

BRFS was 77% without MF vs 17% with MF (p 0.001)
BRFS was: PSA 0.2-1: 83%; 1.1-2: 66%; 2.1-10: 39%; >10.1: 37%. p: 0.02

Conclusion: cPET/TAC detect initial local and regional relapses that can be treated with local radiotherapy with or without hormonal therapy with good results.

EP-1343

PET-CT-related treatment changes in high risk and recurrent prostate cancer

A. Müller¹, D. Zips¹, D. Wegener¹, G. Reischl², K. Nikolaou³, C. La Fougère⁴, C. Pfannenbergl³

¹University Hospital Tübingen- Eberhard Karls University, Radiation Oncology, Tübingen, Germany

²University Hospital Tübingen- Eberhard Karls University, Department of Radiology- Preclinical Imaging and Radiopharmacy, Tübingen, Germany

³University Hospital Tübingen- Eberhard Karls University, Department of Radiology- Diagnostic and Interventional Radiology, Tübingen, Germany

⁴University Hospital Tübingen- Eberhard Karls University, Department of Radiology- Nuclear Medicine, Tübingen, Germany

Purpose or Objective: To prospectively evaluate the impact of Choline/ PSMA PET-CT imaging on management of patients with prostate cancer (PC).

Material and Methods: Fifty patients with high risk or recurrent PC received a 11Choline and/or a 68Ga-PSMA-PET-CT before radiation treatment planning within a prospective register study. Main subgroups were identified and only patients with a conventional staging before PET-CT were evaluated to compare treatment management decisions before and after PET-CT with regard to treatment intent, target volume (TV) definition, radiation dose and duration of androgen deprivation therapy (ADT).

Results: The three main subgroups fulfilling the mentioned conditions above were high risk (HR, n=17), recurrence after prostatectomy (R, n=12) and R plus salvage radiotherapy (RSR, n=7). In HRPC, TNM-changes (n=12/17) led to treatment changes (n=14) including TV-changes (n=12). In R, TNM-changes (n=8/12) resulted in treatment changes (n=8) including TV-changes (n=7). In the group after RSR, TNM-changes (n=6/7) resulted in treatment changes (n=6).

Management was changed in 82% (HRPC), 66%(R) and 85%(RSR). Of these groups (n=36) only two patients were initially stratified as M1. PET-CT led to downstaging (M0) or diagnosed only oligometastatic disease enabling curative treatment in both patients. However, in 12 patients initially planned for curative treatment detection of M1-disease (n=3/9) or newly diagnosed M1-disease (n=9/11) shifted treatment allocation to palliative therapy.

Taken together, curative treatment could be offered to initially diagnosed M1-patients (n=2). Since patients with RSR were usually in the palliative situation, PET-CT enabled in further 28% (2/7) of patients disease localization and curative treatment. However, of initially curatively planned patients (27/29) with R or HRPC, PET-CT facilitated to avoid overtreatment in ~30% (8/27) of patients due to early visualization of incurable disease. Main limitation is the absence of histological verification.

Conclusion: PET-CT had a pronounced impact on decision making and management in this group of patients with high-risk or recurrent prostate cancer. Therefore we suggest that PET-CT should be considered in the work-up in specific clinical situations.

EP-1344

Influence of surgical margins on the biochemical and radiological characteristics of the recurrence

L.G. Sapienza^{1,2}, J.D. Panichella¹, R.C. Camargo¹, A. Ernani¹, J.P. Dos Reis Junior¹, G.A. Pavan¹, H.A. Salmon¹

¹Clínicas Oncológicas Integradas COI-RJ, Radiation Oncology, Rio de Janeiro, Brazil

²A. C. Camargo Cancer Center, Radiation Oncology, São Paulo, Brazil

Purpose or Objective: To evaluate the possible impact of positive margins (PM) after surgery for prostate cancer on: I) biochemical parameters of recurrence (immediate failure rate and the time to development of biochemical recurrence) and II) the incidence of macroscopic disease at magnetic resonance image (MRI) realized before salvage radiation therapy (SRT).

Material and Methods: Data from 101 prostate cancer patients treated between 2012-13 was analyzed. Fifty (49.5 %) had MRI before SRT. PSA failure was defined as a value greater than 0.2 ng/ml after 6 weeks after prostatectomy. Cases with PSA >0.2 at the first measure 6 weeks after the surgery were categorized (no vs yes) and considered separately for the analysis of immediate failure. Categorical analysis were done using chi-square test. The time to the development of biochemical recurrence was presented in Kaplan Meier and log-Rank test was used to compare PM vs negative margins (MN) group. Mann-Whitney-Wilcoxon test was used to compare the PSA means between groups (PM vs NM / macroscopic recurrence present vs absent). The statistical analysis was done using SPSS V.20.

Results: The basic characteristics of this population were: age 66.8 years (median), initial PSA 8.0 ng/ml (median), 52.6% pT2 and 34.7% pT3. The proportions of each pathological risk group were 7%, 42% and 51% (low-risk, intermediate risk, high-risk) and 43,6% had PM (n=44). Those with PM had an increased chance of immediate PSA failure (p=0.004) and an earlier development of biochemical recurrence (23.4 months vs 49 months, p = 0.001). The mean PSA of the recurrence was 1.4 (+/- 1.7) ng/ml vs 2.6 ng/ml (+/- 6.1) (p = 0.839), for NM and PM respectively. Patients with macroscopic recurrence had a greater pre-SRT PSA: 3.5 (+/- 1.7) vs 0.8 (+/- 0.7) ng/ml. The incidence of biochemical recurrence with prostatic nodule in the MRI was not influenced by margin status (p=0.108) and marginally not influenced by pathological status (low or intermediate risk vs high risk) (p=0.062).

Conclusion: PM patients have had an earlier development of biochemical recurrence but our series did not find a significant impact of margin status on the incidence of nodule on prostatic bed. A possible delay in the detection of the recurrence in margin negative patients should be evaluated in next studies.

EP-1345

SBRT in low- and intermediate-risk prostate cancer: results of a phase II study

G. D'Agostino¹, E. Villa¹, C. Franzese¹, R. Liardo¹, G. Reggiori¹, P. Navarra¹, C. Iftode¹, F. De Rose¹, D. Franceschini¹, A. Tozzi¹, T. Comito¹, A. Ascolese¹, S. Tomatis¹, M. Scorsetti¹

¹Istituto Clinico Humanitas, Radiotherapy and Radiosurgery, Rozzano Milan, Italy

Purpose or Objective: Recent evidences has fostered the emergence of Stereotactic Body Radiation Therapy (SBRT) as a promising treatment modality for the management of localized prostate cancer. In fact, given the low alpha/beta ratio of prostate cancer, the delivery of very high radiation doses in few fractions, may even improve the therapeutic ratio in the treatment of this disease. This phase II study was aimed to evaluate the efficacy and toxicity of SBRT in a series of patients with low or intermediate risk prostate cancer.

Material and Methods: Biopsy confirmed prostate cancer patients were enrolled in this phase II trial, provided that they had the following characteristics: iPSA < 20 ng/ml, Gleason Score < 7, IPSS < 7. The treatment schedule was 35 Gy in 5 fractions, delivered every other day with VMAT technology in FFF modality. Toxicity was recorded according

to CT-CAE criteria v3.0. Biochemical failure was calculated according to the Phoenix definition.

Results: Between December 2011 and March 2015, 90 patients were enrolled (53 low risk, 37 intermediate risk). The median age was 71 years (range 48 - 82 y). The median Gleason Score was 6 (range 6-7) and the median initial PSA was 6.9 ng/ml (range 2.7 - 17.0). Acute toxicity was mild, with 32.2 patients presenting a G1 urinary toxicity and 31.1% of patients presenting a G2 urinary toxicity, mainly represented by urgency, dysuria and stranguria. A rectal G1 toxicity was found in a 15.5% of patients, while a rectal G2-toxicity was recorded in 6.6% of patients. Regarding late toxicity, a G1 proctitis was recorded in 11.1% of patients and a G1 urinary (urgency, cystitis) in 38.8%; only 2 events of G2 urinary toxicity were observed (transient urethral stenosis, resolved by a 24-hour catheterization). At a median follow up of 27 months (range 6 - 62 months) only two intermediate risk patients experienced a biochemical failure (22 and 24 months after radiotherapy, respectively). PET Choline revealed a nodal recurrence in one patient who underwent a further stereotactic radiotherapy and is now free of disease. In the other patient a local recurrence was diagnosed, associated to bone progression (rib), therefore the patient started ADT. Compliance to treatment was good, as reported by the EPIC questionnaires, which revealed a slight worsening in the urinary domains during treatment, with a return to baseline three months after treatment.

Conclusion: Stereotactic Body Radiotherapy seems to be a valid therapeutic option in low and intermediate risk prostate cancer patients, warranting an adequate control of disease, with mild toxicity profiles and good patient-reported quality of life perception.

EP-1346

Intraoperative radioterapy (IORT) in the multimodality treatment of locally advanced prostate cancer

M. Krenkli¹, D. Beldi¹, G. Apicella¹, G. Marchioro², C. Pisani¹, E. Ferrara¹, C. Perotti¹, G. Loi³, A. Volpe², C. Terrone²

¹University of Piemonte Orientale, Radiotherapy, Novara, Italy

²University of Piemonte Orientale, Urology, Novara, Italy

³University of Piemonte Orientale, Medical Physics, Novara, Italy

Purpose or Objective: The treatment for locally advanced prostate cancer is still a controversial issue and multimodality treatment can lead to treatment optimization. The aim of this study is to describe technical and clinical aspects of intra-operative radiotherapy (IORT) in patients with locally advanced prostate cancer.

Material and Methods: Between September 2005 and September 2015, a total of 110 patients were enrolled. The statistical analysis was performed in 95 patients with follow up > 12 months. Inclusion criteria were: patients age < 76 years, KPS > 90, initial PSA (iPSA) > 10 ng/ml, clinical staging > cT2c according with TNM, probability of organ-confined disease < 25% according to MSKCC nomogram. Median age was 66.9 years (range 51-83), median iPSA was 14.6 ng/ml (range 2.0-80) and median Gleason Score (GS) was 8 (range 4-10). After surgical exposure of the prostate, IORT was delivered by a dedicated linear accelerator (Mobetron, Intraop, Sunnysvale, CA) with 30° beveled collimator, using an electron beam of 9 or 12 MeV to a total dose of 12 Gy. IORT was followed by radical prostatectomy and regional lymph node dissection. Rectal dose was measured "in vivo" by radio-chromic films placed on a rectal probe. All cases with pathological staging pT3a, positive margins (R1) or metastatic lymph nodes (N1) received postoperative external beam radiotherapy (EBRT), delivered to surgical bed with 3D conformal technique or intensity modulated radiation therapy to a total dose of 46-50 Gy (2Gy/fraction). Patients with pT3 or pT4 disease and/or N1 received adjuvant hormonal therapy.

Results: IORT procedure lasted in average 30 minutes (range 15-50). No major intra- or post-operative complication occurred. Median dose to the anterior rectal wall was 4.32 Gy (range 0.06-11.3). Pathological stage was: 30 pT2, 60 pT3, 5 pT4. 55/95 (57.9%) patients were R1 and 27/95 (28.4%) patients were N1. Median post operative PSA was 0.06 ng/ml (range 0-4). Post-operative radiotherapy was delivered to 73/95 patients (76.8%) with pathological staging pT3a or R1. Hormone therapy was prescribed to 61/95 patients (64.2%). Acute toxicity was: 16 G2 (9 GU; 7 GI), 2 G3 (1 GU; 1 GI). Late toxicity was: 11 G2 (5 GU, 6 GI), 4 G3 (2 GU; 2 GI). No G4 acute or late toxicity was observed. Four patients died of prostate cancer. With a median follow-up of 61.5 months (range 12-108), 26/95 patients experienced biochemical failure. Overall biochemical free survival (BFS) was 50% at 5 years. 5 years BFS was 78% and 42 % in high and very high risk classes according to NCCN classification. No evidence of failure in the prostate surgical bed was observed.

Conclusion: IORT during radical prostatectomy is a feasible procedure and allows to deliver safely post-operative EBRT to surgical bed without a significant increase of toxicity. With a median follow-up of 61.5 months, biochemical control seems to be optimal in particular for high risk patients.

EP-1347

Could "radical" RT be a reasonable choice in bone oligometastatic prostate cancer patients?

C.L. Deantoni¹, C. Cozzarini¹, A. Fodor¹, B. Noris Chiorda¹, P. Mangili², M. Picchio³, E. Incerti³, I. Dell'Oca¹, P. Passoni¹, C. Fiorino², R. Calandrino², N. Di Muzio¹

¹IRCCS San Raffaele Scientific Institute, Radiotherapy, Milano, Italy

²IRCCS San Raffaele Scientific Institute, Medical Physics, Milano, Italy

³IRCCS San Raffaele Scientific Institute, Nuclear Medicine, Milano, Italy

Purpose or Objective: To evaluate toxicity, clinical outcome and predictive response factors in patients with prostate cancer (PCa) oligometastatic (<2 lesions) to the bone at diagnosis, simultaneously treated with curative radiotherapy (RT) to primary tumor/prostatic bed (PB) and bone metastases.

Material and Methods: From February 2009, 33 patients with oligometastatic PCa (OPC), 18 of whom previously treated with radical prostatectomy and pelvic lymphadenectomy, underwent RT at "radical" dose to bone metastases (median 2-Gy equivalent dose, EQD2, >40 Gy, for $\alpha/\beta=2,2$), to the pelvic \pm lombo-aortic nodes (51,8 Gy for $\alpha/\beta=1,5$), and to the PB (median EQD2 72,4 Gy) or the prostate (median EQD2 88 Gy) within the same RT course in association with androgen deprivation therapy (ADT). To evaluate the possible role of adding a local treatment (radical dose RT to all sites of disease) to ADT, the biochemical relapse-free survival (bRFS), clinical failure-free survival (CFFS) and freedom from distant progression (FFDP, when the disease occurred in a different site from that treated) were considered, starting from the first day of RT.

Results: After a median follow-up of 20.2 months, 3 patients died, 1 were lost to follow-up, 2 showed in-field and 7 out-of-field progression, 3 have ended ADT and are still free from any progression. Acute toxicity was very mild with no Grade >2 events, and only 2 serious late events, 1 G3 and 1 G4 late urinary toxicity, only in the hypofractionated postoperative cohort. With respect to bone irradiation, no Grade toxicity were reported. Median bRFS, CFFS and FFDP were 15,8 months, 16,9 months and 17,2 months, respectively. When considering FFDP, the most significant clinical endpoint to evaluate the role of RT in this subset of patients, the most predictive factors were: PSA at diagnosis (iPSA>24,2 ng/ml, most-informative cut-off, AUC 77%, p=0,008) (HR=4.2, p=0,05), 2 vs 1 metastasis (HR=2.87, p=0,1), and no previous prostatectomy (HR=3,19, p=0,08), while no role emerged for the site of metastases (pelvic or not). When stratifying