

questionnaire to the Italian RT Departments belonging to the AIRO Group. Both studies evaluated the number of pts treated, the specific prognostic factors, the RT concepts and schedules according to age, stage, PSA value, RT timing and hormonal therapy. Treatment positioning, immobilisation, simulation, quality assurance procedures were required in the first questionnaire.

Results: 454 pts treated with RT after radical prostatectomy in 2000 were enrolled by the first questionnaire (24 RT institutions, with an accrual of approximately 20 patients per Center). Age range was 45–81 years (33.8% pts >70). RT was delivered in an adjuvant setting (within 6 months after RP) in 297 pts (65.4%) (mean time: 3.4 months) and in an salvage setting for biochemical or micro-macroscopic recurrence in 157 (34.6%). 355 pts (78.2%) were locally advanced. Hormonal manipulation was prescribed directly by the urologists in 244 pts (53.8%). Positive margins, capsular invasion, Gleason Pattern score > 7 were present in 50% pts. Prognostic algorithms (Partin table or Roach formula) in the decision on volume of irradiation were routinely used in 11 Centers (46%). Acute and late toxicity were registered using the RTOG (90%) and/or the SOMA LENT (16.5%) scale. Localization films or digital portal imaging were routinely used. Only 8 Centers (33.3%) occasionally performed in vivo dosimetry. These data were confirmed in the second multicenter prospective study that enrolled 236 pts in the first 6 months of 2002 with these characteristics: age range: 42–78; 154 pts (65.3%) treated with adjuvant intent, 82 pts (34.7%) with salvage RT; 190 pts (74.2%) in locally advanced stage (pT3a-pT4); 112 pts (47.5%) treated with hormonal manipulation (Table 1).

Conclusion: The 2002 prospective survey confirms the 2000 retrospective analysis despite the well known limitations of a study based on mailed questionnaires. These data can help the AIRO Group in evaluating the national state of the art of adjuvant RT after radical prostatectomy and address future multicentric clinical studies within the AIRO Group.

853

POSTER

Conformal irradiation for prostate cancer: biochemical relapse-free survival with standard fractionation versus hyperfractionation

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Purpose: To evaluate biochemical relapse-free survival (bRFS) comparing standard (STD) versus hyperfractionated (HFX) radical conformal irradiation (CRT) in prostate cancer.

Materials and Methods: The medical records of 370 consecutive prostate cancer patients (pts) treated with CRT in the period January 1993-January 2003 were examined. 209 pts received STD (2.0 Gy/day) CRT, while 161 received HFX (1.2 Gy, BID, interfraction interval 6 hours). 179 pts (87%) in the STD group and 151 pts (94%) in the HFX group were evaluable. STD pts characteristics were: median age 71 yrs (range: 54-85); clinical stage: Tx 1.1%, T1 10.1%, T2 54.7%, T3 30.2%, T4 3.9%; median GPS: 6 (range 2-10); mean initial PSA: 23.2 ng/ml (range: 0.2-280 ng/ml); median ICRU 50 prescription dose to the prostate: 74 Gy (70-76 Gy); pelvis irradiation: 42.5%, median ICRU 50 prescription dose: 48 Gy (range: 40-50 Gy); androgen deprivation therapy (AD): 78.2%; median follow up: 25.2 mos (range: 2-118 mos). HFX pts characteristics were: median age: 69 yrs (range: 50-80); clinical stage: Tx 0.7%, T1 7.3%, T2 53%, T3 35.8%, T4 3.3%; median GPS: 6 (range 2-10); mean initial PSA: 20.2 ng/ml (range: 1.9-520 ng/ml); median ICRU 50 prescription dose to the prostate: 79.2 Gy (70-82.8 Gy); pelvis irradiation: 43.7%, median ICRU 50 prescription dose: 50.4 Gy (range: 40.8-50.4 Gy); AD: 70.9%; median follow up: 36.7 mos (range: 3-107 mos). Pts were treated using a 4-5 field technique, blocking rectal anterior wall at 70 Gy (STD) or 74.4 Gy (HFX). bRFS was defined following ASTRO definition. 5-yr actuarial probability of bRFS was calculated using Kaplan-Meier method.

Results: No significant difference was observed with respect to pre-treatment and treatment variables. 5-yr bRFS rates for STD vs HFX pts were 70.0% (±6.9%) and 82.6% (±3.9%), respectively. 5-yr bRFS rates for STD vs HFX pts receiving no AD were 63.8% (±12%) vs 85.9% (±6.2%), respectively. For pts undergoing neo-adjuvant AD, the 5-yr bRFS rates with STD vs HFX CRT were similar (78.1% ± 14.7% vs 84.0% ± 7.7%) as those noted in the adjuvant AD pts (78.8% ± 5.5% vs 80.2% ± 5.2%).

Conclusion: The 5-yr bRFS rate observed with HFX CRT appears higher than STD CRT. Despite the limited median follow up available, these data can have intriguing implications in the current radiobiological discussion on the proper fractionation to be adopted in prostate cancer.

854

POSTER

Postoperative dilemma of rising PSA levels in patients with prostatectomy: Evaluation of 11C-Choline-PET/CT examination for radiation therapy

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Background: To optimise therapy regimes in patients with rising PSA levels after radical prostatectomy is difficult. There is no diagnostic tool for early and reliable detection of a locoregional relapse in an early stage. We studied 11-C Choline-PET/CT in 45 patients with hormonal suspicion of relapsing prostate cancer.

Material and Method: Between 07/2002 and 02/2003 45 patients (pts.) (mean age: 65.2 y) with rising PSA levels after radical prostatectomy were investigated. All patients underwent dedicated 11C-Choline-PET/CT from neck to prox. femur (GE Discovery LS). Image fused PET/CT was used to determine local relapse, lymph node (Lnn.) involvement or distant metastasis. CT detected Lnn.were measured, localised and compared to PET. In case of focal increased 11C-choline uptake the size of Lnn. was correlated to the SUV. In PET SUV was measured in case of local recurrence (LR), single Lnn. or distant metastasis (Lnn., bone) and correlated to the PSA levels.

Results: 32/45 patients were positive at PET/CT (PSA mean: 21.6 ng/dl). Local recurrence was found in 3 (PSA 2.4 ng/ml), local recurrence and intrapelvic lymph nodes in 5 patients (PSA 22.9 ng/ml), intrapelvic single nodular relapse in 11 patients (PSA 1.7 ng/ml) and distant lymphonodular metastasis, i.e. paraaortic lymph nodes and intrapelvic regional lymph nodes in 13 patients (PSA 63.9 ng/ml). 7 of these patients had also skeletal metastases. SUV was 2.3 in local recurrence (2.1 in single lymph node relapse and 3.4 in nodular conglomerates). Diameter of 22 intraabdominal lymph nodes positive at PET/CT (12.75 mm, range 4.25mm ? 25.5mm) and 45 intraabdominal nodes negative at PET/CT (11mm, range 4.00mm ? 29.75mm) was not significantly different.

Conclusion: The 11-C Choline PET/CT detects local regional relapse and distant lymphonodular as well as skeletal metastases with high accuracy above the PSA cut off of 0.5 ng/ml. 11-C Choline uptake but not CT measured size is a reliable indicator of lymphonodal involvement in prostate cancer.

855

POSTER

Detection of local recurrence by means of 11C-Choline-PET/CT after radical prostatectomy for conformal radiation therapy

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Background: After radical prostatectomy approximately 25% of men develop biochemical recurrence during long-term follow up. In case of isolated clinical local recurrence (LR) patients appeared to have a more favorable prognosis, but the diagnostic detection of these patients is difficult. The purpose of the study was to assess the utility of 11C-Choline-PET/CT in the detection of local recurrence after radical prostatectomy.

Methods: Between 06/2002 and 02/2003 10 patients (age: 66.5 y) with rising PSA levels after radical prostatectomy (RPE) and pelvic lymphadenectomy were investigated. All patients underwent dedicated 11C-Choline-PET/CT examination from neck to inguinal region (GE Discovery LS: GE Lightspeed Plus/Advance Nxi PET-Scanner). Data acquisition started 10 min after injecting 1077 Mgq 11C-Choline and a non-ionic contrast agent in bolus tracking technique. Four row multidetector helical CT, iterative CT-corrected 2-D-reconstructed PET images and fused PET/CT were employed to determine local recurrence or distant metastasis. Patient data about postoperative tumor classification (TNM, Grading, Gleason, R-classification), postop. PSA-level and PSA-level before PET/CT, kind of postoperative systemic therapy and diagnostic investigations before PET/CT were collected.

Results: All pts. before PET/CT-examination were in cN0 M0-Status. In 9/10 Patients (90%) the rising PSA-level is caused by a LR. In 3/10 pts. (30%) only a LR was detected, in 7/10 pts (70%) LR and lymph node involvement was seen. 7/10 pts. (70%) were proved by histology (n=5) or diagnostics (CT/TRUS/MR; n=2). In 3 pts. only 11C-Choline-PET/CT demonstrated the LR.

Conclusions: 11C-Choline-PET/CT differentiates between relapse and scare, so that these patients are selected for curative therapy such as surgical intervention or radiation therapy. The detection of local recurrence after radical prostatectomy by 11C-Choline-PET/CT is also possible in soft tumor masses under 2 cm.