Moderate hypofractionation prostate cancer treatment with IMRT, IGRT and internal fiducials

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Introduction. Hypofractionated treatments are an attractive strategy for institutions and patients with prostate cancer (PC).
Purpose. This study attempts to determine biochemical relapse-free survival (BRFS), overall survival and acute and late toxicities with moderate hypofractionated stereotactic radiotherapy treatments in patients with PC.
Methods. Between March 2009 and February 2013, 115 patients with PC were treated with moderate hypofractionated stereotactic radiotherapy: 45 low, 68 intermediate and 2 high risk. Previously, an internal marker (Visicoil®) was placed within the prostate gland transperineally, guided by transrectal ultrasound, and external infrared spheras were used during the CT simulation. All patients received 70 Gy in 28 fractions (2.5 Gy/day) with intensity modulated radiation therapy (IMRT) with "sliding windows", in the Novalis Linac (Brainlab®), adapted to stereotactic treatments. Daily verification of the internal marker was performed with IGRT Exactrac® system, using a 6D robotic couch, an infrared camera and orthogonal X-rays. Toxicity was assessed according to RTOG criteria and biochemical relapse was defined as Nadir+2.
Results. Median follow up was 21 months (2–43). Overall survival was 98.98% and BRFS was 96.94% in the 98 patients analyzed. Maximal acute urinary toxicities were grade 1 in 66.9% and grade 2 in 2.6% of patients. Grade 1 gastrointestinal toxicities were observed in 2.6% of patients. There were no grade 3, 4 or 5 events. Late toxicities were evaluated in 95 patients. Urinary toxicities grade 1 and 2 were 7.3% and 1.03% respectively. No late urinary toxicities higher than grade 2 and late gastrointestinal toxicities have been reported.
Conclusions. Moderate hypofractionated stereotactic radiotherapy with IMRT, IGRT and internal markers is a feasible, safe and accurate treatment for PC. The toxicity profile was similar to previous studies reported and the BRFS rate was very high, although longer follow up is needed.

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Osteopaenia and osteoporosis among localized prostate cancer patients treated with long-term androgen deprivation and radiotherapy

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Background. In men, age is associated with a decrease in testosterone and estradiol levels, resulting in an annual decrease in bone mass of around 1%. Prostate cancer (PCa) patients might have a lower bone mineral density (BMD) than age-matched controls, although the mechanism is not clear. In addition, a significant number of patients receive androgen-deprivation therapy (ADT), which has adverse effects; of these, one of the most important is the loss of bone mineral. This enhances the risk of additional morbidity, such as bone fractures with a decreased quality of life.
Objectives. To determine the prevalence of osteopaenia and osteoporosis in PCa patients treated with long-term ADT (>12 months) and curative radiotherapy.
Methods. From 7-2011 to 1-2013 the lumbar spine, femoral neck and total hip BMD was measured by dual X-ray absorptiometry in 52 patients before ADT and radiotherapy. The same procedure was repeated 12 months later. Osteopaenia and osteoporosis were defined by a T score of -1.0 to -2.5 and ≤ -2.5, respectively (NHANES).
Results. Mean age was 70 ± 7 years. Before treatment 17 men (32.7%) had osteopaenia, 6 had osteoporosis (11.5%) and 29 had normal values (55.8%). Median follow-up was 10 months (2–17). To date, nineteen patients had repeated the exam after one year ADT. Of those, before treatments osteopaenia was found in 9/19 men (47.4%), osteoporosis in 2/19 (10.5%) and within normal values in 7/19 (36.8%). The figures 1 year later were 10/19 (52.6%), 2/19 (10.5%) and 7/19 (36.8%), respectively.
Conclusions. Before treatments, one-third and one-tenth of PCa patients who were planned to receive long-term ADT $\pm$ radiotherapy had osteopaenia and osteoporosis, respectively. The figures did not changed by much after 1-year ADT.

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