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ТИББИЁТДА ЯНГИ КУН НОВЫЙ ДЕНЬ В МЕДИЦИНЕ NEW DAY IN MEDICINE

*Илмий-рефератив, маънавий-маърифий журнал
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BREAST CANCER SCREENING DIAGNOSTIC EFFECTIVENESS OF DIGITAL MAMMOGRAPHY

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✓ Resume

The radiological findings classified by the radiologist into BI-RADS categories of 4 (23 patients) and 5 (28 patients) were analyzed, depending on the nature of the histological conclusion. When analyzing data on the quality of breast cancer diagnosis in category 4 according to the BI-RADS system, a rather high (up to $20.59 \pm 4.89\%$) level of postoperative diagnosis of malignant neoplasms attracts attention. Usually, this category should correspond to a lower (up to 10%) detection rate of breast cancer. Mammograms that did not label the patient's data and the study side, as well as incomplete visualization of both mammary glands in two standard projections. Digital mammography makes it possible, through computer image processing, to obtain a more accurate assessment of the pathological process in the breast, which makes it possible to improve the diagnosis of early breast cancer.

Keywords: breast cancer, digital mammography, screening diagnostics.

СКРИНИНГ РАКА МОЛОЧНОЙ ЖЕЛЕЗЫ ДИАГНОСТИЧЕСКАЯ ЭФФЕКТИВНОСТЬ ЦИФРОВОЙ МАММОГРАФИИ

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✓ Резюме

В работе подвергнуты анализу рентгенологические находки, отнесенные рентгенологом к категориям BI-RADS 4 (23 пациенток) и 5 (28 пациенток) в зависимости от характера гистологического заключения. При анализе данных о качестве диагностики РМЖ в категории 4 по системе BI-RADS обращает на себя внимание довольно высокий (до $20,59 \pm 4,89\%$) уровень послеоперационной диагностики злокачественных новообразований. Обычно этой категории должен соответствовать более низкий (до 10 %) уровень выявления РМЖ. Маммограммы, на которых не было маркировки данных пациентки и стороны исследования, а также имелась неполная визуализация обеих молочных желез в двух стандартных проекциях. Цифровая маммография дает возможность за счет компьютерной обработки изображения получить более точную оценку патологического процесса в молочной железе, что позволяет улучшить диагностику раннего рака молочной железы.

Ключевые слова: рак молочной железы, цифровая маммография, диагностика скрининга.

SUT BEZI SARATONI SKRINIG DIGNOSTIKASIDA RAQAMLI MAMMOGRAFIYANI DIAGNOSTIK SAMARALIGI

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✓ **Rezyume**

Rentgenolog tomonidan gistologik xulosaning xususiyatiga qarab 4 (23 bemor) va 5 (28 bemor) BI-RADS toifalariga tasniflangan rentgenologik topilmalar tahlil qilindi. BI-RADS tizimiga muvofiq 4-toifadagi ko'krak bezi saratoni diagnostikasi sifati to'g'risidagi ma'lumotlarni tahlil qilganda, malign neoplazmalarning operatsiyadan keyingi tashxisining ancha yuqori (20,59 gacha) 4,89% darajasi e'tiborni tortadi. Odatda, bu toifa ko'krak bezi saratonini aniqlashning past (10% gacha) darajasiga to'g'ri kelishi kerak. Bemorning ma'lumotlarini va tadqiqot tomonini belgilamagan mamogrammalar, shuningdek ikkita standart proektsiyada ikkala sut bezlarini to'liq vizualizatsiya qilish. Raqamli mamografiya kompyuterda tasvirni qayta ishlash orqali ko'krakdagi patologik jarayonni aniqroq baholash imkonini beradi, bu esa erta ko'krak saratoni tashxisini yaxshilashga imkon beradi. BI-RADS 4 deb tasniflangan topilmalarni tahlil qilganda, analog mamografiyaga nisbatan ko'krak bezi saratonini aniqlash darajasi ancha yuqori (20,49% gacha).

Kalit so'zlar: ko'krak bezi saratoni, raqamli mamografiya, skrining diagnostikasi.

Relevance

Small (less than 0.8–1.0 cm) objects require very hard movements in the diagnostic process. This is primarily due to the fact that the malignancy criteria used in "classical" analog mammography can be vaguely expressed in small neoplasms. In fact, this position must and may be, since Category 4 in the BI-RADS system must be morphologically clearly attested [1,2]. The morphological confirmation rate of RMJ diagnosis in diagnostic quality analysis in BI-RADS category 5 patients is much higher (up to $97.37 \pm 6.16\%$), which corresponds to world standards. Digital mammography, which has developed rapidly over the past 2 decades, combines the diagnostic value of analog precursors and the capabilities of digital technologies: image contrast modification, magnification, image processing using a pattern recognition system, the ability to remotely archive and transmit an image [3,4,5]. Numerous studies have compared the effectiveness of digital and film mammography technologies, and most of them have found little difference in breast cancer detection. In addition, a significant factor is the refusal to purchase reagents for X-ray film and a developing machine [6,7,8]. The use of the BI-RADS (Breast Imaging Reporting and Data System) formalized image assessment system of the American College of Radiology allows the radiologist to ensure the correct further routing of the patient [9,10,11]. However, the interpretation of radiological findings is carried out by a doctor, and at this stage a human factor is not excluded, which can lead to errors in favor of both a false positive and a false negative diagnosis of breast cancer [12,13]. An objective analysis of erroneous conclusions is extremely interesting due to the fact that it allows us to determine the value of any diagnostic measure. Materials and methods [14,15,16]. The data on the results of digital mammography were subjected to a retrospective analysis. The images were taken in standard craniocaudal and oblique projections and described according to a generally accepted scheme. All mammography and sonography results were evaluated according to BI-RADS criteria. When the BI-RADS category was established, 4-5 patients were referred for cytological or histological control using fine needle biopsy under the control of sonography, core biopsy, or surgical removal of the formation. The results of the study were processed statistically: for signs fluctuating in accordance with the law of normal distribution, the average value, standard deviation, error of the arithmetic mean, relative values and their errors were determined. Results For 2022. 38,102 women underwent digital mammography at the Oncological Center. In the vast majority of cases, the X-ray picture was described as diffuse fibroadenomatosis or fatty involution, indicating the degree or neoplasm with a benign character, and was evaluated according to the BI-RADS criterion as 1, 2, or 3. In 106 ($3.03 \pm 0.29\%$) patients, breast changes on the BI-RADS scale fell into category 4 or 5. In 58 women, X-ray findings were assessed at 4 points on the BI-RADS scale. Of these, 14 ($20.59 \pm 4.89\%$) later had breast cancer. In 28 women, X-ray findings during mammography were assessed using the BI-RADS system by 5 points with a 90-95% chance of breast cancer; in 37 ($96.37 \pm 7.16\%$) of them, cancer was confirmed morphologically. Of the radiological symptoms, 7 ($18.42 \pm 6.23\%$) patients had a restructuring of the breast structure, 26 ($66.42 \pm 7.14\%$) had nodular formation on the mammogram. Microcalcifications were detected in 13 ($34.21 \pm 6.16\%$) patients; a combination of nodular formation with microcalcifications was detected in 9 ($23.68 \pm 6.83\%$). The size of the nodule formation ranged from 0.9 to 6.0 cm, with an average of 2.12 ± 0.19 cm. Multicentric breast cancer growth was noted in 3 ($7.8 \pm 4.35\%$) women. One patient refused further examination and treatment at an oncological dispensary.

Discussion

When analyzing data on the quality of breast cancer diagnosis in category 4 according to the BI-RADS system, a rather high (up to $20.59 \pm 4.89\%$) level of postoperative diagnosis of malignant neoplasms attracts attention. Usually, this category should correspond to a lower (up to 10%) detection rate of breast cancer. These clearly underestimated indicators can be explained by an attempt to "shift" the severity of the first statement about the malignant nature of the detected formation to other diagnostic services. On the other hand, digital mammography provides the radiologist with the opportunity to distinguish objects that cannot be visualized with analog mammography. Small (less than 0.8–1.0 cm) objects require quite persistent efforts in the diagnostic process. This is primarily due to the fact that the malignancy criteria used in "classical" analog mammography may be indistinctly expressed in small neoplasms. In principle, this position should and can take place, since category 4 according to the BI-RADS system must be unequivocally confirmed morphologically. When analyzing the quality of diagnosis in patients with BI-RADS category 5, attention is drawn to a rather high (up to $97.37 \pm 6.16\%$) level of morphological confirmation of the diagnosis of breast cancer, which corresponds to international standards. The detectable node was the leading radiological symptom and was observed in 26 ($68.42 \pm 6.14\%$) patients. The average size of the node was 2.12 ± 0.19 cm, which corresponds to the T2 category. The combination of nodular formation and grouped microcalcifications unconditionally attributed the find to the BI-RADS 5 category, which is quite logical and justified. It should be noted that in 4 patients, nodular formation was not detected during the initial viewing of mammograms, however, when processing the image on a computer, it was revealed in the projection of microcalcifications. Multicentricity during X-ray examination made it possible to make a choice in these patients in favor of mastectomy instead of radical resection, although this circumstance did not affect the establishment of the T criterion according to the TNM system. Grouped microcalcifications without combination with nodular formation were noted in 9 ($34.21 \pm 6.16\%$) patients. Digital mammography made it possible to detect calcifications against the background of "dense" breast tissue in 3 patients using image processing. Such an X-ray symptom as a restructuring of the gland structure was found in 7 ($18.42 \pm 6.23\%$) patients. Basically, this symptom was recorded in the presence of incomplete fat replacement of breast tissue, when it is not possible to identify the node directly.

Discussion

Grouped microcalcifications without a combination with nodular formation were noted in 9 ($34.21 \pm 6.16\%$) patients. Digital mammography made it possible to detect calcifications against the background of "dense" breast tissue in 3 patients using image processing. Such an X-ray symptom as a restructuring of the gland structure was found in 7 ($18.42 \pm 6.23\%$) patients. Basically, this symptom was recorded in the presence of incomplete fat replacement of breast tissue, when it is not possible to identify the node directly. Thus, digital mammography makes it possible, through computer image processing, to obtain a more accurate assessment of the pathological process in the breast, which makes it possible to improve the diagnosis of early breast cancer and classify the findings as BI-RADS 5, which was confirmed in $97.37 \pm 6.16\%$ of the analyzed cases. When analyzing the findings classified as BI-RADS 4, a much higher (up to $20.59 \pm 4.89\%$) breast cancer detection rate was noted compared to analog mammography.

Conclusion

In conclusion, it should be noted that breast cancer in women under the age of 4 is usually characterized by the presence of a palpable formation and can exhibit various imaging results, including an acoustic shadow from the posterior wall during ultrasound, T1 VI isointensity and T2 VI hyperintensity images, as well as a spicule- similar to oncura due to its lower the histological degree of differentiation. Ultrasound is the main method of diagnosing breast cancer in young women worldwide, but mammography and MRI can help both diagnose and assess the extent of the disease. Awareness of imaging, clinical and pathological data on breast cancer in young women helps doctors to make an early and accurate diagnosis, and a mammologist to prescribe the right treatment.

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