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ABSTRACT

Cervical cancer is one of the cancers with the highest incidence and mortality rates among women in Indonesia. According to GLOBOCAN 2018 data from the International Agency for Research on Cancer (IARC), there were 18.1 million new cancer cases and 9.6 million cancer-related deaths worldwide. Among these, cervical cancer ranks fourth in cancer incidence among women globally, following breast, colorectal, and lung cancers. This study aimed to evaluate the Dose Volume Histogram (DVH) parameters in accordance with the International Commission on Radiation Units and Measurements (ICRU) Report 50 and the Quantitative Analysis of Normal Tissue Effects in the Clinic (QUANTEC) guidelines for different sequencing parameters in intensity-modulated radiation therapy (IMRT) for cervical cancer using the Monaco Treatment Planning System (TPS) at the Radiotherapy Unit of RSUP H. Adam Malik Medan. The study was conducted on a 41-year-old female patient diagnosed with squamous cell carcinoma of the cervix, stage IIIC1, at RSUP H. Adam Malik Medan. IMRT plans were generated with sequencing variations of 10 and 30 segments. Dosimetric parameters and delivery time were analyzed and compared between the two sequencing settings. The addition of sequencing segments influenced the beam delivery time. The total monitor units per fraction (MU/Fx) for the 30-segment sequencing plan was 1011.65, compared to 949.89 for the 10-segment plan. The increase in MU/Fx positively correlated with an increase in patient delivery time during cervical cancer radiotherapy. Increasing the number of sequencing segments in IMRT planning for cervical cancer increases total MU/Fx and consequently prolongs delivery time. The findings provide a basis for optimizing sequencing parameters to balance plan quality and treatment efficiency.

Keywords : Radiotherapy, cervical cancer, IMRT, Sequencing, ICRU 50, QUANTEC

Dosen Pembimbing



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