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DIGITAL MAMMOGRAPHY: APPLICATION OF THE BI-RADS SYSTEM FOR DATA EVALUATION

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Introduction

For many decades, malignant tumours of the mammary gland occupy the first place in the structure of cancer diseases of the female population in Europe and North America. According to the data presented in the scientific literature [1, 3–6], breast cancer (BC) amounts to more than 26 %, and mortality from breast cancer — more than 17 %. At the same time, in women aged 35–54, this figure amounts to 20 % and it is the main cause of mortality, whereas in women aged 50–55, breast cancer is the second leading cause of death after cardiovascular diseases [6]. This determines the relevance of screening, since early diagnosis of breast cancer and timely and effective treatment of this disease (including organ-preserving operations) increase patients' chances for a non-recurring course and a favourable prognosis up to 90 % [1, 7]. It is worth emphasizing that digital mammography is currently the method that allows us to detect the disease at an early stage, since the average size of the breast tumour (BT), which becomes palpable in an average clinical examination, is 2.5 cm. Meanwhile, the high resolution of mammography allows visualization of both tumours less than 10 mm and microcalcinates of 0.1 mm (non-invasive cancer), therefore the disease can be diagnosed three to four years before the woman finds out the first symptoms of the disease [1, 2]. Studies show that among women aged 50–69, who were examined in screening programs, mortality from this pathology declined by about 35 % [4]. Currently, in Ukraine, as in most developed countries, the BI-RADS (Breast Imaging Reporting and Data System) system for describing and recording the MRI visualization is successfully applied. The use of the BI-RADS system is fundamentally different from the traditional evaluation of the obtained image, since the main purpose of this study is not so much in the formulation of morphological diagnosis, but in determining the tactics of further patient management [1, 7, 8].

Aim

To analyse the results of screening of benign tumours and breast cancer, conducted using the BI-RADS system in the medical and diagnostic centre «Medion» (Poltava, Ukraine).

Materials and Methods

Material of the study embraces the results of 1989 digital mammographies with further description of images in accordance with recommendations of BI-

RADS, 5th edition, conducted in the medical and diagnostic centre «Medion». During mammography, compression of the mammary gland was used, so that the thickness of the tissues of the gland was the same in all zones. In order to exclude unpleasant sensations, the study was conducted in the first half of the cycle: from 5–6 to 10–14 days. The procedure included two main stages: the first one consisted in the actual assessment of the mammographic signs of the disease and their description using standardized terminology; the second stage involved the establishment and indication in the conclusion of the rating category from 0 (the final conclusion is impossible) to 1–6 (the final conclusion is possible). For each rating category, appropriate recommendations were given for further patient management.

Results and discussion

The results of the study showed that 829 patients had no pathology (probability of BC 0 %, final conclusion of the BI-RADS category 1); in 821 patients, benign neoplasms of MG were detected (probability of BC 0 %, BI-RADS 2). Depending on age, control mammography was recommended to patients in these categories in 1–2 years after examination. 83 patients with the BI-RADS category 3 — probably benign neoplasms (the probability of BC is less than 2 %) were recommended a control examination in a short period of time (6 months). 141 patients were classified as BI-RADS 4 — suspicious pathology (the probability of BC from 2 to 90 %). 76 women formed the category 5 — high suspicion of malignancy (the probability of BC is 90 %). In order to verify the diagnosis, these patients were referred to Poltava Regional Oncology Clinical Dispensary for verification of the diagnosis. 39 patients were classified in the category 6 — histologically verified cancer. Their examination was conducted to determine the extent of intervention in the preparation for surgical treatment, to exclude multicentric or multifocal growth of BC and for the dynamic monitoring in evaluating the performed radiation or chemoradiation therapy. Evaluation of the mammography results was conducted taking into account the MG density (MGD), where A is predominantly adipose tissue; B — tissue of MG consists of individual fibrous-glandular elements; C — heterogeneous density of MG; D — high density of MG.

Conclusions

Thanks to its high informativity, reliability and verified effectiveness, digital mammography allows diagnosis of benign and malignant neoplasms of the mammary glands at an early stage, enables the choice of the best treatment, thereby reducing the mortality rate of women. Thus, the application of the BI-RADS system is appropriate at all stages of the examination of women — from screening to diagnostic programs with subsequent verification of the diagnosis and the

possibility of dynamic supervision and consultation of patients by different specialists, various medical institutions of our country and foreign countries.

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