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EARLY DIFFERENTIAL DIAGNOSIS OF THE BRAIN TUMORS WITH HELP OF COMPUTED TOMOGRAPHY

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Abstract
Despite the widespread use of modern radiation imaging technologies in the neurosurgical clinic, the problems of diagnosis and treatment of various brain tumors (GM) are still lagging behind in the focus of attention of clinicians and health care organizers. This is due to the prevalence of primary and secondary embolism tumors, a large number of adverse outcomes and the high cost of treating diseases.

Keywords: good quality tumor, bad quality tumor, cranial, instrumental examination.

Introduction

The relevance of research. Brain and central nervous system cancer is an important public health issue worldwide, considering the high mortality, economic burden for persons and society, the low survival rate, and the effect on the patients' quality of life. Based on Global Cancer Observatory (GLOBOCAN) 2020 estimates, brain and central nervous system cancer is a considerable part of the global burden of disease, ranking 19th among the most frequent malignancies (1.9% of all cancers) and 12th among the leading causes of cancer deaths (2.5% of all cancers).

Neuroimaging plays an ever evolving role in the diagnosis, treatment planning, and post-therapy assessment of brain tumors. This review provides an overview of current CT-scan methods routinely employed in the care of the brain tumor patient. Specifically, we focus on advanced techniques including contrast and non-contrast CT-scan as they pertain to noninvasive characterization of brain tumors and pretreatment evaluation. The utility of both contrast and non-contrast CT-scan in the brain evaluation is also reviewed with special attention to the challenges presented by findings (sclerosis, cysts, hematoma) that imitate brain cancer.

Since the first days of independence of our country, systematic measures have been taken to organize a completely new, high-quality medical care for the population, and effective models of the healthcare system are being introduced. As a result, positive results were achieved in improving the quality of diagnosis of various diseases of the brain through the introduction into clinical

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practice of the latest systems of radiation diagnostics, such as multispiral computed tomography (MSCT-scan), which allows a detailed study of various diseases of the brain.
Today, there are a number of problems in the healthcare system, including radiation diagnostics, despite targeted measures. One of them is that detecting life threatening brain tumors in early stages as soon as possible.

Purpose of the research. To give a well-rounded comprehending of the possibilities of modern computed tomography techniques in the diagnosis of various brain tumors.

Materials and methods of research. Patients with pathologies of the brain tumors that are visited in the Oncology dispensary of Andijan region for research will be chosen.

Result of investigation. When examining patients in the postoperative period after removal of glial brain tumors using CT and MRT, it is possible to clearly assess the state of brain structures after total tumor removal and visualize reactive postoperative changes in response to surgical aggression. The characteristic signs were: the absence of a tumor node in the area of the postoperative cavity; the presence of edematous brain tissue around the postoperative cavity, which has no clear boundaries; the absence of dislocation and scarring; reduction of reactive changes after dehydration therapy.
Postoperative scarring on CT scans was visualized as areas of slightly increased density, with clear contours drawn in against the background of a postoperative cavity filled with cerebrospinal fluid. The contour density did not increase after intravenous administration of the contrast agent. In these patients, no volumetric effect on the brain matter was determined, as evidenced by the absence of displacement of median structures, compression of liquor-containing spaces, and protrusion of brain matter into a trepanation defect.
One of the main tasks of CT and MRT in the postoperative period was to identify the non-removed part of the tumor in order to assess the prognosis and plan further treatment. Residual tumor tissue was detected in 48 patients with partial or subtotal tumor resection. Of the 34 cases of total resection, residual tumor tissue was found in 9 patients. There was no residual tumor tissue in 20 patients. In 5 patients, the final assessment was difficult due to the presence of postoperative hematoma.
CT scans were performed to improve the visualization of the remaining part of the tumor with contrast enhancement in the first 24 hours after surgery. An MRT scan on the first day after surgery of patients with glial brain tumors revealed a 50% increase in the MRT signal from hemoglobin breakdown products, which made it difficult to interpret the data obtained using contrast agents.
To identify early complications observed in the first three days (hemorrhage in the bed of a removed tumor, postoperative edema, dislocation of the brain, ischemic changes, hydrocephalus, pneumocephaly) it is preferable to use CT according to accelerated programs, since long-term MRT studies are accompanied by motor artifacts that make it difficult to interpret MRT data.
Stereotactic local cryotomy served as part of the combined treatment of glial neoplasms located in deep sections and functionally significant areas of the brain. Stereotactic guidance was performed using MRT in 6 patients. One of them underwent three stcreotactic interventions due to the continued growth of the neoplasm, the others had one each. A total of 9 stereotactic cryotomies were performed. The volume of cryotomy ranged from 1/6 to half the volume of the tumor.

In one patient, cryotomy was performed in the full volume of the tumor. When a glial tumor is located in deep sections, stereotactic biopsy is the only method of tumor verification. Subsequent cryodestruction serves as a palliative link in the treatment of glial tumors not only of low malignancy, but also glioblastomas. Histological examination of tumor tissue obtained by stereotactic biopsy verified fibrillar cells According to CT and MRT data 3-6 months after stereotactic intervention, a cerebrospinal cyst formed at the site of the lesion.

Thus, radiation methods of investigation make it possible to accurately determine the localization of the tumor during stereotactic cryodestruction. In the postoperative period, CT and MRT are methods of visualizing foci or areas of necrosis, as well as complications in the form of the presence of hemorrhage sites. Radiation therapy of glial tumors was carried out in the form of postoperative radiation in terms of combined treatment, as well as in case of tumor recurrence and was an additional effect on the tumor during its non-radical removal or irradiation of the tumor bed after radical operations to prevent recurrence.

Of the 118 operated patients, radiation therapy was performed in 101 patients. The results of treatment were evaluated according to CT and MRT data, and the criteria for the effectiveness of treatment were a change in tumor volume and a decrease in perifocal response.

When irradiating normal tissues adjacent to the tumor, no serious damage to brain tissue was observed at doses of 45-50 gr, with an increase in the dose to 65-70 gr, one patient revealed a zone of reduced density in the frontal lobe with localization of glioblastoma in the parietal and occipital lobes. In highly differentiated tumors of the glial series, the changes were less pronounced, in poorly differentiated ones necrotic changes prevailed, and pronounced perifocal edema was noted. In undifferentiated gliomas, more pronounced tumor regression was observed in 2 patients with a dose of 34-40 gr, the resumption of growth was noted on KT and MRI 2-3 weeks after the end of irradiation. Pronounced regression of highly differentiated tumors occurred in 4 patients after administration of a dose of 54-60 gr. and the resumption of growth in 3-6- 12 months.

Conclusions

MRI is a highly effective neuroimaging method that allows you to identify a glial brain tumor, clarify its structure, localization, size and prevalence of the neoplasm. CT additionally allows us to evaluate the density characteristics for different histological types of intracerebral tumors. The distinctive features of glial tumors detected by MRI and CT are the homogeneity of the structure in benign astrocytomas and heterogeneity in anaplastic astrocytomas and glioblastomas. In astrocytomas of low malignancy, the effectiveness of MRI is higher when detecting a small focal type of accumulation of contrast medium. In addition, an MRI scan may detect arteriovenous shunts characteristic of malignant tumors. Depending on the morphological structure of the glial tumor, sensitivity, specificity and accuracy in CT and MRI are 94.2% and 97.1%; 75 and 82%; 93% and 95%, respectively.

Radiation research methods are leading in the examination of patients after surgical removal of glial brain tumors or cryodestructive intervention. CT and MRI studies using a contrast agent make it possible to assess the radicality of tumor removal, differentiate postoperative reactive changes and the undetected part of the neoplasm. Sensitivity at CT is 97.4%, at Mrt - 89.9%.

X-ray computed tomography after surgical removal of a glial tumor allows timely detection of early postoperative complications: a hematoma in the bed of the removed tumor, an increase in postoperative edema, ischemic changes, occlusive hydrocephalus, pneumocephaly.

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