

ORIGINAL RESEARCH

Age Distribution and Demographic Characteristics of Triple-Negative Breast Cancer Patients in Iran

Sara Salajegheh¹, Hesam Dehghani², Arshad Hosseini³, Mohammad Esmail Akbari⁴ Samira Salajegheh⁵, Gholamreza Hashemitabar^{*6}

1. *Department of Pathobiology, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran. Cancer Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran.*
2. *Department of Basic Sciences, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran.*
3. *Department of Biotechnology, School of Allied Medical Sciences, Iran University of Medical Sciences, Tehran, Iran.*
4. *Cancer Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran.*
5. *Department of Radiology, Kerman University of Medical Sciences, Kerman, Iran.*
6. *Department of Pathobiology, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran.*

***Corresponding Author:**

Address: Department of Pathobiology, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran
 Email: hashemita@gmail.com
 ORCID: 0000-0001-9760-1096

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Abstract

Objective: Breast cancer remains the leading cause of cancer-related deaths among women worldwide. Researchers classify Triple-Negative Breast Cancer (TNBC) by the absence of oestrogen receptor (ER), progesterone receptor (PR), and HER-2 expression. This subtype accounts for 10–15% of breast cancer cases and shows poorer prognosis with higher recurrence rates compared to other forms. This study investigates the age distribution and demographic characteristics of TNBC patients in Iran.

Materials and Methods: Researchers collected data from TNBC patients who referred to Shohada Tajrish Hospital in Tehran over six years. They recorded clinical and demographic information and conducted statistical analyses using SPSS version 26.

Results: The study revealed that the average age of TNBC patients was 44.6 years, with most cases presenting invasive ductal carcinoma (IDC). Researchers noted that breast-conserving surgeries were the predominant treatment strategy.

Conclusion: TNBC in Iran aligns with global patterns, highlighting the higher prevalence of this subtype among younger age groups. Findings emphasize the importance of targeted approaches for early diagnosis and effective management.

Keywords: Breast cancer, Triple-negative breast cancer, Estrogen receptor, HER-2 receptor, Progesterone receptor

Introduction

Breast cancer continues to dominate as the most prevalent malignancy among women. Global statistics show that approximately 2.3 million new cases were diagnosed in 2020, accounting for 24.5% of all cancers in women (Sung et al., 2021). This disease also ranks as the leading cause of cancer-related mortality in women, contributing to 15.5% of cancer-related deaths globally. The American Cancer Society states that one in eight women in the United States develops breast cancer during her lifetime (Siegel et al., 2021).

Triple-Negative Breast Cancer (TNBC) represents a biologically aggressive subtype defined by the lack of ER, PR, and HER-2 expression. Researchers estimate that TNBC accounts for 10–15% of all breast cancer cases (Garrido-Castro et al., 2019). TNBC disproportionately affects younger women and demonstrates a 40% mortality rate within the first five years of diagnosis in advanced stages (Yadav et al., 2020). Scientists have identified that the tumor microenvironment, genomic alterations, and histological characteristics significantly impact TNBC progression and treatment outcomes. This study aims to analyze the age distribution and demographic characteristics of TNBC patients in Tehran, Iran, providing vital insights for improved strategies in diagnosis, treatment, and management.

Materials and Methods

Researchers conducted a retrospective study involving TNBC patients who visited Shohada Tajrish Hospital in Tehran between 1995 and 2021. Inclusion Criteria: Patients who had TNBC confirmed through pathology and immunohistochemistry (IHC) following surgery qualified for inclusion. Data Collection: Researchers documented clinical and demographic details using standardized checklists and stored data for statistical analysis. Statistical Analysis: Analysts used SPSS version 26 to calculate descriptive statistics, including mean, standard deviation, and variance, to characterize the sample population.

Results

Patient Demographics:

The sample included 12 TNBC patients who sought treatment over six years. The average

age was 44.6 years (SD: ± 14.84), with patients ranging in age from 34 to 80 years.

Tumor Characteristics:

The average tumor size measured 3.76 cm. Histological subtypes showed that 66.7% had invasive ductal carcinoma (IDC), while 25% had invasive mammary carcinoma, and 8.3% had metastatic carcinoma. Researchers noted tumor laterality: 66.6% involved the right breast, whereas 33.3% affected the left breast.

Treatment Modalities:

Neoadjuvant therapy was administered in 25% of cases before surgery. Surgical interventions revealed that 83.3% of patients underwent breast-conserving surgery (BCS), while 16.7% had modified radical mastectomy (MRM). Sentinel lymph node biopsy was performed for 25% of patients, and others underwent axillary dissection.

Additional Findings:

Researchers observed that 83.3% of patients had single masses, while 16.6% had multicentric tumors. One case (8.3%) required re-excision.

Discussion

This study demonstrated that TNBC patients in Iran have an average age of 44.6 years, consistent with global trends. Researchers have noted similar patterns in other studies, including Garrido-Castro et al. (2019), where TNBC disproportionately affected younger women compared to non-TNBC cases. Findings also align with the predominance of IDC (66.7%) and the common use of breast-conserving surgery (Yadav et al., 2020).

The higher prevalence of TNBC among younger women emphasizes the need for early screening programs and personalized treatment strategies. Healthcare systems must address the challenges associated with this aggressive subtype, considering its poor prognosis.

TNBC in Iran reflects similar demographic trends observed globally, with younger populations often affected. These findings underscore the urgent need for comprehensive approaches to enhance detection, treatment, and management of TNBC. Researchers recommend further studies with larger sample sizes to validate and expand these findings.

Conflict of Interest

The authors of this study declare no conflict of interest.

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