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Purpose or Objective: Acute urinary unwished effects of pelvic irradiation may impact on quality of life of patients undergoing radiation therapy on the pelvis. Neoplasms such endometrial, cervical, rectal, and anal cancer requires irradiation of relevant pelvic volumes. In this study we tested Cystoman, a dietary integrator of D-mannosium, cranberry and vitamin C, as prophylactic therapy for the development of acute urinary side effects.

Material and Methods: Fifty five patients undergoing pelvic irradiation were randomly assigned to take 2 tablets/day of Cystoman or not from the beginning of radiation therapy. Radiation therapy consisted of 45 - 50.4 Gy on the pelvis given by 1.8 Gy daily fractions with 3D conformal radiation therapy. The patients were weekly checked for urinary symptoms. Urine culture was performed before and after the treatment.

Results: Between November 2014 and September 2015, 55 consecutive patients were enrolled in the study. Median age was 65 year, 11 were affected by cervical cancer, 9 endometrial, 31 rectal, and 4 anal cancer. Twenty two patients were treated preoperatively and 33 postoperatively. Urinary toxicity appeared at the second week in 3/28 patients in Cystoman group and 11/27 in the control group (p=0.02). However by the end of the treatment 8/28 and 13/27 patients had urinary toxicity in the Cystoman and control group, respectively (p=0.1).

Conclusion: Our study suggests that Cystoman delays the radio-induced acute urinary toxicity presentation and could ameliorate the toxicity profile of the pelvic irradiation.

Electronic Poster: Clinical track: Skin cancer / malignant melanoma

EP-1391
Total skin irradiation using helical tomotherapy: a novel experience and report of three cases
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Purpose or Objective: Description of three cases of total skin irradiation for cutaneous T-cell lymphoma using helical TomoTherapy (Accuray, Sunnyvale, CA).

Material and Methods: In 2015, three patients with refractory T-cell lymphoma underwent total skin irradiation using invers-planned helical tomotherapy. The first case was a 23-year-old woman diagnosed as primary cutaneous gamma delta T-cell lymphoma. She had received 24 Gy of irradiation in 12 fractions with total skin electron beam irradiation technique 10 years ago, and some parts of her skin were irradiated with 24 Gy in 12 fractions with local electron beam irradiation within 3 years. The third case was a 52-year-old man diagnosed as mycosis fungoides. No bolus was added around the body. Because of the long length of treatment of the body in TomoTherapy, treatments were delivered to three parts of the body (trunk, head and neck, and legs). Irradiation was not performed in two or three parts on the same day. Each plan was generated with a prescription dose of 10 Gy in 10 fractions. The planning target volume (PTV) was the body surface with 5mm margins of internal and external lesions of the skin. The third patient had several swelling lymph nodes, so the PTV was the body surface and swelled lymph nodes with their margins.

Results: TomoTherapy technique was created that enabled delivery of the prescription dose to PTV with a relatively sharp drop-off of dose at depth. The calculated mean doses for the organs at risk were 1.96, 2.08, 2.12, 2.19, and 2.27 Gy for the lung, heart, liver, kidneys, and bones, respectively. Using the couch-indexed Vac-Lok cushion and head mask, inter- and intra-fractional patients motions were minimized. All three patients experienced edemas of fingers and toes, and lost much of their hair. Myelosuppression occurred in two of the three patients. Because of grade 4 myelosuppression, the second patient who was treated total skin electron beam irradiation 10 years ago, was treated with blood transfusion during the treatment. All tumors were reduced during and after the treatment.

Conclusion: Using the TomoTherapy technique in total skin irradiation, we were able to achieve good coverage of the PTV and good sparing of organs at risk, including the bones. This treatment method, including the prescription dose and treatment duration, will be needed further research.

Purpose or Objective: After more than 30 years, Ipilimumab was the first agent which showed a survival benefit for the treatment of metastatic melanoma. However, only about the 20% of patients have a long-term survival benefit. The combination of ipilimumab with other therapies might improve its efficacy. Abscopal effect refers to a regression of metastatic lesions distant from the primary site of radiotherapy (RT). This systemic response is observed in patients who received ipilimumab. Here we reported the outcomes from patients treated in the ipilimumab Italian expanded access program (EAP) who received RT after ipilimumab progression.

Material and Methods: Patients with advanced melanoma who had received RT after ipilimumab progression were eligible for analysis. Radiotherapy was available upon physician request for patients who failed ipilimumab therapy and for whom no other therapeutic options were available.

Results: 21 out of 95 patients treated with ipilimumab in the Italian EAP were eligible for the analysis. The median age was of 58 years (range 21-77); the progression free survival (PFS) from ipilimumab treatment was 4 months (range 3-6), while the time from the end of treatment with ipilimumab and RT was of 5 months (range 4-8). RT was performed on brain in 13 patients: 8 were treated with whole-brain RT and 5 patients with stereotactic RT. Other RT treatment included bone, metastatic distant lymph nodes, sub-cutaneous metastasis, spinal cord metastasis. The median doses was 30 Gy (range 30-50). A local response to RT was detected in 13 patients while 8 patients did not show any local regression. The abscopal response has been detected in 11/21 patients: in details, we observed 9 abscopal partial response, 2 abscopal stable disease, and 10 progression. The median of occurrence of the abscopal response was of 1 month (range 1-4). The median overall survival (OS) for all the 21 patients was of 13 months (range 6-26). The median OS for patients
with and without abscopal responses was respectively of 22.4 months (range 2.5-50.3) and 8.3 months (range 7.6-9.0). 11 out of 13 patients with local response showed an abscopal effect.

**Conclusion:** The RT after ipilimumab treatment may be an option for further potentiate its effect. Local response to RT might be predictive for the abscopal response and outcome. Further studies are warranted in this field to better understand and define the role of RT in combination or sequencing with ipilimumab treatment.

**EP-1393**

**Radiological responses of melanoma brain metastases to radiosurgery and patient prognosis**

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**Purpose or Objective:** The aim of this study was to analyze differences in radiological responses of melanoma brain metastases after Gamma Knife radiosurgery and their correlation with patient survival.

**Material and Methods:** We retrospectively analyzed 78 patients treated with Gamma Knife radiosurgery for melanoma brain metastases between 2009 and 2015 in the Radiosurgical centre (Saint-Petersburg, Russia) and subjected to follow-up MRI examinations. Patients receiving BRAF inhibitor therapy or ipilimumab were not included in the study. The group consisted of 55 men and 39 women with a mean age of 52 years. The median KPS was 80%.

According to RPA, 14 patients were in Class I, 61 patients in Class II, and 3 patients in Class III. Most of the patients presented with multiple brain metastases (87%). Radiosurgery was performed with Gamma Knife 4C and Perfection units; the mean dose delivered to the tumor margin was 20 Gy at 50% isodose. After treatment, the patients underwent control MRI examination with standard protocols (2 mm T2 and 1 mm T1 with double contrast enhancement) at 8 weeks and at regular 3-month intervals thereafter. MR images were analyzed with Gamma Plan software. Volumetric measurements of metastases on pre- and post-treatment images were performed in order to determine different types of radiological response. We divided the patients into groups according to the type of radiological response and compared Kaplan-Meier survival curves in these groups with the long-rank test.

**Results:** We found that patients with melanoma brain metastases had different radiological reactions to Gamma Knife radiosurgery. We distinguished several types of radiation response: sustained decrease in tumor volume, prolonged stabilization of tumor volume, transient increase in tumor volume due to intratumoral bleeding with subsequent decrease in tumor size, transient increase in tumor volume due to radiation-induced necrosis followed by tumor shrinkage. Statistical analysis revealed that a rapid decrease in tumor volume was associated with poor prognosis. Median overall survival of this group of patients was about two times less compared with patients whose radiation response developed slowly after the first 2 months of radiosurgery (p < 0.0001). Stratification to RPA classes revealed that patients with a rapid response have poorer survival prognosis than those with a slow response in the corresponding RPA classes.

**Conclusion:** Melanoma brain metastases showed different radiological responses to radiosurgery. Rapid shrinkage of brain metastases is associated with poor survival, which may indicate more aggressive biological behavior of this tumor subtype. Different radiation sensitivity of melanoma brain metastases to Gamma Knife radiosurgery may be associated with molecular characteristics of cell subpopulations, which determine biological tumor behavior and affect patient prognosis.

**EP-1394**

**Radiotherapy for adult T-cell leukemia-lymphoma: a single institutional experience**

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**Purpose or Objective:** Adult T-cell leukemia-lymphoma (ATLL) is a rare disease and a peripheral T-cell malignancy associated with human T-cell lymphotropic virus type I (HTLV-1) infection. ATLL treatment is based on subclassification, and intensive multidrug chemotherapy regimens are often used for aggressive subtypes. However, disease progression occurs in most of patients. There are only a few reports for the radiotherapy in patients with ATLL. Therefore, the role of radiotherapy for ATLL is not well investigated even for the palliation. The purpose of this study was to evaluate the efficacy and toxicity for the radiotherapy in patients with ATLL.

**Material and Methods:** Between April 1983 to October 2013, 44 patients with 205 ATLL tumor lesions were treated with radiotherapy at our institution. Sites of tumor lesions were as follows; 184 lesions were in the skin, 13 lesions in the lymph nodes, 6 lesions in the central nervous system, and 2 lesions in the bone. Acute type on ATLL subtypes was seen in 8 patients, chronic type in 7 patients, lymphoma type in 10 patients, smoldering type in 15 patients and others in 4 patients. Median total dose of radiotherapy was 29Gy (range, 2-60Gy), and the median fractionated dose was 3Gy (range, 1-7Gy). For the skin tumor lesions, 45Gy in 15 fractions was selected in 33 lesions, 30Gy in 10 fractions in 38 lesions, 28Gy in 4 fractions in 21 lesions and 20Gy in 5 fractions in 19 lesions and others in 73 lesions. Only 4 of 44 patients were treated with total skin irradiation, and the remaining 40 patients received conventional radiotherapy for local tumor. Efficacy and toxicity of the radiotherapy for ATLL were retrospectively evaluated, and the predictors of a long-term survival were analyzed.

**Results:** The median follow-up period was 206 days. Objective tumor response rates were 98%. Four of 6 tumor lesions with stable disease or progressive disease on objective tumor response were associated with aggressive subtypes or tumor sites of the central nerves system. In-field recurrence after radiotherapy was recognized in 3 (2%) lesions. Two-year and 5-year overall survival rates were 76% and 44%, respectively. Median overall survival time in patients with indolent subtypes (chronic or smoldering type) of ATLL was 23 months, while in patients with aggressive subtypes (acute or lymphoma type) was 6 months, and the difference was significant. Acute toxicities of Grade 2 dermatitis were seen in 3 patients. Acute toxicity of Grades 3-5 was not observed. Late toxicity of Grade 2 was also not recognized.

**Conclusion:** Radiotherapy for ATLL was mainly used for the skin lesion and well tolerated, and could achieve excellent local tumor control without inducing severe toxicity. Radiotherapy should be selected to improve the quality of life, and be incorporated into combined modality therapy for ATLL.

**EP-1395**

**Choroidal melanoma: is radiosurgery more efficient?**

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**Purpose or Objective:** Choroidal melanoma is a rare disease and there are only a few reports for the radiotherapy treatment. Therefore, the role of radiotherapy for ATLL is not well investigated even for the palliation. The purpose of this study was to evaluate the efficacy and toxicity for the radiotherapy in patients with ATLL.