Секция «Секция "Медицинская физика»>

Study of the influence of optimization and segmentation parameters during photon fluence modulation on the quality of absorbed dose distribution in a heterogeneous medium using Matrad

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Introduction. Radiation therapy (RT) is a cornerstone of modern cancer treatment and is used in more than 50% of cancer patients during their treatment journey. Its primary role lies in delivering ionizing radiation to target tumor cells while minimizing damage to surrounding healthy tissues. RT can be applied as a curative treatment, palliative care to relieve symptoms, or as an adjunct to surgery and chemotherapy to improve outcomes.

The purpose of the work. Is to evaluate the efficacy and impact of radiation therapy treatment planning for liver cancer using the MatRad program.

Material and methods. The patient has been diagnosed with liver cancer, specifically hepatocellular carcinoma, and is undergoing photon therapy, a non-invasive method to treat tumors using high-energy X-rays. The prescribed treatment involves a total dose of 50 Gy, delivered in 25 fractions of 2 Gy each. This fractionated approach allows optimal tumor control while minimizing damage to surrounding healthy tissues. The MatRad treatment planning system is used to ensure accurate planning, dose calculation, and optimal tumor coverage throughout the treatment. With changing the beamlet thickness and compression between these cases which optimal.