, breast cancer is the most commonly diagnosed cancer and the second most common cause of cancer death in women. In addition, breast cancer is the leading cause of death in women ages 40 to 49 years. Breast cancer is treated with a multidisciplinary approach involving surgical oncology, radiation oncology, and medical oncology, which has been associated with a reduction in breast cancer mortality (Kesson *et al*., 2012). Tumor characteristics predict which patients are likely to benefit from specific types of therapy. For example, hormone receptor-positive patients benefit from the use of endocrine therapy. In addition, patients with human epidermal growth factor receptor 2 (HER2)-positive cancers benefit from treatment using HER2-directed treatment. Patients with hormone receptor-positive breast cancer should receive endocrine therapy. Whether they also should receive adjuvant chemotherapy depends on patient and tumor characteristics
Assay for tumor expression of estrogen receptors (ER) and progesterone receptors (PR) have established utility in the clinical management of patients with both early stage and advanced breast cancer, and they should be routinely obtained on all tumor specimens. Receptor positivity is an important indicator of hormone responsiveness and identifies tumors for which endocrine therapy is a valuable therapeutic option, both for adjuvant therapy and for advanced disease (Bartlett *et al*., 2011).

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MATERIALS AND METHODS

This is a descriptive study to evaluate the tumor marker (ER&PR) expression in malignant breast palpable lumps and

histological grade. The study conducted in Radiation Isotopes Centre Khartoum (RICK) during the period from January 2013 to January 2014.

Sample collection

88 sections, taken from patients with breast palpable lumps. For histopathology and immunohistochemistry biopsies collected from patients.

Sample processing

For histopathology

Biopsies will be collected form tissues, and stained in hematoxylin & eosin.

For immunohischemistry

Sections were cut at 3-5 µm thicknesses, mounted onto silanized slides, and left to dry overnight at 37°C. Sections were then deparaffinized and rehydrated. Antigen retrieval was achieved by heat retrieval using a bench autoclave. Briefly, slides were placed in Coplin jars containing enough 0.01 M sodium citrate solution (pH 6.0) to cover the sections, then autoclaved at 121°C for 10 minutes for ER &PR (waterpath 95°C for 30 min). Slides were incubated with Peroxidase blocking reagent for 10min followed by protein blocking reagent for 10min, then rinsed in PBS Slides were incubated with 100-200 µl of primary antibodies for 30 minutes at room temperature in a moisture chamber, then rinsed in PBS. The dilution of the primary antibodies against ER &PR (Dako, Carpintera, Ca, USA) 1:50. After washing, binding of antibodies was detected by incubation for 10 minutes with biotinylated goat anti-mouse antibody ready to use (LSAB2) from Dako; the slides were then rinsed with PBS. Sections were then incubated with streptavidin-horse radish peroxidase for 10 minutes. Finally, the sections were washed in 4 times in 4 minute changes of PBS, followed by adding 3, 3 diaminobenzidine tetra hydrochloride (Biogenex) as a chromogen to produce the characteristic brown stain. For each run of staining, a positive and negative control slide were also prepared. The positive control slides were prepared from breast carcinoma known to be positive for the antigen under study. The negative control slides were prepared from the same tissue block, but incubated with PBS instead of the primary antibody.

Assessments of results

Section will be examined by two different histopathologists for pathological conditions. Then compared with immunohistochemistry result.

Ethical considerations

The aims methods of this study are fully explain to the patients and their consent to participate in this study is obtain. Sample will be taken form patient who consent to participate. The questionnaire filled in the presence of patient; the results of breast biopsy of histopathology and immunohistochemistry shown and discussed with the patients.

Statistical analysis

Data will be analyzed using SPSS program.

RESULTS

The histological grade 0 with ER +ve status cases are 3 (3.4%), whereas among ER – ve status cases are 1 (1.1%). While histological grade I with ER +ve status cases are 2 (2.3%), whereas among ER – ve status cases are 2 (2.3%). Histological grade II with ER +ve status cases are 13 (14.8%), whereas among ER – ve status cases are 4 (4.5%). Lastly, the histological grade III with ER +ve status cases are 16 (18.2%), whereas among ER – ve status cases are 47 (53.4%).Total histological grade with ER +ve status cases are 34 (38.6%), whereas among ER – ve status cases are 54 (61.4%). The histological grade 0 with PR +ve status cases are 4 (4.7%), whereas among PR – ve status cases are 1 (1.1%). While histological grade I with PR +ve status cases are 3 (3.5%), whereas among PR – ve status cases are 1 (1.2%). Histological grade II with PR +ve status cases are 11 (12.8%), whereas among PR – ve status cases are 5 (5.8%). Lastly, the histological grade III with PR +ve status cases are 21 (124.4%), whereas among PR – ve status cases are 40 (46.5%).Total histological grade with PR +ve status cases are 39 (45.3%), whereas among PR – ve status cases are 47 (54.7%). The correlation between ER and PR of study population among ER +ve status cases & PR +ve status cases are 28 (32.6%) whereas among ER +ve status cases &PR – ve status cases are 5 (5.8%). While, ER – ve status cases &PR +ve status cases are 11 (12.8%), whereas among ER – ve status cases &PR – ve status cases are 42 (48.8%).

DISCUSSION

Our finding were much lower than those detected by Ahmed *et al*. (2007) (70%). This frequencies differ to Awadelkareem *et al*. (2008) which PR frequency was (67%) and lower than Stierer *et al*. (1993) (61.3%). ER+ve, PR+ ve were detected in 28(32.6%), this result was supported by other studies done by al-Alwan *et al*. (2000) (34.2%), and Nidal *et al*. (2005) (40%), but lower than detected by Maher *et al*. (2006) (44.2%), and Chu *et al*. (2001) (63.9%) respectively. Our result was much lower than the finding of Awadelkareem *et al*. (2008) (75%). ER-ve, PR-ve were detected in 42 (48.85%) of tumors, which is similar to the study of al-Alwan *et al*. (2000) (43.8%). But our result was higher than the findings reported by Maher *et al*. (2006) (35.8%), Nidal *et al*. (2005) (35%), and Awadelkarim *et al*. (2008) (25%). But lower than the findings by Chu *et al*. (2001) who reported (12.8%) and (34.8%) among white and black American respectively. The expression of ER+ve, PR-ve in tumors was 5(5.8%), this result support Maher (6.7%) (Nidal M Almasri and Mohammad Al Hamad, 2005), and lower than Chu KC *et al*. (2001) who reported (12.8%) and (11.8%) among white and black American females with breast cancer respectively. ER-ve, PR+ve were expressed in 1(12.8%), which was supported with the study done by Awadelkarim *et al*. (2008) (11%), and Maher *et al*. (2006) (13.3%). But higher than the result reported by Chu *et al*. (2001) (3.5%) and (5%) for white and black American females respectively.

Conclusion and Recommendation

Their findings will provide us with greater insight into breast cancer histological grade will help us identify any association that would help discriminate subgroups of expression hormone receptors (ER& PR). Further innovative studies with larger sample sizes are needed to examine how the status of this potentially modifiable expression hormone receptors (ER& PR) with histological grade. Lastly, we recommend further studies in this field with wider scope.

Acknowledgement

Authors acknowledge the great help received from the scholars whose articles cited and included in references of this manuscript. The authors are also grateful to authors / editors / publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed. Authors are grateful to IJDR Journal editorial board members and IJDR Journal team of reviewers who have helped to bring quality to this manuscript My thanks to all people who helped me and I may miss to say their name.

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