MANAGEMENT OF PATIENTS WITH BREAST PATHOLOGY ACCORDING TO BI-RADS CLASSIFICATION

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Resume. *To make a correct diagnosis, it is necessary to have diagnostic criteria that make it possible to accurately prescribe treatment. Modern requirements for diagnostic methods are accuracy, high information content, and accessibility. The article discusses the BI-RADS (Breast Imaging Reporting and Data System) international system for describing and processing mammography and ultrasound data, which has been gaining interest in our country in recent years. The BI-RADS system is a good tool for determining the algorithm of management of patients with breast diseases.*

Key words: *BI-RADS, mammography, ultrasound examination of mammary glands, fibrocystic mastopathy.*

Introduction. The problem of diagnosing breast diseases is related to the search for the ideal technique. During clinical examination, manifestations of fibrocystic fibrosis are found in 20% of women, during mammographic, echographic and histological examinations - in 50% [1, 2].

I would like to have a diagnostic technique that makes it possible to make a diagnosis as early, accurately, minimally invasively, highly informative, inexpensively and accessible as possible. To date, the only correct tactic for effective diagnosis of breast diseases is an integrated approach [3].

In recent years, our country has been increasingly interested in the international system for describing and processing mammography and ultrasound examination (ultrasound) of the breast – BI-RADS (Breast Imaging Reporting and Data System), which is used in many countries.

Mammography is still the "gold standard" breast examination. However, mammographic screening has certain limitations. First of all, about 20% of cancer cases may be missed. This happens most often in young women due to the high density of the mammary gland parenchyma. The attitude towards ultrasound, which was previously perceived as an additional method, has now changed. Ultrasound can be used to differentiate between benign and malignant processes. The main disadvantage of ultrasound in the early detection of cancer is the inability to detect microcalcifications. According to recent publications, modern equipment makes it possible to detect microcalcifications in 70% of cases, and cancer in 90% [4].

BI-RADS is the result of the joint work of leading scientific centers in the USA [5]. The use of BI-RADS helps ensure that the results of each woman's radiation examination are communicated to the attending physician in a clear form with a final assessment of the detected changes in scores. This system indicates a specific plan for further medical actions aimed at establishing a diagnosis and providing adequate care to the patient [5].

The main value of the BI-RADS system for practical medicine is that it allows you to determine the succession of doctors of different specialties and patient management tactics. The description of the mammographic examination, complete and high-quality completion of the protocol assumes: indication of indications for mammography; brief description of previous screening studies; brief description of medical history. If an ultrasound scan of the mammary glands was performed earlier, it is necessary to indicate for what purpose. BI-RADS terminology in mammography Types of mammary gland structure. According to the 2018 BI-RADS scale. the determination of the type of structure of the mammary glands was based on the measurement of total density, as a result of which it was accepted to include mammary glands in the 1st category, which contained less than 25% of the fibrous-glandular tissue, in the 2nd category - from 30 to 54%, in the 3rd – from 55 to 76%, by the 4th – more than 78%. In 2021, the numerical designations of the types of breast structure were replaced by alphabetic ones:

• a: adipose tissue prevails, mammography sensitivity is high;

• b: scattered areas of high-density fibrous-glandular tissue are identified (the term "density" describes the degree of attenuation of X-ray radiation as it passes through the gland);

• c: glands of uneven density, small bulky formations can be masked by dense fibrous tissue;

• d: the glands are very dense, the sensitivity of the method is low. Three-dimensional formations. Most pathological processes in the mammary gland are accompanied by a thickening of the tissue and, accordingly, the X-ray image shows a symptom of darkening. If there are these changes in 2 projections, we can talk about volumetric formation (mass). If the darkening is visualized in 1 projection, we can only talk about densification, and not about volumetric formation. When analyzing the volume formation (darkening), attention should be paid to the shape, contour and density.

Shape analysis:

• rounded or oval;

• lobular;

• incorrect.

A rounded or oval shape is more typical for benign neoplasms. The irregular shape is more common in malignant processes. The lobular form of the formation can be present in both malignant and benign processes, reflecting the anatomical features of tumor growth.

Contour Analysis:

• capsule availability;

• the presence of a rim of enlightenment;

• the clarity or indistinctness of the outline of the formation.

The capsule with rounded and oval nodular formations in the mammary gland is clearly differentiated in the presence of adipose tissue in the structure of the seal.

Density analysis:

• low (comparable to adipose tissue);

• mixed (heterogeneity);

• high (higher than the density of the gland tissue itself or comparable to the density of the gland tissue – isodense).

Of all the tumorous and tumoriferous processes, only adipose tissue can look more transparent compared to the surrounding background of the breast. Therefore, the diagnosis of lipomas, fatty cysts, galactocele, etc. is not difficult. High-intensity darkening in the image causes any pathological process of a productive or exudative order (benign tumor, cyst, breast cancer, sarcoma, etc. Darkening of heterogeneous density is caused by the presence of fatty elements in the pathological focus and occurs in fibroadenolipomas, leaf-shaped tumors, galactocele, hamartomas, and enlarged lymph nodes. Asymmetry of breast tissue density. The asymmetric density of breast tissue detected by mammography corresponds to both non-tumor processes (asymmetric involution of breast tissue, post-traumatic and post-inflammatory changes, adenosis) and tumor (breast cancer).To clarify the nature of the seal, it is necessary to obtain additional sighting images and ultrasound.

Calcinates. The shape, size, quantity, and distribution of calcinates in various diseases are very distinctive. By localization, lobular, ductal and stromal calcinates are isolated in breast tissue. Lobular calcifications in most cases are a sign of benign processes, primarily various hyperplastic and proliferative changes (adenosis, sclerosing adenosis, cysts, fibrocystic mastopathy). Fibrocystic changes are characterized by bilateral calcifications of the type of "cups" (tea cup).With an average degree of hyperplasia and involutive changes in glandular tissue, scattered single calcifications with clear, even contours (size from 0.5 to 1.0 mm) are detected. They are the result of moderate cystic hyperplasia, which calcifies during the involution of breast tissue. Glandular tissue atrophy leaves punctate calcinates evenly dispersed within one or more lobes. They are determined mainly on a fatty background.

Special attention should be paid to calcinates of the "cotton ball" type. These are small-point different-caliber calcinates, grouped into separate "lumps". They can occur both in a limited area and diffuse (i.e., over the entire breast tissue). The detection of such calcifications requires histological verification, especially if they are located in a limited area. Such calcinates are characteristic of sclerosing adenosis with or without epithelial proliferation and for malignant processes such as non–palpable breast cancer. Another variant of lobular calcifications is calcifications of the type of "crushed stone", "broken needle", "arrowhead". These are calcinates with sharp, uneven edges, of different shapes and sizes. Their detection causes difficulties in differential diagnosis, and requires additional sighting, magnification, and histological confirmation.

Ductal calcifications are calcifications in the ducts detected on mammograms. They can be divided into 2 types: very dense, fragmented, uneven calcinates like dotted lines or worm–like lines (more than 1.0 mm in diameter), often repeat the topography of the ducts of the entire lobe of the mammary gland, form continuous lines, ring-shaped shadows (when calcium surrounds the duct - like a "rod"). Such calcifications are characteristic of plasmocytic mastitis, ductal ectasia. In case of blurring, indistinctness in the contours of such calcifications, and a decrease in size of less than 0.5 mm, differential diagnosis with intracurrent noninvasive breast cancer (ductal carcinoma in situ) is necessary; • heterogeneous small dotted, worm-like, intermittent calcifications of the "snake skin" type, characteristic of intracurrent noninvasive cancer (ductal carcinomas in situ). Stromal calcinates are localized outside the glandular tissue – in the walls of blood vessels, fibroadenomas, fatty cysts, and skin. Usually, such calcifications do not cause difficulties in diagnosis. In most cases, they are large, lumpy, shapeless, located in the peripheral areas of the neoplasm (size 1 mm or more, the less dense central part is of the "rim" type). They occur in the area of fatty necrosis, in ducts, small fibroadenomas and cysts.

Calcinates of the skin are found in the sebaceous glands. Many materials used in cosmetic products are radiopaque (the most famous is aluminum, which is part of some deodorants). With the peripheral location of "calcifications" extending to the armpit, having a bizarre shape, you should ask the woman about the use of cosmetics. Identification of calcifications of the arteries of the breast skin does not cause problems. Calcifications are located in the artery wall, as a result of which the arteries become visible on radiographs.

BI-RADS terminology in breast ultrasound, many of the terms used to describe changes in ultrasound are similar to those for mammography, in particular those that are necessary to describe the shape or edges of a bulky formation. The terms that are specific for describing changes in ultrasound will be discussed below. Shape: oval, round, lobed, irregular. Contours: clear, indistinct.

Degree of echogenicity: anechoic, hypoechoic, hyperechoic, isoechoic, mixed echogenicity. Type of mammary gland structure: homogeneous echogenicity with a predominance of adipose tissue, homogeneous echogenicity with a predominance of fibrous-glandular tissue, heterogeneous echogenicity. Echogenicity may be a factor influencing the final category, but it is not highly specific in itself. Acoustic effects: distal gain, acoustic shadow, mixed, no effects. Surrounding tissue: structural changes, duct changes, skin and subcutaneous fat, cooper's ligaments, anterior and posterior fascia. Vascularization: absent, defined by the periphery of the formation, diffuse. Other signs: compressibility, mobility, orientation, etc.

Conclusion The use of the BI-RADS system ensures:

• standardization of terminology;

a unified system for evaluating and interpreting changes;

• systematization of tactics for managing patients with breast spathology, including examination, adequate treatment, and dynamic monitoring;

• proven flow algorithm to ensure high-quality medical care;

• cost-effectiveness of medical care due to optimization of the patient management algorithm

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