

The Value of Hormone Receptor Assessment in Ultrasound Guided Core Needle Biopsy of the Breast

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ABSTRACT

Breast cancer is the most common cancer in women in Western countries after skin tumors. Successful treatment depends on many factors, relies on clinical examination, diagnostic procedures, pathologic evaluation, and good therapy decision. The Pathologic diagnosis should be the determining factor in the decision on therapeutic approach. There are several methods of obtaining tissue samples. The percutaneous ultrasound guided breast Core needle biopsy (CNB) is one of them. The Aim of this Study is to evaluate our experience in the accuracy of hormone receptors assessment in ultrasound guided CNB. In our institution, in last 12 month 60 women (with 67 lesions) underwent Breast CNB. The CNB was performed with 16 Gauge semiautomatic biopsy needle with 15 Gauge coordinated introducer needle. 3–6 specimen (mean 4) were taken during the procedure. We analyzed five factors (histological type, histological grade, estrogen and progesterone receptor status, and HER2 from the biopsied sample. All results were presented at the Multidisciplinary Oncology Team. In addition to demographic data and morphological features of the lesion, we analyzed five pathological factors (histological type, histological grade, estrogen and progesterone receptor status, and HER2 from the biopsied sample. All results were presented at the Multidisciplinary Oncology Team. Ultrasound-guided CNB has proven to be a reliable technique for performing a biopsy for breast. It is a good and reliable, complication free method, for preoperative staging, operative planning as well for prognostic value. It is a cost-effective method, can be performed quickly and in outpatient population, does not deform the breast and multiple lesions can be biopsied. This technique shows a high sensitivity value and offers many advantages over other imaging methods to guide a biopsy. All advantages have made this technique the most widespread used technique to perform a biopsy for a suspicious breast lesion.

Key words: core needle biopsy, multidisciplinary oncology team, breast carcinoma

Introduction

Breast cancer is today the most common cancer in women in Western Europe, as almost in all countries. The age-standardized incidence in Europe was 62.8/100,000 and the mortality—16.7/100,000 women/year. The age-standardized incidence in Croatia in 2011 was 68.8/100,000 and the mortality—24.3/100,000 women/year¹. In the last 2 decades the incidence rate has increased annually. The incidence is increasing due to mammography screening and with aging of the population. To the rising incidence contribute several factors, as post-menopausal hormone replacement therapy, obesity and consumption of alcohol and tobacco. On the other hand to the reducing of the mortality rate conduce detecting of the tumor in earlier stages, and new systemic therapy modalities. However, Breast Cancer is still the leading cause of cancer death in women². The prevalence of the disease

rises with the age. 75% of the disease occurs after age 50. Unfortunately up to 10% of breast cancers are diagnosed as metastatic at first examination, what leads to low, not more than 20% of 5 years survival. The involvement of axillar nodes is an important factor in the prognosis of relapse of the disease. Up to 3/4 of node-positive breast cancers will relapse. The reason for the high prevalence of metastatic disease is that many women live with their disease till the first visit to the doctor.

The diagnosis is based on self-exam, clinical and radiological examination, fine needle aspiration biopsy and pathological sample examination. Although low specificity of the Breast self-exam (BSE) it is still a valuable tool for detection of the disease, especially in women age >41, because of prevalence of the fatty tissue³.

Clinical examination (CBE) includes bimanual palpation of the breasts and loco regional lymph nodes. In spite that CBE leads to greater risk of false positive results, it has a modest benefit than mammography alone, especially in dense breasts⁴.

Radiological examinations include bilateral mammography and ultrasound of the breasts (and regional lymph nodes depending on local expertise).

Mammography can be performed as screening mammography and as diagnostic mammography in women with symptoms of breast disease. The goal of mammography is to detect and to characterize the disease in asymptomatic women, and to evaluate the findings. Annual screening mammography is today the only imaging modality that reduces breast cancer mortality, especially in age appropriate women. Magnetic resonance imaging (MRI) of the breast should not be used as a routine procedure, but may be considered in women with BRCA mutation, in cases with multifocal breast cancers, and in young women with dense breast where carcinoma is suspected. Also it should be considered in women with silicone implants, and recurrent disease. FNAB is an accurate method for evaluating breast malignancy if rigorous criteria are used. In the case of malignant finding invasive procedures are required. The pathological diagnosis should be based on core needle biopsy (CNB) obtained by ultrasound or stereotactic, guidance or as open surgical procedure. A core needle biopsy should be obtained for the decision of appropriate therapeutic approach. If the decision an operative removal malignant lump is, a surgical clip should be placed into the tumor at biopsy to facilitate the later surgical resection.

Materials and Methods

Ultrasound-guided CNB of the breast is an unavoidable method for taking a sample of pathological changed breast tissue suspected for malignancy detected on ultrasound⁵. Highly suggestive of malignancy are lesions BI-RADS 4–5 Category (Breast Imaging-Reporting and Data System [BI-RADS[®]] category 4 and 5 lesions). When this procedure is performed according to professional criteria the diagnostic accuracy is comparable to open surgical tissue sampling. Ultrasound guided Core needle biopsy is less difficult, time consuming, costly effective, has low risk of complication and multiple lesions can be biopsied compared to open surgery. On the another hand Core-needle biopsy is more accurate than fine-needle aspiration and provides core samples of sufficient quality to stain for markers, which can guide to decision of appropriate therapeutic approach, operative or neo-adjuvant treatment. Before attempting a breast biopsy, the radiologist should be familiar with all aspects of this procedure, should choose the most appropriate biopsy device, must provide safe and effective handling of the equipment and provide the patient with post biopsy care and instructions. Before

the procedure, all patients underwent different imaging modalities, ending with Ultrasound examination. Informed Consent was obtained before the procedure with detailed explanation of the procedure, possible complications and expected result. Risk was discussed, and all patients were asked to come 2 days after the procedure for a control ultrasound for checkup for possible complications.

Results

In last 12 month in our Hospital we performed 60 CNB of the breast (with 67 lesions) using 16G Disposable semi-automatic Guillotine Needle 25 mm Notch with 15G Introducer Needle. Before the procedure local anesthesia and disinfection of the skin was performed. Minimal incision before the procedure is usually obtained. 3–6 (mean 4) specimen were taken, and sent to the pathologist. The finding was completed in at last 10 days. The result was presented to the multidisciplinary Oncological team, where the bet therapeutic approach was discussed. This article presents our experience in ultrasound-guided core-needle breast biopsies. The mean age of our patients was 66.8 years.

From those 53 (79.1%), whose tissue diagnosis by CNB was Carcinoma, 40 (59.7%) entered this study. We analyzed five factors (histological type, histological grade, estrogen and progesterone receptor status (ER, PR), and HER2 from the biopsied sample. The tumor histology as well the number and the value of Hormone Receptor in each category was analyzed. From 40 positive for invasive carcinoma, 10 (25%) were specified as ductal invasive carcinoma, 4 (10%) as lobular invasive carcinoma, and in 26 (65%) were unspecified. The Estrogen and Progesteron status was positive in 34 (85%) in the whole group, and each of them had Her2 status negative. The proliferation index was analyzed using Ki-67 status, and was low (less than 20 cells) in 20 carcinomas, while it was high in (more than 20 cells) in 12 (30%) of cases.

Discussion

Ultrasound-guided CNB has proven to be a reliable technique for performing a biopsy for breast lesions that can be clearly seen on ultrasound. The use of 16 Gauge needle is accurate, safe and a complication free method. It is a good and reliable method for preoperative staging, operative planning as well for prognostic value. This technique shows a high sensitivity value and offers many advantages over other imaging and non imaging methods to guide a biopsy. It is a cost-effective method, can be performed quickly and in outpatient population, does not deform the breast and multiple lesions can be biopsied. All advantages have made this technique the most widespread used technique to perform a biopsy for a suspicious breast lesion.

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VRIJEDNOST PROCJENE HORMONALNIH RECEPTORA KOD ULTRAZVUČNO VOĐENE BIOPSIJE DOJKE ŠIROKOM IGLOM

SAŽETAK

Rak dojke je najčešći rak u žena u zapadnim zemljama, nakon tumora kože. Uspješno liječenje ovisi o mnogim čimbenicima, a ovisi o kliničkom pregledu, dijagnostičkim postupcima, ocjeni patološkog nalaza, kao i odluci o vrsti terapijskog zahvata. Patološka dijagnoza bi trebala biti odlučujući faktor u odluci o terapijskom pristupu. Postoji nekoliko načina za dobivanje uzoraka tkiva. Perkutana ultrazvučno vođena dojke debelom iglom (CNB) je jedna od njih. Cilj ovog rada je ocijeniti naše iskustvo u točnost određivanja hormonskih receptora u materijalu dobivenom ultrazvukom vođenom CNB. U našoj ustanovi, u posljednjih 12 mjeseci kod 60 žena (sa 67 lezija) izvršena je CNB. CNB je učinjena sa poluautomatskom iglom debljine 16G, koristeći uvodnicu debljine 15G. Pored demografskih podataka i morfoloških obilježja lezije, analizirali smo pet patološka čimbenika (histološki tip, histološki stupanj, estrogena i progesterona status receptora i HER2 iz biopsije uzorka Svi su rezultati predstavljeni na multidisciplinarnom onkologiju tima. Ultrazvukom vođena CNB se pokazala pouzdanom tehnikom za uzimanje materijala za histološku analizu. To je dobra, pouzdana i jeftina metoda, sa malom učestalošću komplikacija. Pokazala se kao pouzdana metoda u preoperativnom prikazu promjene, operativnom planiranju, ali i kao dobra prognostička vrijednost. Na ovaj ekonomičan način, može se izvesti brzo i za ambulantne pacijente. Metoda ne deformira dojku i više lezije se može uzeti odjednom. Ova tehnika uzimanja histološkog materijala pokazuje visoku osjetljivost i nudi mnoge prednosti u odnosu na druge metode oslikavanja. Sve ove prednosti su učinile da je tehnika postala najraširenijim načinom uzimanja materijala za histološku analizu koristi tehniku sumnjivih lezija dojke.