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Adaptive radiotherapy from past to future

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Adaptive radiation therapy (ART) is a radiation therapy process where treatment is adapted to account for internal anatomical changes. Some organs in the body that require radiation therapy can change in size and shape over the days and weeks that a course of treatment can take. The aim of ART is to account for these changes and deliver the radiation dose to the tumor as accurately as possible. With the emergence of the onboard-volumetric-imaging device, the implication of ART has dramatically changed. For the first time, it leads to construction of the patient's on-treatment geometric model. Thus, one can adaptively modify not only the PTV margin, but also the spatial dose distribution to best accommodate any change in patient anatomy as well as the dosimetric deviation from the prescription incurred in previous fractions. A treatment plan provides an overall estimate of the treatment. In the last few years, much research has been devoted and also notably, various vendors are making significant efforts. With technical advancements, particularly in computer, network technology and optimization algorithms, online practices is becoming increasingly feasible and may likely become a "Standard Practice" in the near future. In this approach, the role of simulation geometry and treatment plan is different from that in current practice. In conclusion, the workflow and technology features are essential factors for introducing and providing robust adaptation of the treatment plan throughout the course of treatment. Indeed the useful measure to identify patients in need for an adaptive treatment is the goal of strategy.

Biography

Nina Tunçel has completed her PhD from Istanbul University Oncology Institutes in Medical Radiation Physics. She was the Chief Medical Physicist from 1999 to 2013 at Akdeniz University Medical School, Radiation Oncology Department. She has her career as teaching staff for training in Medical Physics at Physics Department of Science Faculty of Akdeniz University. She has published more than 30 papers in reputed journals and has been serving as an Editorial Board Member of reputed.

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