عنوان مقاله:

The Effect of Total Fields' Area and Dose Distribution in Step and Shoot IMRT on Gamma Passing Rate Using OCTAVIUS ۴D-۱۵۰۰ Detector Phantom

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خلاصه مقاله:

Introduction: Quality assurance is necessary for every IMRT plan.Octavius ۴D-۱۵۰۰ detector phantom is one of the new phantoms for determining the treatment plan quality. This study aimed to examine the IMRT plans using the Octavius ۴D-۱۵۰۰ to determine if it is a reliable, dependable, and durable. Material and Methods: IMRT QA conducted for ۳۰ cases: HN and pelvis. The Monaco TPS used for treatment planning. The treatment plans were then applied to the Octavius ۴D-۱۵۰۰ phantom (virtually and actually), the γ-index was calculated in VeriSoft program to evaluate the IMRT plans. Results: Significant differences were observed between the measured and calculated dose distributions for HN and pelvic plans, while the treatment sites did not affect the GP rate. The results of the global Gp were higher than the local GP, regardless of the study criteria. The HN plans showed a more significant difference than the pelvic plans. The HN plans, a strong significant correlation was found between the total fields'area and %GP in both global and local analyses, while in the pelvic plans, there was only a significant association with the local %GP. Conclusion: The measured dose distributions significantly different from calculated distributions. The relationship between the fields' area and %GP was inverse. In the HN plans, a significant correlation found between the total fields' area and %GP in both global and local, while only local %GP in the pelvic plans was significant correlation. Overall, the Octavius ۴D-۱۵۰۰ detector phantom might be applicable for assessing the QA of IMRT plans.

کلمات کلیدی:

Gamma Passing Rate, Dose Distribution, Intensity Modulated Radiotherapy, Quality Assurance