

get additional diagnostic information. With SPECT, the functions of the organ or system of the human body are evaluated, while CT allows you to get accurate anatomical information (Fig. 1).

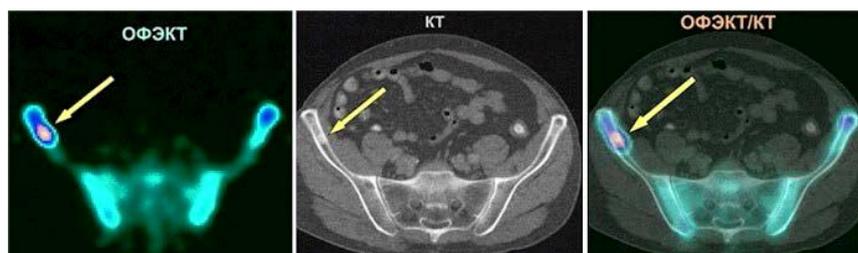


Fig. 1. – Comparative characteristics of SPECT and SPECT/CT for the detection of metastasis in breast cancer

Detection of signal lymph nodes in 3D format and their subsequent excisional biopsy were performed using the declipseSPECT system.

It was possible to visualize the signal lymph node in 100 % of cases, which was confirmed by scanning the removed lymph node in vitro, as well as by scanning the bed of the removed node with a gamma probe. Signal lymph nodes were subjected to an urgent histological and cytological examination. Regardless of its results, for patients with breast cancer, further intervention on the lymphatic apparatus was performed in the volumes established by the diagnostic algorithms for the treatment of malignant neoplasms.

The results of the research of the declipseSPECT navigation system for intraoperative visualization of signal lymph nodes in 9 patients with breast cancer were analyzed (stage 0 – one patient, stage 1 – three patients, stage 2 – three patients, stage 3 – two patients) .

In patients with breast cancer in 3 cases, an urgent histological examination of the signal lymph node showed no signs of tumor growth. According to the results of the final histological examination, in 2 out of three cases, micrometastases were detected in the signal lymph node, and in one case macrometastases in the signal and other lymph nodes of the remote collector were detected. In four patients, metastases were not detected either in the signal or in the remaining removed lymph collector. In two patients, metastases were detected in signal lymph nodes, while in 2 cases these metastases were the only ones.

It was found that the accuracy of radionuclide diagnostic methods using the declipseSPECT navigation system for breast cancer is 83 %, its specificity is 100 %, and its sensitivity is 57 %.

STATISTICAL ANALYSIS OF QUALITY OF TREATMENT OF CERVICAL CANCER BY METHOD OF COMBINED RADIATION THERAPY IN STATE INSTITUTION “N. N. ALEXANDROV NATIONAL CANCER CENTER OF BELARUS”

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Using a statistical analysis method, the databases of 2 years of cervical cancer treatment in patients of the State institution “N. N. Alexandrov National cancer center of Belarus” were investigated. It was found out that in patients with late radiation complications in the rectum and sigmoid colon, the delivered dose to these organs does not exceed 75 Gy. The number of complications to critical organs is 5 % of the total number of patients.

Keywords: radiation therapy, brachytherapy, cervical cancer, radiation injuries.

To analyze the quality of treatment for cervical cancer using contact radiation therapy, a database of patients was created at the State institution “N. N. Alexandrov National cancer center of Belarus” for 2017–2018. The total number of patients was 183 people. All of them underwent combined radiation therapy. The patients are classified by age, diagnosed stage of the disease, treatment results, the presence of complications at the end of treatment and their type.

During the course of brachytherapy, an individual plan of fractional dose distribution is created for each patient. The value of EQD₂ D90 CTV HR (abbreviated D90) was chosen as the studied parameter when analyzing the results of treatment.

The treatment results were analyzed depending on the dose administered, as well as the dose distribution of the D90 value in patients, depending on the result of treatment. The research of the distribution of the D90 dose value by the number of patients (Figure 1) and the statistical characteristics of the D90 value (Table 1) show that the average dose delivered to the tumor was 84.25 Gy.

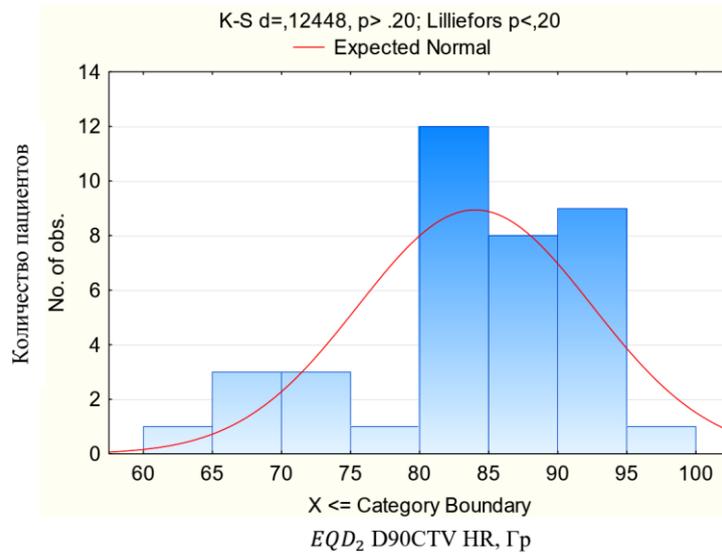


Fig. 1. – Dose distribution of D90 by patients

Table 1

Statistical characteristic of the D90 value

Total number of patients	183
Average dose, Gy	84,25
Minimum dose, Gy	61,20
Maximum dose, Gy	102,60
Standard deviation, Gy	7,22

The average doses received for the bladder, rectum and sigmoid colon for patients with complications were 87.4, 63.8 and 69.2 Gy, respectively. The total number of complications from critical organs was less than 5 %, which corresponds to the results of leading cancer centers in Europe and the USA [1].

BIBLIOGRAPHY

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STATE OF RADIOACTIVE POLLUTION OF WATERBODY ECOSYSTEMS OF THE CHERNOBYL EXCLUSION ZONE BY BASIC DOSE-FORMING RADIONUCLIDES

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The severity of a radionuclide pollution impact on the environment and living organisms depends not only on the radionuclide concentration but also to a great extent on the biological effect of ionizing radiation accompanying radioactive decay. The biological effects of radioactive pollution of the environment are determined by the radiation exposure doses living things receive, which in turn depend on the content, accumulation, fixation strength, and elimination rate of radionuclides from the components of aquatic ecosystems. The study of aquatic