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The dependence of the radiation dose on the angle and the field size for radiation beam with energy 18 MV.

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The cell proliferation is a process that takes place through the cell cycle. Normally there is a balance between cell proliferation and death, when mutations that occur in ADN interrupt this process resulting in the birth of tumors. The spread of tumor diseases has led to the need to develop different methods for treating tumors. One of the methods of treating tumors is also through radiotherapy. In the treatment of tumors through radiotherapy are used accelerators which provide radiation beams with different energies. In the treatment of tumors with radiotherapy, electronic beam can be used for tumors that are located on the surface of the human body up to a depth of 7 cm or photonic beam for tumors that are located in different organs. The treatment of tumors using the radiotherapy provided by accelerators, it is also known as external beam radiotherapy, where the patient is placed at a certain distance from the accelerator head or radiation source as it is otherwise called. In external beam radiotherapy, it is very important to know the characteristics of the beam of radiation that will be used in the treatment of a certain tumor or tumor mass. A very important element in the treatment of external beams is the knowledge of the factors that affect the dose of radiation given to the tumor mass, in order to give the exact dose needed to stop the process of tumor cell proliferation. In this material we will present two important factors, which affect the given dose, which are the size of the radiation field and the angle at which the radiation beam is given by the accelerator head. The factors listed above affect the dose distribution within the tumor mass. In our case we have used an accelerator type Elekta synergy platform with radiation beam with energy 18 MV. To see the dependence of the radiation dose on the factors defined above, we take some radiation field size with different dimensions and look at the changes in the radiation dose values. We notice that with the increase of the field size we have a decrease of the value of the radiation dose compared to the cases with small field size. This dependence helps us to evaluate the dose of radiation that we must give to the tumor mass in order to damage the tumor cells. Treatment of tumors with radiotherapy requires high accuracy and resolution of difficult cases. To treat tumors in different organs of the human body, the radiation source is placed at different angles depending on the position of the tumor. In these cases a correlation is observed between the radiation dose and the angle of the radiation source. The knowledge of the behavior of the radiation dose in relation to the angle of the radiation source, is used in giving the right dose in order to protect healthy organs. We have to be careful in report with given dose on the tumor mass on purpose that we have good results.

Primary authors: Dr SELMANI, Idajet (Aleksander Xhuvani University, Elbasan, Albania); Prof. MALKAJ, Partizan (Faculty of Mathematical Engineering and Physics Engineering, Polytechnic University of Tirana, Tirana, Albania)

Co-author: Mr SELMANI, Islam (Bahri Nela High School, Tirana, Albania)

Presenter: Dr SELMANI, Idajet (Aleksander Xhuvani University, Elbasan, Albania)

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