عنوان مقاله:

Fabrication and Characterization of Beam Quality Phantom for External Beam Radiotherapy

محل انتشار:

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خلاصه مقاله:

Introduction: Radiation dose measurement plays a major role in Radiation Dosimetry. Effective dose delivery to the patient is ensured with the recommendation of some protocol called Quality assurance (QA). It is necessary to confirm that the beam that is used for treatment is a good quality beam and it is given by beam quality factor TPR ۲۰/۱۰ which is one of the QA protocols. Material and Methods: In the present TPR۲۰,۱۰ phantom both depth (۲۰ and ۱۰ cm) doses can be measured at the same procedure without changing any setup. As the reference condition is maintained, the Gelatin-based phantom is kept for irradiation in the Siemens Linear Accelerator (LINAC) machine. Initially Source Axis Distance (SAD) of ۱۰۰ cm from the surface and ۱۰×۱۰ cm۲ of field size. The measurement is taken by ion chamber at ۱۰ and ۲۰ cm depth in gantry angles ۹۰° and ۲۷۰° And the ratio of these values is taken and compared with the measurements of the water-based TPR phantom. Results: The values for the TPR۲۰,۱۰ ratio for the Gelatin and water phantom are measured using the above method and the values are tabulated and compared. Likewise, the output measurements are done and tabulated for comparison. These measurements are carried out for several days to check the repeatability, and reproducibility of the phantom. Also, the measured set of values was analyzed using mean, median, standard deviation, etc. Conclusion: The fabricated phantom had good outcomes in its response. And the result projects that the phantom can be a better alternative for the other phantom materials and gelatin has more advantages over water, we conclude that gel can be used for .better dosimetric procedures

کلمات کلیدی:

Tissue Equivalent Phantom External Beam Radiotherapy TPR۲۰, ۱۰, Gelatin