Al-Azhar International Medical Journal

Volume 4 | Issue 8 Article 36

2023

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How to Cite This Article

Hamama, Taher Moheb Hassan; Al-Agamawi, Ahmed Yousry; and Al-Abady, Hesham Abbas (2023) "Evaluation of Outcome in the Management of Patients with Triple Negative Breast Cancer (retrospective study)," *Al-Azhar International Medical Journal*: Vol. 4: Iss. 8, Article 36.
DOI: https://doi.org/10.58675/2682-339X.1918

ORIGINAL ARTICLE

Evaluation of Outcome in the Management of Patients with Triple-negative Breast Cancer (Retrospective Study)

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Abstract

Background: **The most frequent malignancy in women is breast cancer. Depending on the tumor's morphological traits, clinical characteristics, and hormone receptor levels, treatment outcomes can vary. In modern medicine, the levels of the progesterone receptor (PGR), oestrogen receptor (ER), and human epidermal growth factor receptor 2 (HER-2) have been found to be important prognostic markers.**

Aim of the work: **To evaluate the clinicopathological features among the patients with early-stage triple-negative breast cancer regarding progression-free survival and overall survival.**

Patient and methods: **The Clinical Oncology and Nuclear Medicine Department at AL-Hussein University Hospital conducted this retrospective analysis between the beginning of January 2011 and December 2018. The records of 60 patients who met the qualifying requirements were gathered, and clinicopathological information was taken from the patient files. Disease-free survival (DFS) was the primary goal, and overall survival was the secondary endpoint (OS).**

Results: **The results of the current investigation demonstrated a substantial correlation between bigger breast cancers and poor overall survival. Poor disease-free survival was significantly correlated with lymphovascular invasion.**

Conclusion: **Breast tumours that are triple-negative have poor prognoses. They are at a greater risk of invasion and have high histological grades. Early metastases can occur in this population, and the predicted survival is typically brief.**

Keywords: Breast cancer, KI-67, Triple-negative breast cancer (TNBC)

1. Introduction

Breast cancer is the most common malignancy among women. Triple-negative breast cancers make up about 15% of breast tumours (TNBC).[1]

A weak correlation exists between having triple-negative breast cancer and overall and disease-free survival (OS). TNBC is more common among women of African descent, and BRCA1 appears to be linked to a large number of TNBC-phenotypic breast tumours. Breast tumours that are triple-negative are aggressive physiologically. Although they still have a poor prognosis, they react to chemotherapy better than other forms of breast cancer, especially anthracycline- and taxane-based treatments.[2] They continue to experience only brief periods of health (DSF).[3]

The same fundamental principles for surgical care and radiation therapy choices are applied to all subtypes of breast cancer. Neoadjuvant chemotherapy is used, especially for TNBC and in patients with locally advanced breast cancer at diagnosis. Typically, patients with node-positive tumours or tumours larger than 0.5 cm are advised to undergo adjuvant chemotherapy (regardless of tumour size). For the treatment of tumours <0.5 cm, the decision to administer adjuvant chemotherapy must be individualized based on patients. There are no specific posttreatment surveillance guidelines for patients with TNBC.[4]

Accepted 16 February 2023.
Available online 22 January 2024

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We aimed to evaluate the clinicopathological features among the patients with early-stage triple-negative breast cancer regarding progression-free survival and overall survival.

2. Patients and methods

The study was approved by the Ethics Committee of the Al-Azhar Faculty of Medicine. This retrospective study was conducted at Clinical Oncology and Nuclear Medicine Department, AL-Hussein University Hospital in the period from beginning of January 2011 to the end of December 2018. Sixty cases fulfilled the eligibility criteria were recruited and clinicopathological data were extracted from the recorded patients' files.

2.1. Inclusion criteria

We included pre or postmenopausal female patients aged 18–<70 years, with early-stage breast cancer and performance status 0–II. They were pathologically proven to have invasive breast carcinomas with negative ER, PR and HER-2.

2.2. Exclusion criteria

We excluded patients with hormonal receptor weak + ve, patients with previous history of any other malignancy and patients with incomplete file or data. We extracted patients related data (age, marital status, menopausal status, associated comorbidities, performance status at initial presentation, family history of malignancy, special habits e.g., smoking, and clinical presentation of patient at first visit), disease related data (tumor size, pathological subtype, grade, nodal stage, hormonal profile, genetic tests if available, and lymphovascular invasion).

2.3. Statistical analysis

SPSS (Statistical Package for the Social Science) program version 25.0 (IBM Inc., Chicago, USA), Microsoft Office Excel 2016 software were used to calculate the statistical significance. When appropriate, the median with range and mean described the quantitative variables (distribution did not follow normality). Quantitative data were reported using numbers and percentages, and proportion independence was evaluated using Chi-square or Fisher exact.

With a 95% confidence interval, the Kaplan Meier method (product limit) was employed to estimate survival. The interval between a diagnosis and the last follow-up appointment or death was referred to as overall survival. The interval between surgery and the first known relapse or recurrence of the disease was used to define this term. A log rank test was used to compare survival curves. P value is always significant at the 0.05 level and has two tails.

3. Results

In the current study, the age at time of diagnosis was ranged between 28 and 68 years old with a median of 44.78 years. Thirty eight (63.3%) patients were premenopausal, 22 (36.7%) were postmenopausal. Fifty seven (95%) patients have had IDC disease, 2 had medullary carcinoma, while only one had ILC disease, 33 (55%) have had grade (2) disease while 27 (45%) have had grade (3), 6 (10.0%) presented with pathologically T1 disease, 43 (71.7%) presented with T2 disease, while 11 presented with T3 disease, 20 have had N0 disease, 17 have had pathological N1, 16 have had N2 while 7 (11.7%) have had N3 disease. During our study 44 (73.3%) patients were still alive, 37 (61.7%) were free from any recurrences, 16 (26.7%) were died or lost follow-up. Between age groups of TNBC patients at diagnosis, there were no statistically significant differences in DFS or OS ($P = 0.33$, $P = 0.82$). For DFS ($P = 0.078$) and OS ($P = 0.050$), there were no statistically significant differences between the groups of TNBC patients according to menopausal status. Depending on the stage of the tumour, there was a statistically significant difference in DFS and OS between different tumour sizes. There is no statistically significant difference between DFS and OS for any tumour histological subgroups due to the lack of events in the ILC and medullary carcinoma subtypes. There was no statistically significance between TNBC patients in histological grade regarding DFS and OS ($P = 0.064$), ($P = 0.406$).there were statistically significance between TNBC patients and nodal status regarding DFS and OS ($P = 0.013$), ($P = 0.009$).There was statistically significance difference between TNBC patients with LVI regarding DFS ($P = 0.015$) There were no statistically significance between TNBC patients with LVI regarding OS ($P = 0.124$) there was statistically significance between TNBC patients in different pathological stage according to DFS and OS ($P = 0.044$), ($P = 0.025$) Table 1.

4. Discussion

15–20% of all breast cancer cases are triple-negative breast cancer (TNBC), a molecular subtype of breast cancer with negative expression of the ER, PR, and HER-2 receptors. TNBC patients are more likely to relapse, develop metastatic disease, and

Table 1. The patient demographic data, disease related data TN staging, histopathological type and grade and presence of LVSI.

	Number = 60
Age	
Mean ± SD	44.78 ± 11.46
Range	28–68
Menopausal	
Pre	38 (63.3%)
Post	22 (36.7%)
Family history	
No	51 (85%)
yes	9 (15%)
Performance status	
I	40 (66.6%)
II	13 (21.6%)
III	7 (11.6%)
Surgery	
CBS	19 (31.7%)
MRM	41 (68.3%)
Histopathological type	
IDC	57 (95.0%)
ILC	1 (1.7%)
Medullary	2 (3.3%)
Grade	
Grade 2	33 (55.0%)
Grade 3	27 (45.0%)
L.V·I	
Negative	34 (56.7%)
Positive	26 (43.3%)
T Stage	
T1	6 (10.0%)
T2	43 (71.7%)
T3	11 (18.3%)
N Stage	
N0	20 (33.3%)
N1	17 (28.3%)
N2	16 (26.7%)
N3	7 (11.7%)
Stage	
Stage 1	4 (6.7%)
Stage 2	34 (56.7%)
Stage 3	22 (36.7%)

pass away than patients with non-TNBC subtypes, who also have a worse prognosis for survival.[5] Only 13–18 months is the median survival duration for TNBC patients with metastatic disease.[6] The development of prognosis prediction models is essential since TNBC has a poor prognosis, aggressive behaviour, and is challenging to treat well. Clinicopathological factors that have been linked to prognosis in TNBC patients include age at diagnosis, the presence of axillary lymph nodes, lymphovascular invasion (LVI), and histological grade.[7]

The principal point of this study was to assess the clinicopathological highlights among the patients with beginning phase triple-negative bosom disease in regards to movement free endurance and in general survival. This review study was directed at Clinical Oncology and Atomic Medication Division, AL-Hussein College Medical clinic in the period from start of January 2011 to the furthest limit of December 2018. Sixty cases satisfied the qualification models were enlisted and clinicopathological information were extricated from the recorded patients' documents. The ongoing review revealed how old that the patients might have been at determination run 28–68 years with a middle of 44.78 ± 11.46 years. As indicated by age bunches between TNBC patients at determination, there were no genuinely tremendous contrasts neither to DFS or OAS (P=0.33), (P=0.82).

In accordance with the most recent examination Age was non-essentially connected with Sickness-Free Endurance (DFS) in patients with triple-negative bosom malignant growth, as per Sheng et al., 2022[8] 's univariate study. Kim et al., 2017[9] showed that age more youthful than 40 years was unequivocally related with generally speaking repeat, which is in opposition to our discoveries. The disparity could be welcomed on by the different example sizes and patient stages. There were no genuinely massive contrasts in DFS (P = 0.078) or operating system (P = 0.050) among premenopausal and postmenopausal gatherings for TNBC patients as per menopausal status of patients at finding.

According to Sheng et al. study 2022,[8] menopausal state was not significantly linked with disease-free survival (DFS) in patients with triple-negative breast cancer. This judgement is consistent with the most recent research. Since there were no cases of the ILC or medullary carcinoma subtypes, our findings on histopathological subtype demonstrated that there is no statistically significant difference between any tumour histological categories for DFS or OS. In individuals with triple-negative breast cancer, histopathological type was not substantially correlated with disease-free survival (DFS), according to Sheng et al. study 2022.[8] This conclusion is in line with the present research. However, Wang et al. found in 2011 that there was a relationship between IDC histopathological categories and recurrence-free survival (P=0.038). (RFS). The disparity can result from the various sample sizes. Our research on the size of the tumour after surgery revealed a statistically significant relationship between DFS and OS and breast cancer size (P=0.023), (P=0.032).

Wang et al. (2011) saw that growth size >2.0 cm (P=0.001) was connected with repeat free endurance, which is reliable with our discoveries (RFS). Nonetheless, Sheng et al., 2022[8] shown that in people with triple pessimistic bosom malignant growth, cancer size was not significantly connected with sickness-free endurance (DFS).There was no measurably huge contrast between TNBC patients' histological grades as indicated by DFS and

operating system ($P = 0.064$), ($P = 0.406$), in regards to the neurotic grade. Sheng et al. findings.'s were upheld by their discoveries, which uncovered that the histological grade was not significantly connected with sickness-free endurance (DFS) in patients with triple-negative bosom disease.

Notwithstanding, Wang et al. seen in 2011 that more drawn out repeat free endurance was related with higher cancer grade ($P = 0.038$). (RFS). The disparity could be welcomed on by the different example sizes. Our discoveries in regards to nodal status following a medical procedure showed a significant connection between nodal status and DFS and operating system. In concurrence with the flow study, Steward et al., 2014[10] showed that nodal status was essentially connected with Sickness-free endurance (DFS) or Generally endurance (operating system) in patients with triple-negative bosom malignant growth.

Nonetheless, Arvold et al., 2011[11] showed that rising quantities of positive lymph hubs was not essentially connected with an expanded gamble of locoregional repeat in their TNBC companion. In one more concentrate by Hernandez-Aya et al., 2011[12] positive nodal status was related with an unfortunate guess (both repeat free and generally endurance), however, there was no distinction in endurance with expanding number of hubs. Concerning, it was observed that there was genuinely importance between TNBC patients and energy of LVI with respect to DFS ($P = 0.015$) There was no measurably importance between TNBC patients and inspiration of lymphovascular attack in regards to operating system ($P = 0.124$).Our outcomes were upheld by Urru et al., 2018[13] who revealed that there was huge connection between lymphovascular attack and endurance. Nonetheless, Sheng et al., 2022[8] shown that in patients with triple-negative bosom malignant growth, LymphoVascular Attack was not considerably connected with sickness-free endurance (DFS).

4.1. Conclusion

Breast tumours that are triple-negative have poor prognoses. They are at a greater risk of invasion and have high histological grades. This group is capable of early metastases, and survival is typically brief. With regard to this group, we need to concentrate on new treatment approach methods, and the pre-treatment values of many prognostic indicators are well-known. For our findings to be confirmed and in order to pinpoint further risk factors for adverse outcomes, additional research with a bigger sample size and longer follow-up is required.

Disclosure

The authors have no financial interest to declare in relation to the content of this article.

Authorship

All authors have a substantial contribution to the article.

Sources of funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest

The authors declared that there were NO conflicts of Interest.

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