

Toxicity Analysis of Intensity Modulated Radiotherapy for Prostate Cancer

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Prostate cancer is one of the most common cancers among world male population. Intensity Modulated Radiotherapy (IMRT) is commonly used in treating prostate cancer. During this treatment, rectum is considered as an organ at risk (OAR). Therefore, this study aims to assess the acute rectal side effects with rectal dose in IMRT for prostate cancer. This is a retrospective cohort study that used dosimetric data in IMRT treatments of males who had undergone radiotherapy treatment for prostate cancer at Department of Radiation therapy, National Cancer Institute, Maharagama (NICM). The mean V50 value was calculated and compared with the dose/volume quantitative analysis of normal tissue effects in clinics (QUANTEC) criteria for the rectum. The patients were divided into groups based on the mean dose of rectum as Group A (≤ 60 Gy) and Group B (> 60 Gy), and the presence of side effects were compared for the two groups. In a sample size of 63, the mean value for V50 was 44.87% and the maximum V50 value among the participants was 50.0%. All the participants had received a V50 value $\leq 50\%$ which is within the QUANTEC criteria. The most common side effect observed was constipation (49.2%). Others were rectal bleeding - 27.0%, abdominal pain, 17.5% and loose motion - 12.7%. There was a significant association between presence of rectal bleeding between two groups ($p=0.049$). Also, there is a significant difference in mean V50 value of patients with mean rectal dose ≤ 60 Gy (43.143 ± 5.031) and patients with mean rectal dose > 60 Gy (46.266 ± 5.639) (p value= 0.026). All patients had received a V50 value equal to or less than 50% which is within the QUANTEC criteria. No significant association was observed between occurrences of side effects and the mean rectal dose.

Keywords: Prostate cancer, IMRT, Rectal dose, Rectal toxicity