



Breast Cancer in Young Women Under 40 at the Mohammed VI Oncology Center

Mohamed Amine Doumir*, Si Mohamed ennachit, Oumaima Wajih

Abstract

Objective: Breast cancer in young women is unusual and has specific epidemiological, diagnostic and prognostic features. It is generally associated with a genetic predisposition, unlike its counterpart in older women, and is mainly linked to reduced survival and higher recurrence rates. The aim of the study was to examine the epidemiological, clinicopathological and biological features.

Patients and methods: This was a retrospective study involving 119 female patients aged 40 years or younger, who underwent surgery for breast cancer between January 2017 and December 2019 at the Onco-Gynecology Department of the Mohammed VI Cancer Center. With histologically attested infiltrating breast cancer.

Results: The mean age was 37 years, with fluctuations between (21-40) years. The mean tumor size was 4.2 cm, ranging from 1 to 10 cm. In 89% of cases, it was an infiltrating ductal carcinoma, with SBR grade II in 61.45% of cases. It was associated with N0 lymph node involvement in 53.77% of cases. Negative hormone receptors (HR) were found in only 30% of cases. 50 patients showed HER2 overexpression, for ki 67 growth index was greater than 15% in 96 biopsies, i.e. a percentage of 83.5%. In our study, triple-negative tumors accounted for 24.19% of cases analyzed.

Discussion and conclusion: The occurrence of breast cancer is high in young Moroccan women. In our situation, it is differentiated by a delay in diagnosis which justifies the progression of the disease at the time of diagnosis. Biological characteristics are generally more aggressive, including higher histological grade, absence of hormone receptors and higher frequency of triple-negative tumors, which considerably reduce treatment options.

Keywords: Breast cancer; Young women; Diagnosis; Molecular classification; Prognosis.

Introduction

Breast cancer is the most common cancer among women worldwide. It is increasingly common in young women. In Morocco, breast cancer is the most common form of cancer in both sexes, with a frequency of 19.2%, followed by lung cancer with 12.3% and colorectal cancer with 7.8% [1]. Breast cancer accounted for 20% of recorded cancers in both sexes, and 35% of cases in women. The majority of affected patients were women, accounting for 99.1%. Less than 1% of registered cases were male [2]. Breast cancer also affects young women under the age of 40. Breast cancer in young women

Affiliation:

Cellular and Molecular Pathology Laboratory,
Faculty of Medicine and Pharmacy of Casablanca,
Hassan II University, Casablanca, Morocco

*Corresponding author:

Mohamed Amine Doumir, Cellular and Molecular
Pathology Laboratory, Faculty of Medicine and
Pharmacy of Casablanca, Hassan II University,
Casablanca, Morocco

Citation: Mohamed Amine Doumir, Si Mohamed
ennachit, Oumaima Wajih. Breast Cancer in Young
Women Under 40 at the Mohammed VI Oncology
Center. Journal of Cancer Science and Clinical
Therapeutics. 9 (2025): 97-101.

Received: June 25, 2025

Accepted: July 03, 2025

Published: July 14, 2025

represents a specific challenge, due to the significant medical and emotional consequences of the diagnosis. The aim of this study is to analyze the factors favoring breast cancer in young women under the age of 40 who have been treated at the Mohamed VI Center for Cancer Treatment. This will enable us to assess the prognostic profile of these young women and compare it with data in the literature.

Materials and Methods

This is a retrospective research study of 119 female patients aged 40 or younger, who underwent breast cancer surgery between January 2017 and December 2019 at the Onco-Gynecology Department of the Mohammed VI Center for Cancer Treatment. Women aged 40 or younger at diagnosis were included in this study, with histological confirmed infiltrating breast cancer. However, all women over 40, women who lost their sight before histological confirmation of breast cancer, women with in situ breast cancer and files that could not be processed were excluded. Elements examined: age, bilaterality, metastases, histological type, tumor size “pT”, SBR grade, BIRADS classification and lymph node invasion “pN”.

Results

Between January 2017 and December 2019, 119 new cases of breast cancer were reported during the study period. The mean age was 37 years, with variations ranging from (21-40) years. 8 patients or 6.8% had bilateral breast cancer and 111 patients or 93.2% had unilateral breast cancer. The ACR BIRADS classification of radiological abnormalities was specified and distributed as follows in 91 patients. Eight tumors (9%) were classified as ACR3, 38 (41.75%) as ACR5 and 45 (49.45%) as ACR4.

In the event of radio-clinical discordance, 23 IRMS were performed, representing 19.3% of cases. The mean tumor size was 4.2 cm (extreme: 1-10 cm), with sixty-four (60.37%) of the 106 tumors studied classified as T2, 21 (19.81%) as T1, 12 (11.32%) as T4 and 9 (8.49%) as T3. All 96 patients who underwent microbiopsy with trucut were found. Ductal infiltrating carcinoma was found in 85 biopsies (89%), lobular infiltrating carcinoma in 6 biopsies (6%), micro-papillary carcinoma in 3 biopsies (3%) and mixed carcinoma in 2 biopsies (2%). Of the 96 biopsies taken, SBR grade II was detected in 59 biopsies (61.45% of all biopsies), followed by SBR grade III in 35 biopsies (36.45%) and SBR grade I in 2 biopsies (2.08%).

76 of 119 patients had an in situ component, of which 38 were high-grade, 33 intermediate-grade and 5 low-grade. Vasculolymphatic emboli were observed in 67 cases (69.79%) of the 96 patients in whom the carcinoma could be detected at surgery. Clinical analysis of lymph node involvement in 106 out of 119 patients showed that N0 forms were most frequent

in 57 patients, i.e. 53.77% of cases, followed by N1 forms in 38 patients, i.e. 35.84% of cases, then N2 forms in 8 patients, i.e. 7.54% of cases, and finally N3 forms in 3 patients, i.e. cases. Extension studies carried out on twenty-seven of the 106 patients showed that 11 (10.37%) had metastases.

Hormone receptors were studied in 115 out of 119 patients, representing 97% of cases. The presence of estrogen receptors (ER) and progesterone receptors (PR) was positive in 67 patients (58%), negative in 34 patients (30%), and dissociated in 14 patients (12%). Identification of Her2 status by immunohistochemistry was performed in all patients. 43.5% of patients, i.e. 50 out of a total of 115, over expressed HER2.

The ki 67 growth index was studied in 115 out of 119 patients. It was greater than 15% in 96 biopsies, i.e. 83.5%.

A molecular classification was established using data on hormone receptors, KI67 and HER2 status. The overall phenotypes found at biopsy were 29.03% luminal B HER2 +, followed by basal triple-negative with a percentage of 24.19%, then luminal B HER2 - with a percentage of 20.96%, non-luminal HER2 + with a percentage of 19.35% and luminal A with a percentage of 6.45%.

Genetic research to identify germline mutations of the BRCA1 gene at exon 2 was only carried out in ten patients. The BRCA1 gene was found to be mutated in four of the ten patients examined.

Discussion

Depending on the research, the definition of breast cancer in young women varies. Others conclude that a “young” woman is one aged under 35, under 40, or even pre-menopausal. In this study, we chose to establish a threshold of 40 years. The average age of onset of breast cancer in young women According to the literature [3, 4], it is estimated to be around 35 years. In our collection, the mean age was slightly lower, at 37. With fluctuations ranging from (21-40). Approximately 1% of women are affected before the age of 30 [5]. The minimum age reported in the literature is 14 [6]. Clinical or mammographic diagnosis is more complex in younger women, and is linked to higher breast density, which explains the frequent delay in diagnosis at this age. In the series by Johnstone et al. mammographic examination is frequently less sensitive, being normal in 90% of cases [7]. In our series, sensitivity was better. In mammography, 41% of lesions were classified ACR5. Ultrasound remains an excellent complement to mammography. It is more adaptable than mammography in younger women [8]. According to McAree et al, ultrasound has a sensitivity of 82.4%, compared with 64.3% for mammography [9]. In women under 40, the benefit and importance of screening methods has not been determined. MRI plays a crucial role for this category of young women, given the increased tissue density that gives

it a sensitivity and specificity in excess of 90% [10]. This method facilitates a more accurate assessment of tumor size, as well as adequate estimation of multifocal, bilateral cancers and recurrences [11, 12]. In our series, MRI was applied in 19.3% of cases. Some authors believe that tumor size is more significant in women under 35 years of age [14, 15]. In the present series, the mean size is 4.2 cm, and the distribution of tumors by stage seems very different from that observed in other series. In our series, tumors categorized as pT2 were dominant with a percentage of 64.82%, compared with 73% according to Bakkali et al. [16], 67% according to Bertheau et al. [17] and 76.4% according to Escoute et al. [18]. It is likely that this discrepancy is due to the delay in diagnosis associated with the generally precarious socio-economic situation of our patients.

Histologically, infiltrating ductal carcinoma is the most common histological form; its offensive nature is linked to a higher occurrence of moderately differentiated cancers (grade II). McAree and colleagues reported grade III in 40.7% of cases [9], while Bertheau and his team observed grade III in 60% of cases [17]. As for Colleoni and colleagues, they found it in 61.9% of cases [19]. In our series, 89% of cases were characterized by the presence of infiltrating ductal carcinoma, with sbr grade II in 61.45% of cases. It would appear that the frequency of lymph node invasion is higher in younger women than in older women. Indeed, McAree et al [9] found a rate of 40% in patients under forty. Fisher et al. found a rate of 60% (20), while Walker et al. [21] identified a rate of 69% in women under the age of 30. The incidence of lymph node metastases in very young women (under 26) and young women [26-35] in the study by Kothari et al [22] is not significant, with an estimate of 33%. These results demonstrate some heterogeneity, and there is no significant difference in the incidence of lymph node invasion when age groups are compared [23]. In our case, 58% of young people are reported to have a positive RE status. Indeed, in the study by McAree et al. 76.8% of tumors were ER positive. Colleoni et al [19] found that, in women under 35, 38.8% of tumors did not display ER and 49.1% did not display PR [17]. According to Kothari et al, a lower frequency of estrogen receptor-positive cancers is observed in young women under 35 than in those aged 35 to 65 [24].

In our research, 43.5% of tumors showed an over expression of the Her2 receptor, suggesting the use of trastuzumab treatment (Herceptin). Triple negative tumors are characterized by the absence of expression of hormone receptors and Her2. They are associated with an aggressive progression with resistance to hormone therapy and targeted therapy. Adjuvant or neoadjuvant chemotherapy combined with pembrolizumab immunotherapy remains an effective treatment for triple negative tumors. In our study,

triple-negative tumors constituted 24.19% of cases. The management of breast cancer in young women follows the same guidelines as for older women. Early age, associated with a poorer prognosis, requires surgical intervention in a conservative manner, ensuring a satisfactory carcinological and aesthetically acceptable result. Adjuvant therapy is most often recommended for young women [25, 26]. Treatments based on chemotherapy whose protocols vary little or not at all from those established in postmenopausal women. The use of hormone therapy is recommended when hormone receptors are positive. The efficacy of trastuzumab (Herceptin) in immunotherapy, adjuvant and neoadjuvant chemotherapy in women with over expressing Her2 cancer has been demonstrated with highly significant results, regardless of age [27]. For a long time, the prognosis of breast cancers detected in young women has sparked controversy [28, 29]. According to Chung et al. (30), The recurrence-free survival rate was significantly lower at five years in women under 40 compared with other age groups (60.8% vs. 73.2% for the 41-50 age group), according to Lee et al. [31], The survival of women under 30 years is 10 to 20% lower compared to that of women over 30 years. These authors also point to the long-term risk of contralateral breast cancer and second primary tumor. However, the study of the most important series did not reveal any significant difference in overall survival or relapse-free survival between young women under 30 or 40 years of age and older women [32, 33]. However, according to several authors, being under 35 years old was an independent adverse prognostic factor [25, 26, 34]. According to several authors, the absence of invasion of axillary lymph nodes is linked to a significantly higher survival rate in women under 35 years with breast cancer. This difference reverses in the presence of lymph node involvement, regardless of the number of nodes affected [8, 27, 35].

Conclusion

The prevalence of breast cancer among young Moroccan patients is high. In our situation, it stands out for a delay in diagnosis that explains the progress at the time of diagnosis. Biological characteristics generally have a more aggressive character, in particular the high histological grade, the absence of hormone receptors and a higher frequency of triple-negative tumors which considerably limit treatment options. The establishment of a screening program for women under 40 years with an increased risk of breast cancer, combined with personalized therapeutic management based on various prognostic factors and local monitoring of the disease, could improve prognosis.

Declaration of Interests

The authors claim that they have no conflicts of interest related to this article.

References

1. World Health Organization. Globocan. 2018. Morocco: Incidence, Mortality and Prevalence by cancer site (2019).
2. Benider A, Harif M, Karkouri M, et al. Registre des cancers de la région de Casablanca, Casablanca-Maroc. Fondation Lalla Salma prévention et traitement des cancers (2016).
3. Collins LC, Marotti JD, Gelber S, et al. Pathologic features and molecular phenotype by patient age in a large cohort of young women with breast cancer. *Breast Cancer Res Treat.* févr 131 (2012): 1061-1066.
4. Copson E, Eccles B, Maishman T, et al. Prospective Observational Study of Breast Cancer Treatment Outcomes for UK Women Aged 18–40 Years at Diagnosis: The POSH Study. *JNCI J Natl Cancer Inst* 105 (2013): 978-988.
5. Winchester DP. Breast cancer in young women. *Surg Clin North Am* 76 (1996): 279-287.
6. Jayasinghe Y, Simmons PS. Occurrence of two rare malignant neoplasms (breast and ovarian) in an adolescent female. *J Pediatr Adolesc Gynecol* 22 (2009): 99-103.
7. Johnstone PA, Moore EM, Carrillo R. Yield of mammography in Selected patients age 30 years. *Cancer* 91 (2001): 1075-1078.
8. Houssami N, Irwigl L, Simpson JM, et al. Sydney Breast imaging accuracy study: comparative sensitivity and specificity of Mammography and sonography in young women with symptoms. *AJR Am J Roentgenol* 180 (2003): 935-940.
9. McAree B, O'Donnell ME, Spence A, et al. Breast Cancer in women under 40 years of age: a series of 57 cases from Northern Ireland. *Breast* 19 (2010): 97-104.
10. Schnall MD, Blume J, Bluemke DA, et al. Diagnostic architectural and dynamic features at breast MR imaging: multicenter study. *Radiology* 238 (2006): 42-53.
11. Drew PJ, Chatterjee S, Turnbull LW, et al. Dynamic contrast enhanced magnetic resonance imaging of the breast is superior to triple assessment for the pre-operative detection of multifocal breast cancer. *Ann Surg Oncol* 6 (1999): 599-603.
12. Lehman CD, Blume JD, Thickman D, et al. Added cancer yield of MRI in screening the contralateral breast of women recently diagnosed with breast cancer: results from the International Breast Magnetic Resonance Consortium (IBMC) trial. *J Surg Oncol* 92 (2005): 9-15.
13. Frei KA, Bonel HM, Pelte MF, et al. Paget disease of the breast: findings at magnetic resonance imaging and histopathology correlation. *Invest Radiol* 40 (2005): 363-367.
14. Kim SH, Simkovich-Heerd A, Tran KN, et al. Women 35 years of age or younger have higher locoregional relapse rates after undergoing breast conservation therapy. *J Am Coll Surg* 187 (1998): 1-8.
15. Albain KS, Allred DC, Clark GM. Breast cancer outcome and predictors of outcome: are there age differentials? *J Natl Cancer Inst Monogr* 16 (1994): 35-42.
16. Bakkali H, Marchal C, Lesur-Schwander A, et al. Le cancer du sein chez la femme de 30 ans et moins. *Cancer/Radiotherapie* 7 (2003):153-159.
17. Bertheau P, Steinberg SM, Cowan K, et al. Breast cancer in young women: clinicopathologic correlation. *Semin Diagn Pathol* 16 (1999): 248-256.
18. Escoute M, Aimard L, Felix-Faure C, et al. Cancer du sein chez la femme de moins de 36 ans. In: Cuisenier J, Chaplain G, editors. *XVIe Journée nationales de la Société française de sénologie et de pathologie mammaire*. Dijon (1994): 91-113.
19. Colleoni M, Rotmenz N, Robertson C, et al. Very young women (< 35 years) with operable breast cancer: features of disease at presentation. *Ann Oncol* 13 (2002): 273-279.
20. Fisher CJ, Egan MK, Smith P, et al. Histopathology of breast cancer in relation to age. *Br J Cancer* 75 (1997): 593-596.
21. Walker RA, Gullick WJ, Varley JM. An evaluation of immunoreactivity for cerbB-2 protein as a marker of poor short-term prognosis in breast cancer. *Br J Cancer* 60 (1989): 426-429.
22. Kothari AS, Beechey-Newman N, D'Arrigo C, et al. Breast carcinoma in women age 25 years or less. *Cancer* 94 (2002): 606-614.
23. Nemoto T, Vana J, Bedwani RN, et al. Management and survival of female breast cancer: results of a national survey by the American College of Surgeons 45 (1980): 2917-2924.
24. Kothari AS, Beechey-Newman N, D'Arrigo C, Hanby AM, Ryder K, Hamed H, et al. Breast carcinoma in women age 25 years or less. *Cancer* 94 (2002): 606-614.
25. Maggard MA, O'Connell JB, Lane KE, et al. Do young breast cancer patients have worse outcomes? *J Surg Res* 113 (2003): 109-113.
26. Matthews RH, Mc Neese MD, Montague ED, et al. Prognostic complications of age in breast cancer patients treated with tumorectomy and irradiation or with mastectomy. *Int J Radiat Oncol Biol Phys* 14 (1988): 659-663.

27. Sidoni A, Cavaliere A, Bellezza G, et al. Breast cancer in young women, clinico pathological features and biological specificity. *Breast* 12 (2003): 247-250.
28. McCormick B. Selection criteria for breast conservation. The impact of young and old age and collagen vascular disease. *Cancer* 74 (1994): 430-435.
29. Gloeckler Ries L, Pollack ES, Young JL. Cancer patient survival: surveillance, epidemiology, and end results program, 1973–79. *J Natl Cancer Inst* 70 (1983): 693-707.
30. Chung M, Chang HR, Bland KI, et al. Younger women with breast carcinoma have a poorer prognosis than older women. *Cancer* 77 (1996): 97-103.
31. Lee CG, McCormick B, Mazumdar M. Infiltrating breast carcinoma in patients aged 30 years and younger: long-term outcome for life, relapse, and second primary tumors. *Int J Radiat Oncol Biol Phys* 23 (1992): 969-975.
32. Foxcroft LM, Evans LB, Porter AJ. The diagnosis of breast cancer in women younger than 40. *Breast* 13 (2004): 297-306.
33. Khanfir A, Frikha M, Kallel F, et al. Le cancer du sein de la femme jeune dans le sud tunisien. *Cancer Radiother* 10 (2006): 565-571.
34. Rochefordie` re A, Asselain B, Campana F, et al. Age as prognosis factor in premenopausal breast carcinoma. *Lancet* 341 (1993): 1039-1043.
35. Kroman N, Jensen MB, Wohlfahrt J, et al. Factors influencing the effect of age on prognosis in breast cancer: population based study. *BMJ* 320 (2000): 474-478.



This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC-BY\) license 4.0](https://creativecommons.org/licenses/by/4.0/)