Materials and methods: The prostate cancer database at the Ottawa Hospital Regional Cancer Centre was examined for relevant demographics, tumour features, treatment parameters, toxicity, and efficacy outcomes. Patients were grouped according to Canadian Consensus Guidelines into low risk (LR) (PSA$\leqslant$10& T1-T2a & Gleason $\leqslant$6) high risk (HR) (PSA >20 &/or T3/T4 &/or Gleason >7) or intermediate risk (IR). Radiotherapy: Initially, three gold fiducial intraprostatic markers were implanted under Ultrasound guidance to ensure accurate targetting of the prostate on the LINAC. Patients were positioned prone with HIP FIX® immobilization. Patients were treated with a 6 field 3DCRT technique using 18 MV photons. Planning Target Volume 1 (PTV1) included Prostate $\pm$ Seminal Vesicles with a 1 cm volume margin. PTV2 was Prostate +5 mm margin. PTV1 was treated to 5600 cGy/28 fractions prescribed to the isocentre and PTV2 dose ranged from 1,000 cGy/5 to 2,000 cGy/10.
Weekly orthogonal portal films were taken and repeat CT planning was carried out if prostate motion greater than 1.0 cm was noted prior to the boost phase. Concurrent and adjuvant hormones for 6–36 months were used in IR and HR patients.
Results: Between 1998 and 2001, 71 men were treated. 84.5% were 75–80 years old and 15.5% were over 80. Median follow up is 44.7 months (range 1.6–71). Risk distribution was LR: 15.5%, IR: 50.7%, HR: 33.8%. 60/71(84.5%) received hormones. The total dose delivered was 66 Gy in one (1.4%), 70 Gy in 2 (2.8%), 72 Gy in 24 (33.8%), 74 Gy in 41 (57.7%) and 76 Gy in 3 (4.2%). RTOG GI and GU toxicity is listed in the table.

	GI pts.			GU pts.		
Grade	Gr 1	Gr 2	Gr 3	Gr 1	Gr 2	Gr 3
Acute	9	8	2	13	2	0
Chronic	9	2	0	9	8	1

No patient has died of prostate cancer. 88.7% remain alive and 11.3% have died for reasons other than prostate cancer. 87.3% remain biochemically free of recurrence and 95.8% have no clinically apparent local failure. The biochemical and local failures have occurred in 0/11 LR, 4/36 IR and 4/24 HR pts. To date, no significant differences in disease free or overall survival have emerged between the risk categories.
Conclusions: This study demonstrates the feasibility, tolerability and efficacy of DECRT in elderly men with prostate cancer.

839 POSTER

The impact of fractionation on acute toxicity in radical radiotherapy for bladder cancer

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Background: The aim of the study is to evaluate the relationship between the fractionation schedule and acute bladder and bowel toxicity in patients with bladder cancer treated with radical radiotherapy.
Methods and Material: A total of 480 patients with T2, T3 bladder cancer, treated with radical radiotherapy between 1975 and 1995, comprise the study group. Radiotherapy was performed with 9–23 MV X photons in 313 patients (65%) or with ^{60}Co photons in 167 patients (35%). The PTV in all patients included the bladder with a margin, but, 299 patients (62%) received initially pelvic irradiation. Mean total radiation dose to the PTV was 65.5 Gy (59.2–72 Gy). Radiotherapy was performed using various fractionation schedules, as follows: conventional fractionation (CF) – once a-day with df-1.6–2.5 Gy, split-course fractionation (SCF) – once a-day with df – 1.6–2.5 Gy, accelerated hyperfractionation (AHF) – twice a-day with df 1.2–1.5, and accelerated hyperfractionated boost (AHB) – pelvis irradiated once a-day with df-2.0 Gy; boost irradiated twice a-day with df-1.3–1.4 Gy. Acute radiation toxicity was assessed with RTOG/EORTC scale. The comparison of the bladder and bowel toxicity was performed among various fractionation schedules.
Results: Acute bladder toxicity was similar with respect to various fractionation schedules; no acute bladder toxicity was observed in 41% to 49% of patients, Grade 1 toxicity ranged from 34% to 37%, and $\geqslant$Grade 2 bladder toxicity ranged from 17% to 26% of patients. The differences were not significant. However, acute bowel toxicity was significantly different in various fractionation schedules ($p = 0.000$). Grade 0 bowel toxicity was observed in 75% of patients in SCF group, 67% in CF, 60% in AHB and 31% in AHF group. Acute $\geqslant$Grade 2 bowel toxicity was observed in 5% of patients in SCF group, 11% in CF, 16% in AHB and 46% in AHF group.
Conclusion: Acute bowel toxicity is highly correlated with fractionation schedule and increases with acceleration of the radiation therapy.

840 POSTER

Assessment of late morbidity after 3D conformal radiotherapy for prostate cancer

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Purpose: To assess the safety of dose escalation with 3D conformal radiotherapy (CRT) in prostate cancer patients and to determine the predictive factors for late genitourinary (GU) and gastrointestinal (GI) toxicity.
Materials and methods: Between September 1998 and November 2003, 252 patients were treated for prostate cancer with 3D CRT in a single institution to a median dose of 72 Gy (69–73.8 Gy). The median age was 71 (51–83). Seventy-two percent of the patients were clinically staged as localized, whereas 28% presented with locally advanced disease. The Gleason score was 2–6 in 43%, 7 in 44% and 8–10 in 13% of the patients. Initial PSA level was less than 10 ng/ml in 53%, between 10–20 ng/ml in 26% and higher than 20 ng/ml in 21%. Favourable risk patients according to Roach formula received treatment to the prostate alone, whereas patients with a risk of >15% of seminal vesicle involvement were treated to the prostate and seminal vesicles to 55.8 Gy and then boosted to the prostate. High risk patients with a risk of >15% lymph node involvement received a whole pelvic irradiation to 45 Gy as the initial part of their treatment. The dose is prescribed to the minimum isodose line (95%) that covers the planning target volume (PTV). Patients were evaluated every 3–6 months after the completion of radiotherapy. RTOG/EORTC late toxicity criteria was used. Univariate estimates of morbidity were calculated with Kaplan-Meier methods and comparisons were made with the long-rank statistics. Cox multivariate regression analysis was used to establish the independent predictors of morbidity. Potential risk factors like age, diabetes, colitis, number of radiation portals, pelvic RT, higher radiation dose, presence of acute toxicity, previous history of TUR-P, time on adjuvant hormones, as well as dose-volume histogram (DVH) features for rectum and bladder were evaluated.
Results: After a median follow-up of 36 months (18–75) the incidence for Grade 3 GI and GU late toxicity was 3.2% and 3.8%, respectively. The actuarial incidence of Grade 2 and higher GI and GU morbidity was 18% and 12% at 5 years, respectively. The independent predictors for Grade 2 and higher GI toxicity were history of colitis ($p = 0.0362$) and presence of acute Grade 2 and 3 GI side effects ($p = 0.0135$). We could not identify any significant clinical nor treatment related risk factors for late GU morbidity. DVH features V70, V60, V50 for rectum and bladder were also not significant in univariate analysis.
Conclusions: We confirm that 3D CRT is a safe method to escalate the dose in prostate cancer patients. As reported also by other institutions colitis could be a predictor for late GI morbidity, therefore patients with a history of colitis should be evaluated for other treatment modalities.

841 POSTER

Biochemical outcome following interstitial low dose rate (LDR) prostate brachytherapy in intermediate and high risk patients

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Introduction: We report biochemical outcome data for intermediate and high risk patients who underwent prostate brachytherapy (BXT) using stranded I-125 implant (RapidStrand), with up to 73 months follow up.
Patients and methods: We have prospectively collected data on PSA outcomes on 600 patients treated to date. Between March 1999 and April 2003, 111 intermediate and 43 high risk patients were treated. Minimum follow up was 24 months (range 24–73 months). Risk status was determined using the Seattle Prognostic Index. Patients received either BXT alone, three months of neoadjuvant androgen deprivation (NAAD) followed by brachytherapy, or 3 months NAAD, 45 Gy pelvic external beam radiotherapy (EBRT) and BXT.
Results: The mean age of patients was 63 years. Within the intermediate group 50% had a PSA >10, 25% had a gleason score $\geqslant$7, and 30% were stage T2c or higher. Within the high risk group 86% had a PSA>10, 65% had a gleason $\geqslant$7, and 76% were stage T2c or higher. Actuarial biochemical free survival (bNED) at 73 months for the intermediate group was 93% and the high risk group also 93%. When stratified by treatment group, intermediate risk patients had actuarial bNEDs of 93% for BXT alone ($n = 15$), 94% for NAAD and BXT ($n = 67$), and 90% for NAAD, EBRT and BXT ($n = 29$). In the high risk group bNEDs were 100% for BXT alone ($n = 2$), 83% for NAAD and BXT($n = 7$) and 94% for NAAD, EBRT and BXT ($n = 34$). Three year median PSA for the intermediate risk group was 0.3 ($n = 47$) and 0.1 ($n = 24$) for the high risk group.