

SUMMARY

The purpose of my doctoral thesis was to compare acute and late toxicity after three-dimensional conformal radiotherapy to the prostate to 74 Gy with intensity-modulated radiotherapy (IMRT) to 78 Gy and IMRT using simultaneous integrated boost to 82 Gy.

Ninety-four patients treated with conformal radiotherapy to the prostate and base of seminal vesicles to 74 Gy represented the first group. The second group consisted of 138 patients irradiated with IMRT covering the prostate and base of seminal vesicles to 78 Gy. The last group was treated with IMRT using simultaneous integrated boost. The prescribed doses were 82 Gy and 73.8 Gy in 42 fractions to prostate and to seminal vesicles. Late toxicity was prospectively scored according to the RTOG/FC-LENT scale.

Acute gastrointestinal toxicity Grade 2 or greater occurred in 35.1% patients treated with 3D-CRT, 16% with IMRT 78 and 7.7% using IMRT/SIB 82. Acute urogenital toxicity Grade 2 or greater was presented in 26.6% (3D-CRT), 33% (IMRT 78) and 30.7% (IMRT/SIB 82). At 3 years, the estimated cumulative incidence of Grade 3 late gastrointestinal toxicity was 14% for 3D-CRT, 5% for IMRT 78 and 2% for IMRT/SIB 82. The difference became significant (log rank $p=0.02$). The estimated cumulative incidence of Grade 3 late urogenital toxicity was 9% (3D-CRT), 7% (IMRT 78) and 6% (IMRT/SIB 82) without statistical differences (log rank $p=0.32$).

Simultaneous integrated boost enables dose escalation up to 82 Gy with lower gastrointestinal toxicity Grade 3 in comparison with three-dimensional conformal radiotherapy up to 74 Gy.