computed tomography (CT) images. This work investigates the time course of prostate edema and its effect on CT volume determination and dose-volume histograms (DVHs) of the prostate for prostate cancer patient treated with ^{125}Iodine (^{125}I) seeds permanent brachytherapy.
Material and Methods: From March 2006 to March 2009, 37 consecutive prostate brachytherapy patients with prescribed dose of 145 Gy from ^{125}I as monotherapy comprised the study population. For prostate volume (PVol) study and seed order, a trans-rectal ultrasound-based (TRUb) preplan was performed 3–4 weeks before implantation. The real-time intraoperative planning was used on the day of the implant (Day 0) and postimplant dosimetry was calculated using CT images on the Day 1, Days 30 after implantation. Prostate dosimetry was evaluated by the percentage of the prostate volume receiving 100% of the prescribed dose (V_{100}) and percentage of prescribed dose received by 90% of the prostate volume (D_{90}).
Results: The median preplan TRUb volume (pre-TRUb Vol) was 30.46 ml (range, 16.43–55.33 ml) and as a proportion of the pre-TRUb Vol, the Day 0 was a median of 1.1 (range, 0.75–1.31, $p = 0.0372$). Prostate edema was maximal on Day 1, with the median PVol 10% greater than pre-TRUb Vol (range, 0.82–1.49; $p = 0.0024$) and 7% greater than Day 0 volume (range, 0.8–1.37; $p = 0.047$); it thereafter decreased over time. It was 10% lesser than pre-TRUb Vol (range, 0.56–1.22; $p = 0.0016$) and 11% lesser than Day 0 volume (range, 0.59–1.13; $p < 0.0001$) on Day 30. The median V_{100} was 85% (range, 60–98%) on Day 1 and was 93% (range, 63–100%) on Days 30 and increased 6.8% from Day 1 to Days 30 (range, −6.8–27.1%; $p = 0.0001$).
Conclusion: The results showed that the extent of postimplant prostate edema was less than expected during Days 1–30 and suggested that the CT-based evaluation of ^{125}I implants would best be performed more early than 1 month after implant. Our data indicate that dose coverage of the prostate was sufficient for the most patients on Days 30.

2055 POSTER

Difference of set up margin between conventional 2-D and CT based 3-D planning in Korean patients with early breast cancer

S. Jo[1], M. Chun[1], H. Jang[1], M. Kim[1], Y. Oh[1], S. Kang[1], K. Choi[2]. *[1]Ajou University Hospital, Radiation Oncology, Suwon, South Korea; [2]Sam Anyang Hospital, Radiation Oncology, Anyang, South Korea*

Background: In Korea, many breast cancer patients are young (between age 30 to 50 in 50% of patients) and thin comparing to those at western countries. Comparing with conventional tangential field technique, use of CT based 3-D planning is preferred in recent days to reduce the irradiated normal tissue volume.
The purpose of this study is to evaluate the difference between the margins of radiation fields based on conventional 2-D technique and those of CT based 3-D planning.
Materials and Methods: Twenty-five patients with node negative early breast cancer underwent breast conserving surgery between November, 2008 and February, 2009 were selected for preliminary data analysis. We performed both CT based 3-D planning and 2-D planning by conventional breast tangential technique on same patient. In 2-D planning process, the field margins were following: superior margin at base of clavicle, medial margin at body midline, lateral margin at mid-axillary line and inferior margin at 3 cm below the inframammary fold. In 3-D planning, the clinical target volume (CTV) covered all visible glandular breast tissue and the planning target volume (PTV) was obtained with additional 1 cm margin around CTV except skin surface. Both plans were compared for the radiation field margin extents and the irradiated lung volume (average lung volume at D5 Gy (V5), and D20 Gy (V20) and mean lung dose (MLD)).
Results: Age was median 45 years old (range: 31−73 years old). All patients wore AA or A cup size bra and mean body mass index (BMI) was 23.6. The radiation field size was smaller on 3-D planning: mean difference at superior edge of 2.48 cm (0−4.5 cm), at medial edge of 1.57 cm (−1−2.7 cm), at lateral edge of 2.46 cm (0−5.2 cm) and at inferior edge of 2.47 cm (1−4.5 cm). Absolute volume reduction at V5 and V20 and MLD were 4.1%, 3.2% and 3.5% with 3-D planning, respectively.
Conclusions: This study shows that CT based 3-D planning can reduce the radiation field size on each directions for early breast cancer patient. Also, it shows less irradiated lung volume compared with conventional 2-D planning. Based on this data, we plan to continue to accrue more patients.

2056 POSTER

Fundamental study of polaprezinc suppositories in the prevention of acute radiation proctitis in rats

N. Kamikonya[1], H. Doi[1], H. Inoue[1], M. Tanooka[1], Y. Takada[1], M. Fujiwara[1], K. Tsuboi[1], S. Hirota[1], T. Shikata[2], M. Kadobayashi[2]. *[1]Hyogo College of Medicine, radiology, Nishinomiya Hyogo, Japan; [2]Hyogo College of Medicine, Pharmacy, Nishinomiya Hyogo, Japan*

Purpose: The purpose of this study was to use the rat as an animal model to study the effects of pelvic irradiation on normal rectal tissue and to evaluate the potential radioprotective effects of polaprezinc suppositories.
Materials/Methods: A total of 45 adult female Wister rats were enrolled in this study. Rats were divided into three groups of 15 rats each. Group A was irradiated by a single fraction dose of 22 Gy and medicated with the polaprezinc suppository. Group B was irradiated 22 Gy without any medications. Group C was control group without irradiation and any medications. The rat was taped by the tail so that it hung head down in a vertical position with its back on a lead wall containing a window. Polaprezinc suppositories were prepared with plyethylene glycol bases. Polaprezinc suppositories were inserted into the anus of the rat under ether anesthesia and the anus was closed with elastic tape. The suppository was prescribed every day after radiotherapy during seven days. All rats were evaluated by examination, colonoscopy and histologic evaluation for changes at 2 weeks after irradiation. Colonoscopic findings were scored as follows: 0 = normal mucosa; 1 = edema, mild hyperemia, or decreased vascularity; 2 = diffuse hyperemia, multiple punctuate areas of hemorrhage or, confluent areas of hemorrhage; 3 = presence of erosions or frank hemorrhage; and 4 = ulcers. For histologic evaluation, each specimen was graded as follows: 0 = normal or minor alterations; 1 = slight radiation damage; 2 = mild damage; 3 = moderate damage (must have prominent loss of epithelium, degree of inflammation variable); and 4 = sever damage (ulcers, necrosis).
Results: Colonoscopic scores in Group A ranged from 0 to 2: grade 0: 2, grade 1: 7, grade 2: 1, grade 3: 0. Colonoscopic scores in Group B ranged from 1 to 3: grade 0: 0, grade 1: 1, grade 2: 5, grade 3: 2. The difference between the two groups was statically significant ($p < 0.05$). Histologic scores in Group A ranged from 0 to 2: grade 0: 0, grade 1: 3, grade 2: 7, grade 3: 0. Histologic scores in Group B ranged from 1 to 3: grade 0: 0, grade 1: 1, grade 2: 3, grade 3: 4. Although the tendency of a more critical score of the rat which was not medicated with the polaprezinc suppository was seen, the statistical significant difference was not accepted between the two groups.
Conclusions: In our study, polaprezinc was prepared as a suppository and was administered to rats safely and accurately. The impact of polaprezinc suppository on radiation induced proctitis is under further investigation.

2057 POSTER

Radiotherapy treatment of brain metastases: survival and differences in fractionation

C. Camarasa Garcia[1], V. Aguilar Perez[1], M.A. Masia Tarazona[1], J.L. Monroy Anton[1]. *[1]Hospital La Ribera, Radiation Oncology, Alzira (Valencia), Spain*

Background: Radiotherapy is the principal treatment of patients with diagnosed brain metastases. Lung, breast, and digestive tumors are the most frequent cancers that develop metastases. Survival without therapy is very poor. Radiotherapy increases this survival and also improves neurological symptoms. Our aim was analyzing overall survival after radiotherapy in patients with brain metastases. Compare different radiotherapy schedules.
Materials and Methods: The study was made with data of 59 patients (aged between 34−84 years) with brain metastases treated in our deparment in 2006. Radiotherapy was administered with isocentric technique, two lateral fields, total doses: 20−30 Gy, with two main schedules: 3 Gy/fraction in 10 fractions (3×10), 5 patients; and 4 Gy/fraction in 5 fractions (4×5), 52 patients. 2 patients received other schedules.
Results: Overall survival ranged from 0 to 37 months (mean: 6 m; median: 4 m). 44 patients survive <6 m (72%). In 4×5 schedule, mean survival was 5 m (median: 3 m). In 3×10 schedule, mean survival: 14 m (median: 10). Due to the little numbers of patients in group 3×10 we could not compare the two schemes.
Conclusions: In our institution, survival after radiotherapy treatment in patients with cerebral metastases is around 6 months. Further studies with higher number of patients could show differences in survival between different schemes and fractionation.