Single-fraction HDR brachytherapy boost in combination to EBRT for prostate cancer

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Introduction

To describe efficacy and safety of a single-fraction high-dose-rate brachytherapy (HDRBT) boost for patients diagnosed with NCCN intermediate and high risk prostate cancer using real-time transrectal ultrasound (TRUS) based planning in combination to external beam radiation therapy (EBRT).

Material & Methods

The records of 146 patients treated with a single-fraction HDRBT boost of 14 Gy using real-time TRUS based planning were reviewed. External beam radiation therapy (46 Gy/23 fractions or 50 Gy/25 fractions) was performed before (76%) or after (24%) HDRBT boost. Genito-urinary (GU) and gastro-intestinal (GI) toxicity were assessed according to CTCAE v4.0 every 6 months after the end of combined treatment, as well as PSA evaluation.

Results

The median follow-up was 30 months. Antiandrogen deprivation was administered in 53.6% of the patients. Thirteen patients (8.9%) experienced failure. The biological progression-free survival (bPFS) rate at 24 months was 94%.

Ten patients experienced urinary retention within five days after treatment. There were two cases of grade 3 toxicity (rectal bleeding and dysuria). GI and GU toxicity was reported in 14.4% and 54% of the patients respectively.

Conclusion

Single-fraction HDRBT boost of 14 Gy using real-time TRUS in combination to pelvic EBRT is a feasible and promising treatment option for intermediate and high risk prostate cancer patients.

References


Figure 1. Kaplan-Meier curve of biochemical progression-free survival (bPFS) in the whole population. At 2 years, the bPFS was 94%.

Table 1. Toxicity prevalence for the whole follow-up period. If a patient experienced different grades of a single toxicity, only the highest grade was accounted for. Some patients experienced various symptoms during the follow-up.

Table:<br>GI Toxicity | Nb of cases (%) | GU Toxicity | Nb of cases (%)<br>--- | --- | --- | ---<br>Diarrhea | Grade 1 | 16 (11) | Grade 1 | 2 (1.4)<br> | Grade 2 | 1 (0.7) | Grade 2 | 1 (0.7)<br>Rectal bleeding | Grade 1 | 3 (2.1) | Grade 1 | 29 (19.9)<br> | Grade 2 | 1 (0.7) | Grade 2 | 3 (2.1)<br> | Grade 3 | 1 (0.7) | Grade 3 | 1 (0.7)<br>G1 Anal incontinence | 2 (1.4) | G1 bladder incontinence | 1 (0.7)<br>G1 Tenesmus | 2 (1.4) | G1 bladder urgency | 10 (6.8)<br>G1 pelvic pain | 1 (0.7) | G1 painful urination | 4 (2.8)<br> | | G1 Pollakiuria | 50 (34.2)<br>

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