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The Use of DQA3 Dosimeter for Daily Quality Assurance of Neptun and Compact Linear Accelerator in Ramezanzade Radiotherapy Center

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Introduction and Purpose: Dosimetry has an important role in optimization of radiotherapy, so control and maintenance of linear accelerator (Linac) are seriously important. Dosimetry performs daily and periodically, as a result of development in quality control devices has an effective role in treatment efficiency. The purpose of this study was to investigate the feasibility of using DQA3 device for comprehensive, efficient daily QA of Neptun and Compact Linacs.

Material and Method: The Sun Nuclear Daily QA3 (DQA3) device was used to perform daily dosimetry and mechanical accuracy tests for Neptun (Zdaj, Poland, 1385, Energy= 9MV) and Compact (Elekta, China, 1391, Energy= 6MV) Linacs in Ramezanzade Radiotherapy Center during the year 1392. Both Linacs meanly expose 100 treatment fields a day. In this study, Data collecting contain of dose, symmetry, flatness and energy. Finally, data analyzed by Excel 2010.

Results and Conclusion: For photon beams tested over a period of one year, the outputs were verified to remain within 3%. Investigations show only photon energy variation of Neptun Linac is out of standard but all of the other tests are in the range. The total measurement time for all tasks took less than 15 minutes per QA session compared to 40 minutes with our previous procedure. The DQA3 can be used for accurate and efficient Linac daily QA. It shortens QA device setup time, eliminates errors introduced by changing phantoms to perform different tests.

Keywords: Radiotherapy, Dosimetry, Linear Accelerator, Quality Assurance, Dose.

Biography

I am completed my MSc at the age of 25 years from Tehran University of Medical Science. I am a medical physicist at Ramezanzade Oncology Center now. I published one book and three papers. I work on two books and one paper now. They are in Ultrasound and Radiation Safety topics.

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