PTV margins were large and anisotropic (from 1 cm at the apex to >2 cm at the top). This, likely translates, a mix of translational and around the apex rotational motion of the target.

4043 POSTER

Effect of edema on postimplant dosimetry in prostate brachytherapy using CT/MRI fusion

O. Tanaka[1], S. Hayashi[1], M. Matsuo[1], M. Nakano[2], H. Uno[2], K. Ohtakara[1], S. Okada[1], H. Hoshi[1], T. Deguchi[2]. *[1]Gifu University School of Medicine, Radiology, Gifu, Japan; [2]Gifu University School of Medicine, Urology, Gifu, Japan*

Purpose: To investigate the time course of prostatic edema and the impact on the dose volume histograms of the prostate for patients treated with brachytherapy.
Methods and Materials: Seventy-four patients with prostate cancer were enrolled in this prospective study. TRUS-based preplan was performed 4 weeks before the implant and CT/MRI fusion-based postimplant dosimetry was performed on the day after implantation (day 1) and 30 days after implantation (day 30). Forty-eight patients underwent neoadjuvant hormonal therapy. All patients were treated with loose 125I radioactive seeds using a Mick applicator. The updated American Association of Physicists in Medicine (AAPM) Task Group 43 (TG-43) formula was used in the planning and calculation of the final dosimetry. The prostate volume, prostate V100 and D90 were evaluated with prostate edema over time. Group comparisons for the volumes and dosimetric parameters were performed using the t test. All tests were two-sided, and a p value of $\leqslant 0.05$ was considered to be statistically significant.
Results: Prostate edema was the greatest on day 1, with the mean prostate volume 36% greater than preplan TRUS-based volume and it thereafter decreased over time. It was 9% greater than preplan volume on day 30. The V100 increased 5.7% from day 1 to day 30, and the D90 was increased 13.1% from day 1 to day 30. The edema ratio (Postplan/Preplan) on day 1 of low-quality implants V100 of <80% was significantly greater than that of intermediate to high-quality implants (80% < V100) ($p = 0.0272$). The lower V100 on day 1 showed a greater increase from day 1 to day 30. V100 on day 1 of >92% is unlikely to increase >0% during the time interval studied.
Conclusion: Low-quality implants on day 1 were highly associated with edema, however, such a low-quality implant on day 1 with significant edema tended to improve by day 30. If a high-quality implant (V100 > 92%) can be obtained on day 1, then a reexamination is no longer necessary.

4044 POSTER

Failure to achieve PSA level less than or equal to 1 ng/ml following neo-adjuvant LHRHa therapy predicts for a lower rate of biochemical control and lower overall survival in localised prostate cancer treated with radiation therapy

D.M. Mitchell[1], J. McAleese[1], R.M. Park[1], D.P. Stewart[1], S. Stranex[1], R. Eakin[1], R.F. Houston[1], J.M. O'Sullivan[2]. *[1]Northern Ireland Cancer Centre, Clinical Oncology, Belfast, United Kingdom; [2]Centre for Cancer Research and Cell Biology, Queens University Belfast, Belfast, United Kingdom*

Background: The benefit of using neo-adjuvant, concurrent and adjuvant Luteinizing Hormone Releasing Hormone agonists (LHRHa) along with external beam radiotherapy (EBRT) for locally advanced prostate cancer has been confirmed in several studies. We observed that not all patients acheived complete suppression of PSA prior to commencement of radiotherapy, despite receiving neo-adjuvant hormonal deprivation (NAHD) therapy with an LHRHa. We investigated if the failure to suppress PSA to less than or equal to 1 ng/ml after at least 2months of NAHD in patients due to receive EBRT was associated with reduced biochemical failure free survival.
Materials: A retrospective case note review of consecutive patients with intermeadiate or high risk prostate cancer treated between January 2001 and December 2002 with NAHD and EBRT was performed. Patients' data were divided for analysis based on whether or not the PSA in week 1 of EBRT was less than or equal to 1 ng/ml. Biochemical failure was determined using the ASTRO (Pheonix) definition.
Results: One hundred and nineteen patients were identified, 67 with post NAHD PSA levels of less than or equal to 1 ng/ml and 52 with post NAHD PSA levels of >1 ng/ml. At a median follow-up of 49 (4.2−67.8) months, the 4year actuarial biochemical failure free survival was 84% vs 60% ($p = 0.0016$) in favour of the patients with a post NAHD PSA of less than 1 ng/ml, and overall survival was 94% vs. 77.5% ($p = 0.0045$). Disease specific survival at 4 years was 98.5% vs. 82.5%. Post NAHD PSA remained an independent statistically significant predictor of biochemical failure when examined using multivariate regression analysis.
Conclusions: Patients who have a PSA > 1 ng/ml at the beginning of external beam radiotherapy following at least 2months of neo-adjuvant LHRHa therapy, have a significantly higher rate of biochemical failure, and a lower survival rate compared to those who have PSA less than or equal to 1 ng/ml. Patients who fail to acheive adequate suppression should be considered as a higher risk group and considered for either dose escalation or the use of novel therapies.

4045 POSTER

Gastrointestinal toxicity after ^{125}I permanent implantation for prostate cancer: relationship between patient-assessed quality of life score and physician-assessed toxicity score

H. Ishiyama[1], T. Satoh[2], M. Kitano[1], S. Kotani[1], M. Uemae[3], S. Baba[4], K. Hayakawa[5]. *[1]Kitasato University School of Medicine, Radiology, Sagamihara, Japan; [2]Kitasato University School of Medicine, Urology, Sagamihara, Japan; [3]Kitasato University Hospital, Division of Radiation Oncology, Sagamihara, Japan; [4]Kitasato University Hospital, Urology, Sagamihara, Japan; [5]Kitasato University Hospital, Radiology, Sagamihara, Japan*

Purpose: The present study investigated correlations between physician-assessed toxicity and patient-assessed quality of life (QOL) for the gastrointestinal tract following permanent interstitial brachytherapy.
Materials and Methods: Gastrointestinal toxicity in 130 patients with low-risk prostate cancer was assessed by 1 urologist and/or 1 radiation oncologist at 1, 3, 6, 9, 12, 18, and 24 months after implantation using Radiation Therapy Oncology Group (RTOG) scale and National Cancer Institute Common Toxicity Criteria (NCI-CTC). Every patient received a QOL questionnaire before implantation and at the same times as physician assessment, excluding 9 months. The questionnaire included the UCLA-Prostatic cancer index, and the columns for "bowel function" and "bowel bother" were used in this study. Analysis focused on comparing QOL scores after implantation with respective baseline scores. Relationships between patient-assessed QOL score and physician-assessed toxicity score were assessed.
Results: Median follow-up period was 18 months. Most patients displayed no gastrointestinal toxicity after implantation according to physician assessment. Only 2.3% of patients displayed Grade 2 toxicity during follow up period. No gastrointestinal toxicity of Grade 3 or more was identified. A total of 282 returned QOL questionnaires were accepted from patients after implantation. On average, QOL scores remained at the same level as baseline after implantation. Physician-assessed RTOG grades correlated significantly with "bowel bother" scores, but not with "bowel function" scores. However, RTOG Grade 0 patients displayed broad variations in QOL score changes, and 7.8−30.4% of patients with Grade 0 toxicity displayed greater decreases in QOL scores than median changes for Grade 1 or 2 patients.
Conclusion: Few patients experience gastrointestinal toxicity after permanent interstitial brachytherapy for prostate cancer. However, our results indicate discrepancies between patients-assessed QOL score and physician-assessed toxicity scores, particularly in patients with mild toxicity. Reassessment of interstitial brachytherapy from the perspective of QOL appears warranted.

4046 POSTER

Health-related quality of life in patients with localized prostate cancer receiving high-dose-rate brachytherapy: a time-course analysis

J. Hiratsuka[1], K. Yoshida[2], Y. Jo[3], A. Nagai[3], Y. Imajyo[1]. *[1]Kawasaki Medical School, Radiation Oncology, Kurashiki, Japan; [2]Kobe University School of Medicine, Radiology, Kobe, Japan; [3]Kawasaki Medical School, Urology, Kurashiki, Japan*

Background: High-dose-rate brachytherapy (HDR-BT) has gradually become one of the major treatment modalities for localized prostate cancer with excellent outcomes, but study of health-related quality of life (HRQoL) associated with HDR-BT is falling behined other major modalities, therefore a prompt analysis is required. The purpose of this study is to make a time-course analysis of HRQoL in patients with localized prostate cancer received HDR-BT.
Materials and Methods: Examination of HRQoL has been performed at Kawasaki Medical School Hospital since May 1, 2004. The 36-items Short-Form Health Survey version 2.0 (SF-36v2) and the University of California Los Angeles Prostate Cancer Index (UCLA-PCI) were adopted. SF-36 is consisted of 8 aspects with 36 questions about general condition. The 8 aspects are Physical functioning (PF), Role physical (RP), Bodily pain (BP), General health perceptions (GH), Vitality (VT), Social functioning (SF), Role emotional (RE), and Mental health (MH). Meanwhile, UCLA-PCI is consisted of 6 categories with 20 questions about disease-specific symptoms. The 6 categories are Urinary function (UF), Urinary bother (UB),