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INTRODUCTION

Cervix carcinoma incidence rate growing is marked in the recent years both in Russian Federation and generally in the world. Increasing of cervix carcinoma incidence rate in women is a disturbing fact, because this group of patients is not only a significant part of reproductive female popu- lation, but socially active group also.

The main role in treatment of cervix carcinoma patients belongs to surgical intervention and ray therapy. Nowadays, methods of combined and integrated treatment are developed and introduced into a practice.

Application of advance technologies for treatment requires support of a modern diagnostics. A group of hardware visualization is represented by the following methods: ultrasound research, computed tomography, magnetic- resonance imaging. Recently developed method of three-dimensional non-linear (NLS) diagnostics has several unquestionable advantages over other methods. 3D NLS-diagnostic method is safe for a patient and a doctor in regard to radiation exposure, has sufficient accuracy and high reliability of acquired results. 3D NLS-study of patients suffering from cervix carcinoma may be used both for diagnostics of an oncological process and for monitoring during treatment process in order to correctly prompt or evaluate efficiency of treatment measures. Application of modern devices for NLS-diagnostics allows to evaluate condition and a structure of uterine cervix, dissemination of a process into uterine body, ovaries and urinary bladder. NLS-study of abdominal cavity and retroperitoneal space organs allows to evaluate dissemination of a process, detect presence of metastatic affection of liver, retroperitoneal lymph nodes. Spectral-entropic analysis (SEA) of a tumor makes possible to understand pathogenetic mechanisms of tumor growth and to develop anti-tumor strategy. NLS-method makes possible to acquire multidimensional picture of a researched object and its vascular tree in real-time mode simultaneously.

Combined NLS-diagnostics of cervix carcinoma with application of ultramicroscanning with SEA allows to evaluate size and character of a tumor, which to a considerable extent defines treatment tactics at every stage of the treatment.

The objective of the study is to define possibilities of 3D NLS-research with ultramicroscanning and SEA in evaluation of patients with cervix carcinoma treatment efficiency.

MATERIALS AND METHODS OF THE STUDY

The study was carried out with participation of patients suffering from cervix carcinoma of 2nd and 3rd stage, treated in Omск regional oncologic dispensary. During the study we used “Metatron”-4025 systems with 4.06GHz high-frequency sensor and “Metapathia GR Clinical” professional software with features of three-dimensional visualization and evaluation of microscans.

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At the first stage of the study all cervix carcinoma patients were surveyed to evaluate dissemination of a process: check-up of small pelvis organs in V-mode after preliminary natural filling of an urinary bladder, invasion of urinary bladder was checked. At the second stage of the study we carried out three-dimensional NLS-study of small pelvis organs. Three-dimensional NLS-graphy helped to detect presence of uterine cervix damages and evaluate condition of endocervix. Lateral virtual cross-cut gave images of anterior and posterior walls of an uterus; frontal cross-cuts gave full picture of left and right sides of an uterus condition and condition of parametrial tissue. In three-dimensional NLS angiography mode we studied spatial, virtual picture of vascular structures of uterine cervix. Simultaneous 3D-visualization of the whole organ allowed to get clear idea of...
tumorous nidos volume. At the same time SEA was applied. It made possible to specify pathomorphological picture of uterine cervix affection by similarity of tumor's spectrum and etalon processes. At the third stage of cervix carcinoma patients study we carried out NLS-study and SEA of liver and retroperitoneal space to detect remote metastases. NLS-studies complex was applied in accordance with the protocol developed by our team: before a treatment, during a treatment, after a treatment and in 6 months after a treatment.

RESULTS

Waltogether 51 patients were studied. The following parameters were studied: age, morphological structure of a tumor, tumor growth form, variant of extra-organ spreading of a tumor. Age of all studied patients varied from 26 to 79 years (49.7 years old on the average). In all patients cervix of a tumor. Age of all studied patients varied from 26 to 79 years (49.7 years old on the average). In all patients cervix carcinoma was detected. 23.6% of patients had 2nd stage cancer, 78.4% - 3rd stage. Study of cervix carcinoma growth regularities showed: In 37% of patients combined form was detected, in 29.6% - endophytic form, in 31.4% - exophytic form and in 2% - infiltrative-ulcerous one. Variants of extra-organ spreading of a tumor: vaginal- parametric process was located in uterine cervix, excluding cases of spreading into body of uterus, ovaries and metastases into retroperitoneal lymph nodes. In our study we included patients subjected to ray therapy, chemoradiation, chemoradiation with thermotherapy.

During and after the process of treatment we detected changes of contours and structure of uterine cervix. At a positive response to applied treatment contours of uterine cervix get distinct and even lines, hyperchromogenic nidi in uterine cervix are not visualized. At application of SEA similarity with "Cervix carcinoma" etalon process has not decreased – 0.387±0.084 till 0.876±0.148. At negative dynamics contours become more even, nidal changes of uterine cervix remain. At application of SEA similarity with "Cervix carcinoma" etalon process has decreased reliably – 0.387±0.084 and 0.412±0.091 correspondingly.

During and after the process of treatment we registered a tendency of uterine cervix volume decreasing in all patients. It was the 3D NLS-study with SEA that allowed to evaluate efficiency of treatment in the most optimal way when applying various methods of treatment.

CONCLUSIONS

Complex of 3D NLS-study with SEA is a highly informative way of cervix carcinoma treatment efficiency monitoring.

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