

STEREOTACTIC BIOPSY OF BREAST LESIONS UNDER DIGITAL MAMMOGRAPHY CONTROL WITH TOMOSYNTHESIS

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Abstract: Despite the extensive experience gained by specialists in radiation diagnostics over the past decades, in a number of cases the interpretation of breast diseases detected by digital mammography is difficult. The advantage of performing stereotactic biopsy of breast neoplasms under the control of digital mammography is undoubtedly a weighty argument for the successful work of this specialized oncology institution. This paper presents “our” experience in performing stereotactic biopsy of volumetric breast lesions under the control of digital mammography with tomosynthesis.

Keywords: Screening, Mammography, Stereotactic Biopsy, Breast Cancer.

Breast cancer (BC) is the most common pathology among women in Russia and Western countries. About 1 million cases of BC are diagnosed worldwide every year. The main role of biopsy in breast diseases is to determine whether changes in breast tissue are malignant or benign. Based on the information obtained from tissue biopsy, the treatment plan can be adjusted. In Russia and St. Petersburg, BC consistently occupies the leading place in terms of incidence rates. In 2013, 2,396 primary cases of the disease were registered in St. Petersburg, including 12 in men and 2,384 in women. The “crude” incidence rate was 85.7 per 100,000 population, the standardized rate was 47.14. In 2013, 1,122 women died of BC in St. Petersburg [1, 2].

In the Republic of Uzbekistan, mammographic screening is not carried out everywhere, but within the framework of the Presidential Decree, a screening program is being carried out as a pilot project in the Bukhara region among the female population of the region in the age group of 45-65 years [3,4].

IndispensableThe condition that determines the treatment strategy for a patient with a malignant tumor of the mammary gland is morphological verification of the diagnosis [5]. In recent years, preference has been given to trephine biopsy of areas suspicious for a malignant tumor, which allows not only to verify the morphological type tumor structure, but also to differentiate its receptor status. In case of a palpable formation, verification is as follows: as a rule, does not present any particular difficulties, much more difficultThis is the case with non-palpable tumors of the mammary glands.Diagnostic sectoral resection of the mammary glands (open biopsy) for many years was basically the only diagnostic method of its kind, allowing to obtain tissue for histological examination and thus verify the clinical diagnosis [6]. This method of verification of diagnosis has certain drawbacks: increased costs, time costs, low sensitivity, the presence of some postoperative complications, cosmetic defects, etc.

As an alternative to sectoral resection, various methods of biopsy of breast lesions have been introduced since the early 1980s.

Photo 1. Mammography unit



Photo 2. Stages of stereotactic biopsy

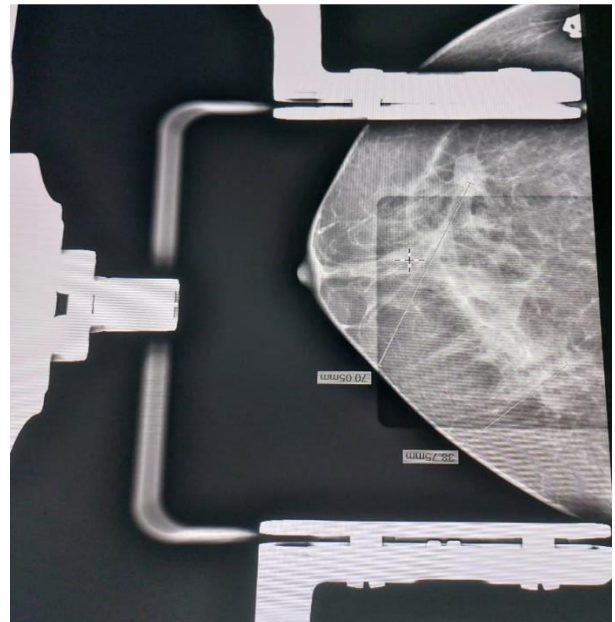
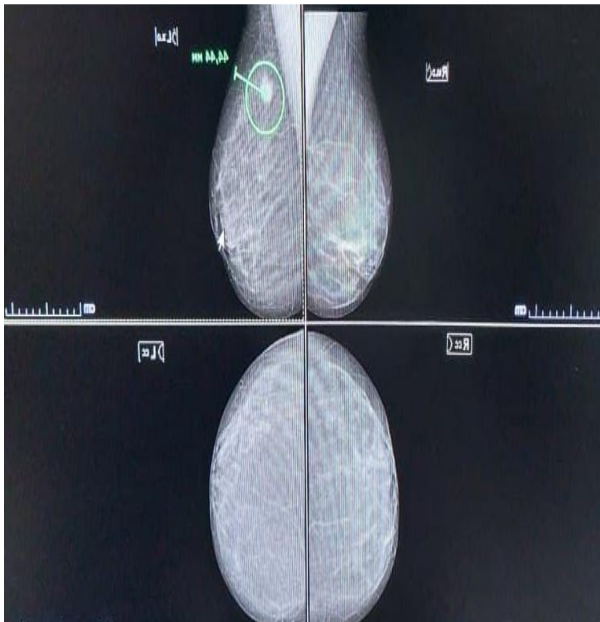


Photo 3. Material for histological examination



The percutaneous biopsy technique was first tested in Sweden. A hand-operated device called a needle gun was used to obtain tissue samples. The biopsy was performed under ultrasound guidance [7]

Usage The use of the stereotactic biopsy system "Mammotest" for performing aspiration biopsy of non-palpable breast lesions under X-ray control has not been widely distributed due to a number of significant defects.

Received the tissue was uninformative and was only available for cytological examination, and in 25% of cases it was not possible to collect sufficient material for testing final diagnosis [8]. In 1988, the American radiologist S. Parker performed the first stereotactic biopsy of a non-palpable breast formation under X-ray control using the system "needle gun"[9]. According to literary sources, the diagnostic accuracy of stereotactic biopsy of non-palpable breast lesions under X-ray control is significantly superior to sectoral resection of the mammary gland for diagnostic purposes [10, 11].

Stereotactic biopsy technique

To perform stereotactic biopsy under the control of digital mammography with tomosynthesis, we use the device of the company "Fujifilm" (Japan). With the help of this equipment, the patient is examined in a vertical position and the examination consists of 3 stages. In the first stage, the examined mammary gland is placed under the mammography device, pictures are taken, the targeted tumor is visualized, then the information is transmitted to the automatic control system of the biopsy needle, marking the area of interest with the cursor. Having preliminarily treated the surgical field 3 times under local anesthesia with a solution of Supercaine, a biopsy is performed. To perform a biopsy, we use a needle with a diameter of 14 G and a length of 10 cm. A disposable sterile needle is inserted into the device before the procedure. After the "shots", tissue samples are removed from the so-called spoon of the needle and placed on a glass slide and sent for histological examination. On average, 7-8 biopsy samples are obtained in one procedure. After the biopsy is completed, the wound is treated with an antiseptic solution and an aseptic plaster is applied. In some cases, after the biopsy, patients develop hematomas at the injection site that regress without additional interventions.

Conclusion: Neoplasms of the mammary glands, detected by palpation, as a rule, do not create problems for verification by the method of fine-needle aspiration biopsy or trephine biopsy with histological examination of the material. Non-palpable formations, areas of local asymmetry or severe restructuring, accumulations of calcifications - this is the range of diseases that is accessible only with high-tech diagnostic procedures and there is no way to verify the tumor without the help of a specialist in the field of radiation diagnostics. That is why it is necessary to provide and equip specialized oncological institutions

with devices for stereotactic biopsy under mammography control with tomosynthesis. Puncture biopsy on devices is more economically profitable in comparison with diagnostic (open) sectoral resection. Stereotactic biopsy under mammography control is performed on an outpatient basis, without hospitalization and special anesthesia. The procedure is much cheaper than sectoral resection of the mammary gland. Secondary prevention of breast cancer involves the extensive use of digital mammography for the early detection of malignant tumors. Detection of the slightest changes on mammograms and verification of the diagnosis with the support of stereotactic biopsy make it possible to perform the required range of diagnostic and treatment procedures for timely and correct diagnosis at the earliest stages of the tumor process. Ultra-early diagnosis of neoplasms in combination with a competent therapy strategy increases the likelihood of achieving a reduction in economic costs for treatment and in the future to reduce mortality rates from breast cancer.

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