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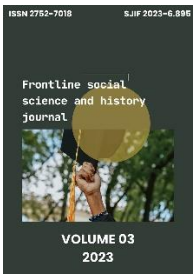

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Research Article

COMPARISON OF THE DIAGNOSTIC VALUE OF MRI AND ULTRASOUND IN THE STUDIED PATIENTS AND DETERMINATION OF PROGNOSTIC FACTORS OF ENDOMETRIAL CANCER

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ABSTRACT

Endometrial cancer (EM) is the most common malignant tumor in women, most often of reproductive age. EC are detected, according to various sources, in 25 - 50% of women under the age of 50 years. We analyzed the results of examination and treatment of 98 patients. The criterion for inclusion in this study was a morphologically verified squamous EC of stages IB2, IIB and IIIB, the results showed that it is advisable to subject endometrial cancer patients with identified metastases to a special one (chemo, chemoradiotherapy followed by radical operations), as this leads to improved results (in in our study by more than 20%) and an increase in the life expectancy of these patients, also, depending on the stage, depth of tumor invasion and those treated with neoadjuvant chemotherapy and subsequent radical operations: for example, the five-year relapse-free and overall survival rates were 79.6% and 87 .5%, respectively, in patients with EC stages IB2 - IIIB, which is approximately 20% higher than similar indicators among patients who underwent only combined radiation therapy.

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KEYWORDS

Malignant neoplasms, endometrial cancer, neoadjuvant chemotherapy, methods for diagnostics.

INTRODUCTION

Endometrial cancer (EM) ranks first among malignant tumors of the female genital area and is one of the most complex and urgent problems of oncogynecology. At present, complementary principles of complex therapy for cancer patients have been developed, including, along with surgical intervention, the use of hormone therapy, radiation therapy, immunotherapy, detoxification, general somatic and vitamin [3].

The data of epidemiological studies indicate that over the past decades in Russia, as well as in a number of other countries, there has been a clear trend towards an increase in morbidity and mortality from malignant tumors of this localization [1; 2; 12]. Thus, the standardized incidence rate in our country for the period from 2007 to 2017 increased from 17.58 to 22.33 [2].

In the structure of the incidence of malignant neoplasms in women, EC occupies the sixth place. In 2018, 569,847 such patients were identified in the world, which accounted for 3.2% of the total number of diagnosed malignant tumors. 311,365 women died from manifestations of this disease [1].

EC refers to neoplasms of visual localization, however, only in 65.6% of patients the disease is detected at stages I-II [2]. The mortality rate in the first year after the detection of the disease ECains unacceptably high (14–18%), which indicates late diagnosis and, as a result, not always good treatment results [2; 8; 12]. Relatively long ago, it was shown that the introduction of cytological screening provides an increase in the effectiveness of cervical cancer prevention. The sensitivity of the cytological study is 66-83%, the specificity is 60-85%. It is estimated that screening women aged 25-64 years with an interval of 5 years can lead to an 84% reduction in mortality from cervical cancer [10; 11]. This is due to the identification of patients with early stages of the disease with a favorable prognosis. However, in addition to cytological screening, the level of morbidity and

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mortality of women from EC is influenced by many other factors, including those that are difficult to take into account, characterizing the level and style of life in this region [1]. In addition, at the present stage of development of the healthcare system, there are a number of obstacles, both organizational and economic in nature, which make it difficult to further decimated and promote this method [15].

MATERIALS AND METHODS OF EXAMINATION

The study was of a prospective-retrospective nature. The results of examination and treatment of 98 patients were analyzed. The criterion for inclusion in this study was a morphologically verified squamous EC of stages IB2, IIB and IIIB. All patients underwent outpatient and inpatient treatment at AFSMCO for the period from 2017 to 2020.

The studied patients were divided into two groups. The main group consisted of 52 patients with IB2, IIB and IIIB stages of EC who underwent neoadjuvant chemotherapy followed by radical surgery and/or chemoradiotherapy. The comparison group included 46 patients with EC stages IB2, IIB and IIIB, who received only combined radiation therapy according to a radical program. In all the studied patients, the morphological structure of the tumor corresponded to squamous cell carcinoma - keratinizing (55.2%) and non-keratinizing (44.8%).

All patients underwent a comprehensive examination using general clinical, laboratory and radiological diagnostic methods. The general clinical study consisted of a detailed study of the background of patients, their general somatic and gynecological status. The general condition of the patients ("performance status") was assessed using the ECOG–WHO scale.

All patients included in this study corresponded to 0 - 1 degree of this scale. The use of standard laboratory methods and radiodiagnosis (X-ray of the chest organs, ultrasound of the abdominal cavity, kidneys, sigmoidoscopy, cystoscopy) made it possible to obtain the necessary information about the presence of complications and concomitant diseases, as well as possible distant EC metastasis. The results of these studies were used to determine the tactics of patient management, the need for corrective therapy before the start of special treatment, and the

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choice of anesthesia. In addition to standard laboratory and instrumental research methods, MRI and ultrasound were used before the start of special treatment and at all its stages. MRI was performed on a Toshiba ExcelartVantage 1.5 Tesla machine using the Magnevist contrast agent at a dose of 0.4 ml/kg of body weight. Due to the different intensity of the signal from the neoplasm and surrounding tissues, the visualization of the tumor focus was noted, its shape, the nature of the contours, and density were recorded.

The distribution of the studied patients by EC stages is presented in tables 1, 2. In all groups, patients with stage IIB of the disease predominated, IB2 and stage IIIB were somewhat less common. In general, among the studied patients with EC, the ratio of patients with different stages was approximately the same.

Table 1

Distribution by stages of the main group of patients

Stage of EC	Number of patients		Metastases in the pelvic l / y	
	n	%	n	%
IB2	13	25	2	3,8
IIB	21	40,3	6	11,5
IIIB	18	34,6	3	5,7
Total	52		11	21,1

Table 2

Distribution by stages of patients in the comparison group

Stage of EC	Number of patients	
	n	%

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IB2	12	26,1
IIB	21	45,6
IIIB	13	28,3
Total	46	100,0

The youngest patient included in the study was 26 years old, the oldest was 67 years old. In the main group of patients, the average age was 42.1±10.5 years. 16 patients (7.7%) were under 30 years of age, 22 (10.5%) were over 60 years of age.

RESULTS AND DISCUSSIONS

In this section of the work, a comparative assessment of the results of the clinical method of research, ultrasound, MRI and pathomorphological examination data of the surgical material of patients and prognostic factors in EC was performed using the method of correlation analysis.

A high direct correlation between the volumes of neoplasms determined in a clinical study, as well as a pathomorphological study of the surgical material ($r=0.982970$, $p<0.05$) was revealed. Tumor volumes calculated using modern radiological examination methods were also characterized by a direct dependence on the objective morphometry index, however, the correlation coefficient turned out to be somewhat lower, amounting to 0.657589 for ultrasound and 0.724505 for MRI ($p<0.05$). The volumes of neoplasms determined by ultrasound and MRI in the studied patients with cervical cancer of all stages were characterized by a direct correlation ($r = 0.911300$, $p<0.05$). This may indicate a high diagnostic value of both studied methods, the differences between the results obtained were insignificant (Table 3).

Table 3

Dependence of indicators of the volume of the body of the uterus, determined using a clinical study, ultrasound, MRI and pathomorphological examination in EC stages IB2, IIB and IIIB

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Cervical volume	Clinical examination	Ultrasound	MRI	Pathological examination
Clinical study	1,000000	0,681905*	0,735382*	0,982970*
Ultrasound	0,681905*	1,000000	0,911300*	0,657589*
MRI	0,735382*	0,911300*	1,000000	0,724505*
Pathological examination of the preparation	0,982970*	0,657589*	0,724505*	1,000000

The results of a comparative analysis of the volumes of neoplasms obtained using examination and palpation, ultrasound, MRI, as well as pathomorphological studies showed some differences in the information content of these methods in patients with different stages of EC. So, in patients with EC stage IB2, the correlation of MRI with the data of the pathomorphological conclusion when determining the volume of the cervix was 0.724505, and ultrasound - 0.657589 (Table 4).

Table 4

Dependence of indicators of the volume of the body of the uterus, determined using a physical examination, ultrasound, MRI and pathomorphological examination in EC stage IB2

Cervical volume	Clinical examination	Ultrasound	MRI	Pathological examination
Clinical study	1,000000	0,681905*	0,735382*	0,982970*
Ultrasound	0,681905*	1,000000	0,911300*	0,657589*
MRI	0,735382*	0,911300*	1,000000	0,724505*

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Pathological examination of the preparation	0,982970*	0,657589*	0,724505*	1,000000

In patients with EC stage IIB, a direct correlation was found between the volumes of the uterus, determined using MRI and pathomorphological examination, with a correlation coefficient r = 0.981056. Ultrasound parameters in comparison with the morphometry data of recoved preparations were characterized by a correlation coefficient of 0.685367 (Tab 5).

Table 5

Dependence of indicators of the volume of the cervix, determined using a physical examination, ultrasound, MRI and pathomorphological examination in CC stage IIB

Cervical volume	Clinical examination	Ultrasound	MRI	Pathological examination
Clinical study	1,000000	0,608542*	0,771943*	0,783336*
Ultrasound	0,608542*	1,000000	0,690838*	0,685367*
MRI	0,771943*	0,690838*	1,000000	0,981056*
Pathological examination of the preparation	0,783336*	0,685367*	0,981056*	1,000000

Based on the gained results, it can be argued that modern methods of radiation diagnostics make it possible to identify the boundaries of normal and tumor tissues with a high degree of certainty.

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CONCLUSIONS

Determination of the risk of adverse prognostic factors with careful dynamic monitoring of the tumor process is one of the main conditions for the use of multicomponent treatment of patients with EC. The technological basis of monitoring is the integration of MRI and ultrasound into diagnostic standards. The survival of patients with endometrial cancer with metastases depends on the stage, depth of tumor invasion and those treated with neoadjuvant chemotherapy and subsequent radical operations: for example, the five-year recurrence-free and overall survival rates were 79.6% and 87.5%, respectively, in patients with stage IB2 EC – IIIB, which is about 20% higher than in patients who received only combined radiation therapy.

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