

Molecular Subtypes among Patients with Breast Cancer

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Objective: To evaluate the estrogen receptor (ER), progesterone receptor (PR) and HER-2 receptor expression in breast cancer patients.

Design: A Retrospective Study.

Setting: Oncology Department, King Hamad University Hospital, Bahrain.

Method: All women with a confirmed diagnosis of breast cancer via biopsy from 2010 to 2016 were reviewed. The following were documented: age, type, and stage of cancer.

Result: Eighty-nine patients were included in the study. A total of one hundred and two patients were diagnosed with breast cancer based on biopsy results; thirteen patients were excluded due to the unknown stage and/or grade. The mean age was 53.9 years. The majority of cases were infiltrating ductal carcinoma (IDC), 82 (92%). The most common molecular subtype detected in the study was Luminal B (ER+, PR+, HER2+), 29 (32.6%) of the study population. Nine (10%) had an unknown grade, and 8 (8.9%) had unknown stage were excluded from the analysis.

Conclusion: Many patients were lost to follow-up. More effort is needed to reduce the proportion of unknown stages and grades of breast cancer cases. Further research is advised to evaluate the prognosis of breast cancer patients in Bahrain due to the high incidence in the Gulf Cooperation Council (GCC).

breast cancers known as triple positive, are ER+, PR+, HER2+ and have a slightly worse prognosis than Luminal A. HER2 enriched breast cancers are ER-, PR-, HER2+. These grow faster and have a poorer prognosis than Luminal cancers, but are often successfully treated with therapies targeted at the HER2 protein. Triple Negative (basal-like) breast cancers are ER-, PR-, HER2; this subtype is frequently seen in younger age groups and often associated with BRCA1 gene. Pathology, stages, grades, and metastasis were then determined for each subtype.

The TNM staging system follows the American Joint Committee on Cancer (AJCC) depending on the tumor size, number of lymph nodes involvement and presence or absence of metastatic disease⁸. Tumors can be classified into three grades: well-differentiated (Grade I), moderately differentiated (Grade II) and poorly differentiated (Grade III)⁹.

The aim of this study is to evaluate the estrogen receptor, progesterone receptor and HER-2 receptor expression in breast cancer patients.

METHOD

Eighty-nine women diagnosed with breast cancer from 2010 to 2016 were reviewed. All cases underwent immunohistochemistry testing to determine hormonal receptor status. In addition, relevant pathological and clinical variables were included: grade, stage, family history and metastasis. ER and PR positivity were determined in the laboratory by a

T1N0M0. Metastatic disease was present in 5 (5.6%) patients of this subgroup.

Sixteen (18%) patients had triple negative breast cancer; seven (7.9%) patients had left breast IDC. In this group, 8 (8.9%) patients had grade III and five (5.6%) patients had T2N0M0. Metastatic disease was seen in 2 (2.2%) patients of this subgroup.

Twelve (13.5%) patients had HER-2 enriched. Seven (7.9%) patients had left breast IDC. Forty-nine (55%) patients had grade II and four (4.5%) patients had T2N0M0. Metastatic disease was found in 2 (2.2%) patients of this group.

Table 1 (A): Clinical Data

Grade	Total No. (89)
I	9 (10%)
II	49 (55%)
III	28 (31.5%)
IV	3 (3.4%)
TOTAL	89 (100%)

Table 1 (B): Clinical Data

ER, PR	Total No. (89)	Percentage (%)
neg	29	32.6%
pos	60	67.4%

diagnosis, and management of breast cancer patients in KHUH and Bahrain in order to implement a more organized approach to breast cancer care. In our study, 12.7% patients were found to have an unknown grade or stage and were thus not included in our dataset. This is in comparison to prior data, which also found significant proportions of unknown stages and grade³. Further research is needed to evaluate why patients are being lost due to unknown stage or grade, and significant effort is needed in order to reduce this.

CONCLUSION

The results of this study are applicable largely to the women in Bahrain and the GCC. The number of patients lost to follow up decreases the validity of said results. A more systematic approach to the screening, diagnosis, and management of breast cancer needs to be adopted in Bahrain. An organized system for the collection and categorization of breast cancer cases in Bahrain will standardize what is currently a relatively disorganized system. That would pave the way to future research and advancing the management of breast cancer in Bahrain and the GCC.

Author Contribution: All authors share equal effort contribution towards (1) substantial contributions to conception and design, acquisition, analysis and interpretation of data; (2) drafting the article and revising it critically for important intellectual content; and (3) final approval of the manuscript

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