

Comparison of Different Treatment Schemes for Early Prostate Cancer: A Two Year Study

Alan J. Katz, M.D., Matthew Witten, Ph.D., Owen Clancey, M.S. Richard Ashley, M.D.
Fred Diblasio, M.D. Jonathan Haas, M.D. Michael Santoro, M.D.

Objective(s): To compare early efficacy and toxicity of two monotherapy doses schemes and a CyberKnife® boost regimen.

Methods: 372 patients with T1c or T2a prostate cancer were treated with CK at Winthrop Hospital from April 2006 through May 2008. Age range was 45 to 88 with a median of 71. Median AUA score was 7. 78 patients received neoadjuvant hormonal ablation, usually started before presenting to us and discontinued shortly thereafter. 19 patients received prior TURP. All patients received pretreatment rectal Amifostine installation. 210 low risk patients (Gleason's 6, PSA <15) received monotherapy. 43 patients received 7Gy x 5 and 167 patients received 7.25Gy x 5. Out of 121 intermediate risk patients (Gleason's 7 or PSA >15 but <20), 81 received monotherapy, 7 with the lower dose and 74 with the higher dose. 39 intermediate risk patients received a CK boost of 6-7Gy x 3 after 4500 cgy was delivered to the pelvis. 34 high risk patients (Gleason's >7 or PSA >20) received CK as boost and 7 high risk patients received monotherapy 7.25Gy x 5. All patients had four fiducial seeds placed and all four were tracked 96% of the time. MRI was fused into the Cat scan for planning, where feasible. GTV included the prostate only for low risk and boost patients. Proximal seminal vesicles were included for higher risk monotherapy patients. 5-7 mm margins were used to create the PTV (3mm posteriorly). Dose was prescribed to the 83-87% line. Mean D50 to the rectum and bladder was 46% and 45% respectively.

Results: Median follow up was 16 months. The mean PSA for patients receiving 7Gy x 5 dropped from 5.9 to 0.93 at one year. For the 7.25 x 5 patients, the mean PSA went from 6.5 to 0.91. For patients receiving CK as a boost, the mean PSA went from 11.2 to 0.52 in one year. Taking out patients on hormones, the mean PSA was 0.61 at one year. This was significantly lower than monotherapy ($p=.02$). There were no failures in the low and intermediate risk patients but 11% of the high risk patients have failed, although only one having failed locally. Toxicity was mild overall. There was no difference in the rate of acute Grade 1 or 2 urinary and rectal toxicity among the three groups. Grade 1 rectal toxicity ranged from 80-83% and Grade 1 urinary toxicity ranged from 75-80%. Grade 2 rectal toxicity was 3-4% and Grade 2 urinary toxicity occurred in 1% of patients. Late Grade 2 rectal toxicity was significantly higher when CK was used as a boost compared to monotherapy (4% vs 0.3% $p=.02$). Late urinary toxicity was mild, with 5% having Grade 1 and 2% having Grade 2, with no difference among the treatment groups.

Conclusion: Thus far, PSA response and toxicity look favorable for all treatment regimens. There appears to be a difference among the different regimens in terms of efficacy at one year, with CK boost resulting in a lower mean PSA. However, CK used as a boost produces slightly greater rectal toxicity than monotherapy.