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The role of intensity-modulated radiation therapy (IMRT) seems to have been established in the definitive treatment of localized prostate cancer. By delivering ≥ 78 Gy in 2-Gy daily fractions or doses equivalent to or higher than this level, high local control rates (> 80%) are obtained with acceptable complication rates. We treated prostate cancer patients with static 5-field IMRT using linac 18-MV X-rays or tomotherapy with 6-MV X-rays. As X-ray energies differ, we hypothesized that 18-MV photon IMRT may be better for large patients and tomotherapy may be more suitable for small patients. Thus, we compared dose–volume parameters for the planning target volume (PTV) and organs at risk (OARs) in 59 patients with T1–3 N0M0 prostate cancer who had been treated using 5-field IMRT. For these same patients, tomotherapy plans were also prepared for comparison. In addition, plans of 18 patients who were actually treated with tomotherapy were analyzed. The evaluated parameters were homogeneity indicies and a conformity index for the PTVs, and D2 (dose received by 2% of the PTV in Gy), D98, Dmean and $V_{10–70\ Gy}$ (%) for OARs. To evaluate differences by body size, patients with a known body mass index were grouped by that index (<21; 21–25; and >25 kg/m^2). For the PTV, all parameters were higher in the tomotherapy plans compared with the 5-field IMRT plans. For the rectum, $V_{10\ Gy}$ and $V_{60\ Gy}$ were higher, whereas $V_{20\ Gy}$ and $V_{30\ Gy}$ were lower in the tomotherapy plans. For the bladder, all parameters were higher in the tomotherapy plans. However, both plans were considered clinically acceptable. Similar trends were observed in 18 patients treated with tomotherapy. Obvious trends were not observed for body size. Tomotherapy provides equivalent dose distributions for PTVs and OARs compared with 18-MV 5-field IMRT. Tomotherapy could be used as a substitute for high-energy photon IMRT for prostate cancer regardless of body size.