AJPMHS GLOBAL RESEARCH NETWORK

AMERICAN Journal of Pediatric Medicine and Health Sciences
Volume 02, Issue 03, 2024 ISSN (E): 2993-2149

Optimization of Early Diagnosis of Cervical Cancer and Its Relapses

Ulmasov Firdavs Gayratovich, PhD
Ortikova Hilola Ubaydullayevna, PhD
Ibragimov Ismoil Sharofovich,
Esankulova Bustonoy Sobirovna

1. Samarkand State Medical University
2. Republican Specialized Scientific and Practical Medical Center of Oncology and Radiology Samarkand branch.

Abstract. Cervical cancer is one of the most common cancers among women, and its recurrence is a serious problem in the treatment and prognosis of the disease.

The **aim of the study** is to develop more effective methods for diagnosing recurrent cervical cancer, which will allow detecting them at an early stage and taking appropriate treatment measures.

Material and methods: The object of research was the data of a comprehensive examination and treatment of 87 women with breast cancer who were treated at the clinic of the Samarkand Branch of the Republican Specialized Scientific Practical Medical Center of Oncology and Radiology in the period from 2021 to 2023.

Results and discussion: In our study, we conducted a comparative analysis of the diagnostic information content of transvaginal ultrasound, colposcopic (CP) with biopsy, and magneticresonance imaging.

A total of 87 patients with suspected recurrent cervical cancer (PCC) were studied. Progression of the disease was observed in 55 patients diagnosed with recurrent cervical cancer. These signs were related to ultrasound signs. In addition, during cytological examination using CP. in 6 (10.9%) cases, we observed an echonegative relapse. A case of local relapse was diagnosed in 16 (29%) patients, while regional relapse was diagnosed in 21 (38.1%) cases.

Colposcopic studies of patients with cervical cancer showed that the sensitivity to determine relapse up to 1 sm is 95%, 1-2-2 sm-90.9%, and more than 2 sm-93.2%. The accuracy of colposcopy in determining cervical cancer is up to 1 sm -76%, 1-2 sm -80%, and more than 2 sm-82%. Diagnostic specificity up to 1 sm -60%, 1-2 sm -60%, more than 2 sm-83.3%.

In the diagnosis of recurrent cervical cancer after complex and/or combined treatment, the value of colposcopy is significantly higher than ultrasound and MRI, so thesensitivity of colposcopy for relapse up to 1 cm was 95.5±1.2%, specificity 60.2±4.3%, accuracy 76±2.8%. The sensitivity of ultrasound in determining relapse up to 1 cm is 80.0±2.3%, the specificity is

62.5±3.8%, and the accuracy is 84.2±6.6%. For MRI, a measure of sensitivity, specificity, and accuracy 66,7±3,6%, 90,5±2%,3%, 83,35±2,8% accordingly. There was no significant difference in resolution in the diagnosis of recurrent cervical stump using ultrasound and MRI (p>0.05).

Key words: Cervical cancer, relapse, ultrasound, colposcopy.

Introduction

Cervical cancer is the second most common cancer in women worldwide and is diagnosed in more than 12,000 women in the United States each year [2-5-5]. Every year, there is a tendency to increase the incidence of cervical cancer, and there is a global increase in mortality rates by more than 275,000 cases [1-3].

Breast cancer remains one of the most common causes of cancer death among women worldwide. Progress in the treatment of cervical cancer has been slow. Over the past 60 years, 2 major achievements have been achieved. First, the introduction of PAP smears as a screening method in the 1950s, which resulted in a 60% or more reduction in mortality. [1,4,5,10]

Second, 50 years later, several randomized trials showed a 30-60% reduction in the risk of death with the addition of cisplatin to radiation therapy. Modern treatment of cervical cancer can lead to a cure of 80% to 90% of women with early stage I and II cervical cancer and 55-60% with stage 3. However, the prognosis for women with locally advanced or recurrent cervical cancer remains relatively low [10, 11, 15,32].

If, after 6 months or more earlier, the resumption of tumor growth with distant ones is called a relapse of cervical cancer, the sites of localization of lesions are mainly the pelvic region or para-aortic lymph nodes(LU)[4,7,19,21].

The urgency and unresolved problems of metastasis remain one of the main problems of oncology. 90% or more of premature deaths in cancer patients are associated with the consequences of primary tumor metastasis [11,19,24]. The same problem occurs in patients with recurrent and metastatic breast cancer, who, despite the treatment, get an unfavorable outcome within a year, of which only 10-15% of patients survive [21,317,21,30,31].

Relapse of the disease mostly made itself felt up to 12 months after the end of treatment. Analyzing, it is possible to accurately determine the anatomical location of relapses, where solitary lesions of the vaginal stump (2 patients, 2.7%) and regional lymph nodes (2 patients) could be seen with equal frequency., 2,7%). [6, 8,10,23,26].

Objective: To study the results of early diagnosis of recurrent cervical cancer after complex and combined treatment.

Material and methods: The object of research was the data of a comprehensive examination and treatment of 87 women with breast cancer who were treated at the clinic of the Samarkand Branch of the Republican Specialized Scientific Practical Medical Center of Oncology and Radiology in the period from 2021 to 2023.

X-ray, clinical and laboratory, ultrasound, radiation, morphological and statistical methods of research were used to solve the tasks set.

Based on the goals and objectives of the research work, all patients were divided into 2 groups. The first control group consisted of 32 (36.78±5.17%) patients with breast cancer who underwent complex and combined treatment without relapse for three years. The second group included 55 (63.22±5.17%) patients with the same diagnosis, but who had an early relapse at the preclinical stage after complex and combined treatment. The patients were divided into several groups.

Quantitative distribution of methods of examination of patients in different groups

Examination methods	Number of patients			
	Group 1 Group		2	
	abs	%	abs	%
Physical examination	32	100.0	55	100.0
General clinical blood and urine	analysis 32	100.0	55	100.0
Biochemical blood examination	32	100.0	55	100.0
Bacteriological urine examination	22	68.75	35	63.64
X-ray examination	32	100.0	55	100.0
Ultrasound examination	32	100.0	55	100.0
Colposcopy with biopsy	32	100.0	55	100.0
Computed tomography	18	56.25	29	52.73
Magnetic resonance	imaging 21	65.63	39	70.9
Excretory urography	32	100.0	55	100.0

Ultrasound and Doppler studies were used to clarify the definition of tumor invasion in large vesselsдоплерографические. The study was performed on a "Sone-100" device (HuletHaker, USA) using a 3.5 MHz sensor in the pulse-wave Doppler mode.

Cystoscopy was performed with an endoscope (manufactured by KarlStorzKarlStorzGBH, Tullingen, Germany), with a tube diameter of 21 (according to Charriere). Cystoscopy allowed not only to determine the growth of the tumor, but also to establish its nature, localization, size, and sometimes the degree of infiltration of the bladder wall.

Excretory urography evaluated the excretory function of the kidneys due to tumor infiltration, many functional properties (destruction, deformation, excretory state of the kidneys and bladder configuration) of the urinary tract were lost. The study was conducted by injecting 76%- 0.5-1.0 ml per 1 kg of urographin intravenously with a control graphic study of the removal of contrast agent in 5, 15, 25 minutes of the examination.

Computed tomography was performed on a 3rd-generation SOMATOM AR. TX computed tomograph (Simens, Germany), with a tomography step of 5 mm. During the CT scan, all generally accepted conditions were met. Before the study, all patients underwent a topogram, which determined the level of the beginning of the CT study. Scanning was performed at the height of shallow inspiration-from the level of the upper edge of the liver to the level of VL3. The scan time is 5 seconds.

MRI scans were performed polyprojectively in coronary, sagittal, and axial projections in T1 spin-echo (SE) mode. It was performed on MagnetomOpena MagnetomOpen /Viva device, фирмы “manufactured by Siemens(Germany) with a magnetic field strength of 0.2 T..Patients were asked to lie on their backs.In all projections, the following parameters were determined: thickness of sections (SL) 3-5 mm, distance between sections (SP) 1-2 mm, number of sections 12-16. The total study time was 20-25 minutes.

All women were examined with a colposcope according to the generally accepted method. Colposcopy is an optical microscopic examination that uses a stereoscopic magnifier to magnify the surface of tissues from 4 to 40 times, this technique is part of the standard diagnosis, especially for practical gynecologists.

Results of the study:

In our study, we conducted a comparative analysis of the diagnostic information content of transvaginal ultrasound, colposcopic (CP) with biopsy, and magneticresonance imaging. The reliability of the information obtained during TUS, CP and MRI was evaluated by comparison with the results of histological verification of relapse.

A total of 87 patients with suspected recurrent cervical cancer (PCC) were studied. Progression of the disease was observed in 55 patients diagnosed with recurrent cervical cancer. These signs were related to ultrasound signs. In addition, during cytological examination using CP. in 6 (10.9%) cases, we observed an echonegative relapse. A case of local relapse was diagnosed in 16 (29%) patients, while regional relapse was diagnosed in 21 (38.1%) cases.

In case of local recurrence, the tumor was visualized as a solid, hypoechoic formation with irregular shapes, with uneven and indistinct contours.

Tumor recurrence up to 1.0 cm was detected in 19 (34.5%) cases, 1.0 to 2.0 cm — in 18 (32.7%) patients, and more than 2.0 cm-in 12 (21,8%). 6 (10.9%) In some cases, the diagnosis of recurrent cervical cancer was established on the basis of a cytological examination taken during colposcopy, since there are signs of tumor growth. the process was not detected on ultrasound.

Ultrasound studies of patients with cervical cancer showed that the sensitivity of the TCD to determine relapse up to 1 cm is 80.0%, 1-2-2 cm-87.5%, and more than 2 cm-85.7%. The specificity of ultrasound in determining cervical cancer is up to 1 cm -62.5%, 1-2 cm -71.4%, and more than 2 cm-66.7%. Diagnostic accuracy up to 1 cm -84.2%, 1-2 cm -80.8%, more than 2 cm-84.2%.

The recurrence of cervical cancer was most localized in the dome of the vaginal stump-in 17(30.9%) patients, between the vaginal stump and the rectal wall was visualized in 3 (5.4%) patients , in the middle third of the vagina along the right wall in 4 (7.2%) patients, which was verified by taking a biopsy for CP. In 7 (12.7%) patients, the spread to the paravesical tissue, the bladder wall and the urethra was determined, and the data were confirmed by MRI. Local recurrences of cervical cancer in 19 (34.5%) patients were characterized by the presence of a solid tumor in прикультевойthe vaginal occipital zone

Relapses that occurred in the pelvic region after complex treatment according to the MR picture of local relapse in the stump were observed in 14 (24.5%) patients in the form of a lumpy formation in the stump of the cervix with an average signal intensity in the T2 mode. The diagnosis of relapse is confirmed only after colposcopy together with a biopsy . Vaginal relapses were observed in 4 (7.2%) cases that had the appearance of nodular formation and were located in the middle third of the vagina.

According to histological / cytological verification of the material, it was revealed that relapse in the stump of the cervix up to 1 cm in size was detected in 2 cases, in 7 cases – 1-2 cm, in 13 cases – an increase of more than 2 cm. When evaluating the values of the MRI results, they were true negative – in 20 cases, there were no true suspicious, false negative or false positive results.

The obtained data on the comparative evaluation of the results мof magnetic resonance imaging of patients with PCC showed that the sensitivity of MRI to determine relapse in the

amount of up to 1 cm is 66.7%, 1-2 cm-83%, and more than 2 cm-87.5%. The specificity of MRI in determining cervical cancer up to 1 cm is 83.3%, up to 2 cm-94.1% , and more than 2 cm-83.3%. Diagnostic accuracy of MRI up to 1 cm is 90.5, 1-2 cm is 93.9% , and for more than 2 cm – 95.5%.

The prevalence of the disease in the studied populations ranged from 40% to 89%. Our analysis revealed that the correlation between the colposcopic impression and the diagnosis of directed biopsy (colposcopic accuracy) was within one histological degree in 89% of cases, and was in exact agreement with the histological diagnosis in 61% of cases

Colposcopy in the diagnosis of earlier signs of relapse is taken as the maximum gradation, the same for preclinical signs of relapse, the criterion is taken as the minimum. This trend, however, is considered to be quite low at 5%. The sensitivity of colposcopy in differentiating normal from recurrent cervical tissue ranged from 86.9±4.7%, and the specificity ranged from 67.4±3.5%. Tumor recurrence up to 1.0 cm was detected in 29 (52.7%) cases, 1.0 to 2.0 cm — in 19 (34.5%) patients, and more than 2.0 cm — in 7 (12.7%).

In 6 (10.9%) cases, the diagnosis of recurrent cervical cancer was established on the basis of cytological examination after colposcopy with a smear, since there were no signs of a tumor process on the TUS.

Colposcopic studies of patients with cervical cancer showed that the sensitivity to determine relapse up to 1 cm is 95%, 1-2-2 cm-90.9%, and more than 2 cm-93.2%. The accuracy of colposcopy in determining cervical cancer is up to 1 cm -76%, 1-2 cm -80%, and more than 2 cm-82%. Diagnostic specificity up to 1 cm -60%, 1-2 cm -60%, more than 2 cm-83.3%.

Conclusions

In the diagnosis of recurrent cervical cancer after complex and/or combined treatment, the value of colposcopy is significantly higher than ultrasound and MRI, so thesensitivity of colposcopy for relapse up to 1 cm was 95.5±1.2%, specificity 60.2±4.3%, accuracy 76±2.8%. The sensitivity of ultrasound in determining relapse up to 1 cm is 80.0±2.3%, the specificity is 62.5±3.8%, and the accuracy is 84.2±6.6%. For MRI, a measure of sensitivity, specificity, and accuracy 66,7±3,6%, 90,5±2%,3%, 83,35±2,8% accordingly. There was no significant difference in resolution in the diagnosis of recurrent cervical stump using ultrasound and MRI ($p>0.05$).

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