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Time factor and dose fractionation in radiotherapy for head and neck cancer

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Results of our studies on dose fractionation and time factor for more than 1000 head and neck cancer cases are presented. For a constant total dose (TCD50) extension of overall treatment time (OTT) significantly decreases tumor cure probability by 1-1.50% per each one day extension of the OTT for laryngeal cancer. Further studies focused on oral cavity and oropharyngeal cancer and showed that due to accelerated repopulation of tumor clonogens starting about week 3 of irradiation of conventional fractionation 5 days/week, about 0.6 Gy/day (Drep) of 2.0 Gy fractions is balanced by repopulation. In early 80-ties it became a basic rationale for altered fractionation (accelerated, hyperfractionation and hybrid fractionation). There were over 50 clinical trials carried out through the next 20 years but meta-analysis of these results has shown only 6-7% overall therapeutic gain, much lower than expected. Because of various fractionation schedules, it is not possible to separate biological effect of dose escalation from that of changes in dose per fraction. When hypofractionated radiosurgery became the object of interest, there is promising perspectives to improve tumor local control at least for some tumor types and sites. The results of these studies will be presented and discussed.

Biography

Bogusław Maciejewski has completed his PhD and Scientific Title of a Full Professor in Radiotherapy. He has done many research projects in the UCLA Los Angeles, Gray Lab London, MGH Harvard University Boston, MDACC Houston and other Cancer Centers in Europe. He was the Director of Cancer Center-Institute Gliwice, Poland till 2015. He is the author of over 200 papers which are published in reputed journals (IF=1650 and citation index=3500). He was awarded the G F Fletcher Gold Medal and Gold Medal of Life Achievements in Oncology by all European Oncologic Societies. He is an honorary member of American College of Radiology, Radiotherapy Expert of the IAEA in Vienna and for 10 years he was a Member of European Board of Radiotherapy. His major interest focuses on the importance of treatment time and tumor repopulation; and altered dose fractionation in Clinical Radiotherapy for human tumors.

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