

an interactive dynamic dose calculation is possible. Dosimetric and clinical data will be shown.

Methods: Up to now 119 patients underwent a permanent seed implantation. 84 patients were planned intraoperative with the system VariSeed 6.7 on the basis of transrectal ultrasound images. For 35 patients an interactive treatment planning has been performed with the VariSeed 7.0 where a dynamic dose calculation is possible. Implant quality is checked for all patients by post-implant CT-based dosimetry six weeks after the implantation.

Results: A comparison between the intraoperative and the postoperative dose calculation of the first 84 patients results in differences up to 20% in the D90 (dose covering 90% of the volume) and V100 (volume receiving the prescribed dose) for the prostate. Because of the possibility to adjust the position of each needle and each single seed during the implantation using the planning system VariSeed 7.0 differences of nearly 5% in the dose distributions are possible between the interactive planning and the preplanning. Thus the differences between the D90 for the interactive dynamic dose calculation and the D90 of the post-implant CT-based dosimetry are much less for the 35 patients planned with the new version of the planning system.

Conclusion: The analysis of the data of the 84 patients planned with the system VariSeed 6.7 shows obvious differences between the intraoperative dose calculation and the CT-based dosimetry. These differences in the dose distribution are much more smaller for the patients planned with the new version of the planning system (7.0). It is very important to adjust the position of each needle and seed to its real location to guarantee a homogenous dose distribution enclosing the whole prostate. According to this the dose at the organs at risk can be better calculated and the side effects are less.

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POSTER

Intravenous (IV) vinorelbine (VRL) plus hormone therapy (HT) versus hormone therapy alone in hormone-refractory prostate cancer (HRPC). Final report of a randomised phase III study

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Background: VRL produced sustained PSA decline and durable clinical benefit in phase II studies. Its moderate toxicity profile is well tolerated in elderly patients.

Material and methods: 414 patients received either IV VRL 30 mg/m² on days 1 and 8 every 3 weeks combined with HT, consisting of hydrocortisone 40 mg/day + aminoglutethimide 1000 mg/day, or HT alone. Eligible patients had metastatic, progressive disease after androgen deprivation, PSA > 10 ng/ml and Karnofsky score (KPS) > 60%. The primary endpoint was progression-free survival (PFS). All responses and dates of progression were independently reviewed. EORTC QLQ-C30 questionnaires were scheduled every 3 cycles.

Results: Median age was 69 (range: 48-87). The median number of cycles was 6 (1-36) in the test arm versus 4 (1-40) in the control arm. The median relative dose-intensity of VRL in the test arm was over 90%. Intent-to-treat analysis of PFS showed a significant prolongation in the IV VRL arm: 6 month PFS rate of 34.4% versus 23.7%, median of 3.75 versus 2.93 months [p=0.061 in the logrank test (2-sided, α = 10%), p=0.005 in the test adjusted for predetermined prognostic factors]. Significant factors in the multivariate Cox model included hemoglobin (p=0.004), KPS (p=0.020), and alkaline phosphatase (p=0.001). PSA response rate (decline > 50% for 6 weeks) was also significantly higher in the test arm: 30.1% versus 19.2% (p=0.01), as well as clinical benefit response: 30.6% versus 19.2% (p=0.008). Aminoglutethimide did not impact on PFS in either arm. Survival was not different: 12 and 18 month survival rate of 56.1% and 41.1% in test arm vs 57.7% and 40.1%; median at 14.7 vs 15.2 months. Toxicity was low. Grade 3 - 4 neutropenia (25.6%), neutropenic infection (3%) and constipation (3%) were seen in the test arm only.

Conclusion: IV VRL plus hydrocortisone offers a new effective and safe therapeutic option for the treatment of HRPC.

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POSTER

Comparison of ultrasound assisted implantation of the prostate using a look-up nomogram versus ultrasound assisted intraoperative 3D computer optimization: improved conformality with improved urethral and rectal dose volume histogram: it's time to move forward!

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Purpose: We have employed a 3D computer planning system with intraoperative dose optimization and feedback in an effort to improve target conformality and reduce urethral and rectal doses. We report our preliminary dosimetric outcome with this approach and compare our results to our prior experience with a standard lookup nomogram.

Materials and Methods: 114 patients (pts) with favorable risk prostate cancer underwent ultrasound guided brachytherapy using Iodine-125 sources, from 1998 through 2002. Sixty-nine pts (Gr 1) were implanted using a transperineal approach with a standard look-up nomogram. Pts in Gr1 were prescribed a dose of 160 Gy without dose constraints on the urethra and rectum using a modified peripheral loading technique. Forty-five pts (Gr 2) were recently implanted with a transperineal technique using a computer dose-optimization program with real-time feedback. Pts in Gr 2 had pre-determined urethral (V150 < 35%), and rectal dose constraints (V110 < 1.5 cc) placed and prostate dose range (140-180 Gy) prior to the implant. Dosimetric outcome was compared between both groups for differences.

Results: For Gr 1 and Gr 2 (3D), there was no difference in the median pre-implant gland volume (33 cc vs 35 cc; p=0.31), median mCi/seed strengths (0.4 vs 0.45 mCi; p=0.23), or median D90 at post-implant day 30 (165 Gy vs 160 Gy; p=0.26). However, for Gr 2 (3D), the median total mCi's implanted (26 vs 33 mCi; p<0.0001) and the median number of seeds implanted (67 vs 83; p<0.0001) were significantly less. At day 30, the median V150 urethra for Gr 1 was significantly higher than for Gr 2 (3D) (63% vs 17%; p<0.0001) respectively. Similarly, the median V110 rectum for Gr 1 was significantly higher than that in Gr 2 (1.93 vs 0.26 cc; p<0.0001). The percent of pts with D90 > 180 Gy was 29% in Gr 1, compared to 16% in Gr 2 (p=0.08). No difference was observed in the percent of pts with D90 < 140 Gy (14% Gr 1 vs 9% Gr 2, p=0.56). A V150 urethra > 35% was observed in 88% of pts in Gr 1 compared to 29% in Gr 2, p<0.0001. The percent of pts with V110 rectum > 1.5 cc in Gr 1 and Gr 2 was 57% and 13%, respectively, p<0.0001. Pre- and post-implant IPSS scores, and post-implant RTOG GU and GI symptom index scores were obtained in both groups. For Gr 1, the median pre- and post-implant IPSS scores were 5 and 6 at a median f/u time of 25 months. Late RTOG GU morbidity includes 20% with grade 2 symptoms, 2% grade 3, and 2% grade 4. For Gr 2, median pre- and post implant IPSS scores are 4 and 8. To date, 29% are experiencing grade 2 GU symptoms at a median f/u time of 6 months, with no grade 3-4 symptoms. RTOG GI sxs for Gr 1 include 5% grade 2, 0% grade 3, and 2% grade 4. For Gr2, only 3% have grade 2 sxs, with no grade 3 or 4 sxs.

Conclusions: The introduction of a 3D computer optimization program with real-time dosimetric feedback of the target volume during prostate seed implantation resulted in significantly lower urethral and rectal doses while achieving excellent target coverage. Pre-determined dose constraints were effectively maintained in a majority of patients. Additional follow-up will determine if these improvements will lead to a more favorable morbidity profile without compromise of biochemical control.

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POSTER

A novel system for high-dose radiotherapy for localized prostate cancer using a dual X-ray fluoroscopy and amorphous silicon flat panels system

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Purpose: This study comprises the clinical implementation of a new system mounted on the gantry of a linear accelerator, a dual X-ray fluoroscopy and paired flat panels system (DFFP system) for the settings of a dose escalation protocol.

Material and Methods: The DFFP system consists of a dual fluoroscopy that has been adapted to the gantry's left-right side at 45 degrees from beam axis each and paired flat panels with x-ray sensors opposing the x-ray sources. The image acquisitions of an implanted gold seed in the prostate are obtained at 15-30 frames per second and gold seeds (GS) coordinates, intrinsically recognized as the pixel position on the flat panels. At treatment, the isocentered GS coordinates allow precise positional verifications. In