

IMAGING DIAGNOSIS OF BREAST CANCER IN VERY YOUNG WOMEN

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Keywords: breast cancer, very young women, diagnosis, imaging

Abstract: To highlight the role of imaging diagnosis of breast cancer in very young women with overview of the literature, considering the diagnostic difficulties at this age. **Material and method:** We retrospectively reviewed all breast cancer cases in women ≤ 35 years-old admitted in the County Clinical Hospital of Tîrgu-Mureș, during the past five years, analyzing the clinical, imaging, histopathological and surgical reports. **Results:** A total of 950 women were diagnosed with breast cancer during this period, 113 (11.89%) younger than the age of 45. 22 (19.46%) were very young (aged ≤ 35 years), with a mean age of 30. Out of the very young group, 16 (72.72%) women presented palpable lesions and 13 (59.09%) axillary adenopathies on diagnosis. All patients underwent ultrasonographic evaluations, 18 (81.81%) displaying spiculated lesions; multifocal masses were seen in 3 (13, 63%) cases and microcalcifications without mass only in one. Five patients (22.72%) were mammographically examined, as well. Breast magnetic resonance imaging, performed in 2 cases, revealed multifocal masses in one patient and non-masslike enhancement in a high grade of malignancy intraductal carcinoma. Mastectomy with axillary lymph node dissection was performed in 50% patients. **Conclusions:** Breast cancer diagnosis in very young women may be more difficult to establish considering the high breast density at this age. Breast ultrasound remains the preferred way for the examination of dense breasts, generally recommended as a method of choice under the age of 35 years old. Combining imaging methods increases diagnosis accuracy of breast cancer in very young women.

Cuvinte cheie: cancer mamar, femeia cu vârstă foarte tânără, diagnostic, imagistică

Rezumat: Evidențierea rolului diagnosticului imagistic al cancerului mamar în rândul femeilor cu vârstă foarte tânără, revizuirea literaturii de specialitate și luând în considerare dificultățile de diagnostic la această vârstă. **Material și metodă:** Am studiat retrospectiv toate cazurile de cancer mamar în rândul pacientelor de sex feminin cu vârsta ≤ 35 ani, internate în Spitalul Clinic Județean Mureș pe parcursul ultimilor 5 ani, analizând rezultatele examinărilor clinice, imagistice, histopatologice și chirurgicale. **Rezultate:** Un total de 950 femei au fost diagnosticate cu cancer mamar în această perioadă, 113 (11,89%) cu vârsta sub 45 ani. 22 (19,46%) au fost foarte tinere (vârsta ≤ 35 ani), cu vârsta medie 30 ani. Din grupul celor foarte tinere, 16 (72,72%) prezentau la momentul diagnosticului leziuni palpabile, iar 13 (59,09%) adenopatii axilare. Toate pacientele au fost evaluate ultrasonografic, 18 (81,81%) prezentând leziuni spiculate; 3 mase multifocale (13,63%) și o singură pacientă – microcalcificări fără masă vizibilă. Cinci paciente (22,72%) au fost examinate și mamografic. Imagistica prin rezonanță magnetică nucleară mamară, efectuată în 2 cazuri, a detectat mase multifocale la o pacientă și priză de contrast de tip non-masă în cazul unui carcinom intraductal cu grad ridicat de malignitate. La 50% paciente s-a efectuat mastectomie și evidare ganglionară axilară. **Concluzii:** Diagnosticul cancerului mamar la femeia foarte tânără poate fi mai dificil de stabilit, având în vedere densitatea ridicată a sânului la această vârstă. Imagistica prin rezonanță magnetică nucleară mamară rămâne metoda preferată de examinare a sânilor denși, recomandată în general ca metodă de elecție sub vârsta de 35 ani. Combinarea metodelor imagistice crește acuratețea diagnosticului cancerului mamar la femeia de vârstă foarte tânără.

INTRODUCTION

Rarely occurring at very young age, breast cancer is in a more advanced stage at the time of diagnosis, has a more aggressive behaviour and a poorer prognosis in this age group than in older women.

Breast cancer imaging diagnosis in very young women is more challenging because of the breast structure particularities.

PURPOSE

The purpose of this study is to highlight the role of imaging diagnosis of breast cancer in very young women with an overview of the literature, considering the diagnostic difficulties at this age.

METHODS

We retrospectively reviewed all breast cancer cases in women \leq age 35 admitted in the County Clinical Hospital of

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Țirgu-Mureș, during the past five years (January 2007 – January 2012) and analyzed the clinical, imaging, histopathological and surgical reports.

The age of the patients ranged from 20 to 35 years old. Ultrasonographic evaluations were performed with Philips HD11 XE equipment with 12.5 MHz linear transducer, mammographic examinations with GE Senograph DMR plus system and breast magnetic resonance imaging (MRI) with GE Signa Excite 1.5 T.

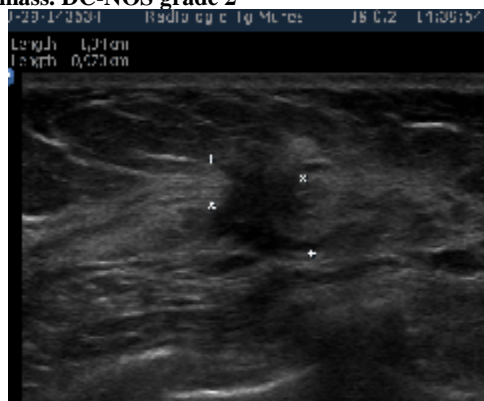
RESULTS

The total number of women diagnosed with breast cancer in this period of time was 950, out of which 113 (11.89%) were younger than 45 years old. Among these, 22 (19.46%) were very young (aged ≤ 35 years), with a mean age of 30. Family history of breast cancer was noted in two patients. In the very young group, 16 (72.72%) women presented palpable lesions and 13 (59.09%) axillary adenopathies at the time of diagnosis. All patients underwent ultrasonographic evaluations, 18 (81.81%) of them displaying spiculated lesions (figures no. 1 and 2).

Figure no. 1. 35-year old woman. Ultrasonography. Hypoechoic mass - 2.4/1.3 cm with spiculation. IDC-NOS grade 3



Figure no. 2. 29-year old woman. Ultrasonography. Typical spiculated mass. DC-NOS grade 2

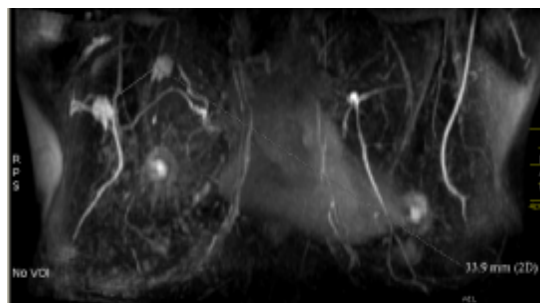


On ultrasound, more than half, 12 (54.54%) of our patients had large tumoural masses (2-4.5 cm) at diagnosis. Multifocal masses were ultrasonographically found in 3 cases (13.63%) and microcalcifications without mass in only one case. Mammography, performed in 5 (22.72%) patients, depicted masses with associated microcalcifications in 3 cases, and highly suspicious microcalcifications in 2 cases (one-an invasive carcinoma, the other - ductal carcinoma in situ).

Breast magnetic resonance imaging (MRI), performed in 2 cases revealed multifocal masses in one of them and non-masslike enhancement with segmental distribution in the case of

an intraductal carcinoma with high grade of malignancy. (figures no. 3, 4 and 5).

Figure no. 3. 34- year old woman. MRI. Maximum-intensity-projection image (MIP). 2 spiculated masses in the upper external quadrant of the right breast. Multifocal IDC-NOS grade 3



Most carcinomas were invasive ductal NOS (IDC-NOS) carcinomas (16 patients - 72.72%), out of which 68.18% were grade 2 and 3. Most patients were luminal B.

Histology demonstrated multicentricity in 7 (31.81%) of the cases. Mastectomy with axillary lymph node dissection was performed in 11 (50%) of our patients.

Figure no. 4. 35-year old woman. Mammography (detail). Pleomorphic, vermicular, branching microcalcifications. High nuclear grade DCIS

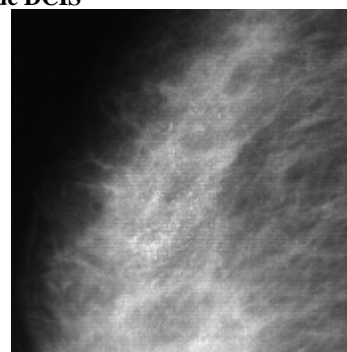
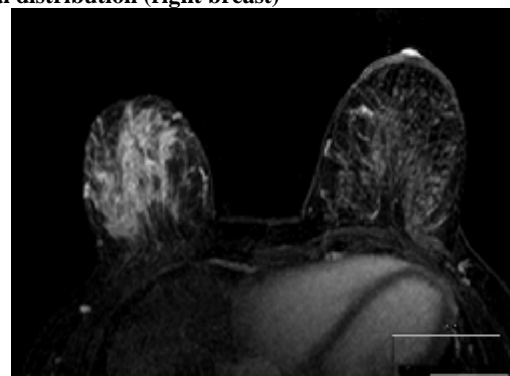


Figure no. 5. Same case. MRI. Non-mass enhancement with segmental distribution (right breast)



DISCUSSIONS

Breast cancer is uncommon in very young women, the risk to develop it increasing with age.(1,2,3) According to literature data, only 8.8% of all breast cancers occur in women below the age of 40, and 0.6% to 7% below the age of 35.(4,2,5,6,7,8)

It has been found that 75% of breast cancer cases are encountered in women older than 50 years old.(1) In this study,

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breast cancer in women ≤ 35 years-old represented 2.3% of all of our cases, and 19.46% of women below 45 years of age. In the majority of the very young group patients (72.72%), the lesions were palpable, of large size (exceeding 2 cm), associating axillary adenopathies in 59.09% of cases at diagnosis.(9) One of the multicentric cohort studies has also reported a high percentage (80%) of tumours detected by self palpation in very young women.(9)

Generally, younger women are in a more advanced stage and higher grade at the time of diagnosis. Delayed diagnosis of breast cancer in the very young women group tends to be related to the lower prevalence of cancer at this age, the absence of screening programmes under the age of 40 years old and the fact that young women usually do not expect to develop cancer at an early age.(2,7,11) The diagnosis of breast cancer in very young women may be more difficult because of the generally high density of the breast at this age. This feature, associated to fluctuations in menstrual cycle could also reduce the accuracy of clinical examination.

Although breast ultrasound (US) is not included as a routine examination in screening programmes, it is considered to be the diagnostic method of choice in this category of patients. The method is more sensitive than mammography in evaluating breast masses in women below age 35.(12) In our study, most lesions (81.81%) displayed highly suspicious appearances on US (spiculated/irregular masses), out of which more than half (54.54%) were large, some of them with internal microcalcifications. The usefulness of US in detecting unpalpable lesions with false-negative mammographies in dense breasts, as well as multiple mammographically invisible breast masses has been noted. In this study, multifocal masses were seen in 3 (13, 63%) of the cases and microcalcifications without mass in one of them. Microcalcification foci frequently represent the first sign of breast cancer. Regarding this aspect, mammography has better image resolution than ultrasound. Suspicious microcalcifications are rarely detected on ultrasound examination, but, when visible, they are usually malignant. As we reported, microcalcifications without mass were ultrasonographically seen, prior to mammographic examination in only one case - a ductal carcinoma in situ (DCIS). We performed mammography only in five (22.72%) patients, because of its well known lower accuracy in case of dense breasts. As it has been shown in a recent literature study, breast density can have a negative effect on imaging performance, reducing ultrasound sensitivity from 95.2 to 72.0% and mammographic sensitivity from 90.1 to 45.9%.(13)

MRI has the highest sensitivity, specificity, and positive predictive value for the detection of invasive as well as intraductal cancer.(14) The addition of MRI to US increases the sensibility of breast cancer detection and diagnosis in young women. DCIS is less frequently encountered in young women, mostly in stage II and III.(4) Only one DCIS grade 3 was found in our patients, as most cases were invasive ductal NOS (IDC-NOS) carcinomas (16 patients - 72.72%), out of which 68.18% were grade 2 and 3.(9) Multifocality was found in an important percentage of 31.81% of our very young patients. In this study, breast MRI was performed in two of the cases, helping us to assess the multifocal character of the lesions in one case and also the real tumour size in the second (DCIS) case.

CONCLUSIONS

The diagnosis of breast cancer in very young women may be more difficult considering the high density of the breast at this age.

Breast ultrasound remains the preferred way for the examination of dense breasts, generally recommended as the

method of choice under the age of 35. Combining imaging methods increases the accuracy of breast cancer diagnosis in very young women.

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