

recovery in QOL scores over time was deemed statistically significant ( $p < 0.0001$ ). A clinically and statistically significant improvement in physical (78.7 vs. 87.7,  $p = 0.05$ ), emotional (66.5 vs. 78.5,  $p = 0.05$ ) and social functioning (61.5 vs. 82.2) was observed in IMRT cohort. The patients treated with IMRT had fewer patients having symptoms of appetite loss (30.4 vs. 12.1,  $p = 0.01$ ) and diarrhea (24 vs. 9;  $p = 0.04$ ). The use of IMRT was also associated with reduced lymphedema (15.2 vs 3.2;  $p = 0.05$ ). However no difference was observed in sexual and global QOL.

**Conclusion:** Early results show improved functional scales and reduced symptom scales with use of postoperative IMRT when compared to 3DCRT. Further long term follow up is needed to clearly define the impact of IMRT on patient reported outcomes.

#### PO-0731

Quality of life of women after endometrial cancer: the role of the vaginal dilator

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**Purpose or Objective:** Pelvic radiotherapy (RT) provides good local control in women with endometrial cancer (EC), but may also cause substantial acute and chronic adverse effects, which in turn may reduce patients' (pts) quality of life (QoL).

**Material and Methods:** 293 pts who were treated with adjuvant pelvic RT for EC at our department between 2004 and 2012 were asked to fill in questionnaires regarding their QoL (EORTC QLQ-C30, EN24). Median follow-up was 6 years. 112 pts agreed to participate. 42 (38%) used the vaginal dilator (VD; group A) as prescribed, 62 (55%) did not use the VD (group B), 8 (7%) preferred not to answer this question. The values of the function and symptom scales of the pts were statistically analyzed and compared between the two groups as well as compared with reported values of normal populations.

**Results:** The values of the function and symptom scales are generally lower in our pts compared to an age adapted normal population (NP). Pts reported statistically better values for sexual interest and sexual activity compared to NP ( $p < 0.0001$ ), while sexual enjoyment was significantly reduced ( $p < 0.0001$ ). Vaginal dryness and pain during intercourse ( $p < 0.00001$ ) were the leading complaints. Sexual interest and activity increased with age ( $p < 0.0005$ ) in contrast to NP. Pts in group A were younger than in group B ( $p = 0.016$ ). Group A reported significantly less pain in the back and pelvis ( $p = 0.005$ ) as well as less muscular pain ( $p = 0.013$ ). Pts using VD > 1 year had better values for sexual interest ( $p = 0.022$ ) and sexual activity ( $p = 0.013$ ) compared to < 1 year. Pts with vaginal brachytherapy (IVB) only had a better global health status compared to pts with additional external beam RT, while IMRT was better than 3D-conformal RT ( $p < 0.0017$ ). Pts with higher acute GI toxicity reported more chronic GI symptoms ( $p = 0.002$ ) with diarrhea ( $p = 0.009$ ), nausea/vomiting ( $p = 0.032$ ) as well as poorer social functioning ( $p = 0.036$ ). Pts with higher acute GU toxicity reported more pain during intercourse ( $p = 0.044$ ).

**Conclusion:** Pelvic RT substantially affects QoL even years after treatment. Women participating in our study were more sexually active than the normal population. Therefore sexuality is important for QoL in women after endometrial cancer, even at higher age. The vaginal dilator is capable of improving chronic pelvic pain, sexual interest and sexual activity when used longer than one year. Pts with higher acute toxicities also exhibit more chronic problems. IMRT seems to be beneficial for long-term QoL.

#### PO-0732

Predictive factors for inter-fraction uterine motion in definitive radiotherapy for cervical cancer

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**Purpose or Objective:** Uterine motion is a challenging issue in applying intensity-modulated radiotherapy (IMRT) for patients with cervical cancer. In this study we quantified the inter-fraction uterus movement during a course of definitive radiotherapy (RT) to determine the predictive factors affecting uterine motion.

**Material and Methods:** A total of 343 cone-beam CT (CBCT) scans from 43 patients who underwent definitive RT were analyzed retrospectively. The median age of the patients was 58 years (range, 34-85 years). The FIGO stages were as follows: IB1, 9; IB2, 6; IIA, 1; IIB, 12; IIIB, 10; and IVA, 5. Cervical and corpus movement (mm) were measured for each direction (cranial [C], anterior [A], left [L] and right [R] for the uterine corpus; and A, posterior [P], L, and R for the cervix) by comparing planning CT and CBCT. The mean movement of each patient was analyzed according to the following factors: age; tumor stage; BMI; area of visceral fat in the umbilical plane, as assessed by CT; circumference of abdominal girth; history of abdominal surgery; uterine orientation (anteverted or retroverted); size of the uterus; tumor diameter; and tumor invasion to the corpus.

**Results:** The mean movement of the corpus was as follows: C, 5.8 mm (range, 0-29.0 mm); A, 5.2 mm (range, 0.3-37.7 mm); L, 2.4 mm (range, 0-10.6 mm); and R, 2.5 mm (range, 0-9.2 mm). The mean movement of the cervix was as follows: A, 3.2 mm (range, 0-11.4 mm); P, 2.4 mm (range, 0-12.5 mm); L, 1.5 mm (range, 0-9.2 mm); and R, 1.6 mm (range, 0-7.3 mm). There was a significant correlation between abdominal girth and anterior movement of the corpus ( $r = -3.6$  and  $p = 0.029$ ). Tumor invasion to the corpus had a negative correlation with posterior movement of the cervix with marginal statistical significance ( $p = 0.05$ ).

**Conclusion:** The study demonstrated that abdominal girth and tumor invasion to the corpus were predictive factors of uterine motion during definitive RT for patients with cervical cancer.

#### PO-0733

Treatment response evaluation with ADCmean in cervical cancer patient treated with chemoradiotherapy

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**Purpose or Objective:** The aim of this study is to investigate the ADCmean of the primary tumor to evaluate their correlations with the recurrence and survival rates in patients with primary cervical cancer before and after definitive CRT.

**Material and Methods:** The data of 44 patients with histologically proven squamous cell carcinoma of cervix was retrospectively evaluated. All patients had multi-parametric pelvic MR imaging (CE-MRI and DW-MRI) and 18F-FDG PET/CT for initial staging prior to treatment and also multi-parametric pelvic MR imaging after treatment at our Institution between February 2009 and May 2014. ADC response was measured by the proportion of ADC changes between pretreatment and posttreatment ADC measured in DW-MRI. The patients were divided into groups based on the pretreatment and posttreatment ADCmean of the primary tumor cutoff values derived from the ROC curves. Disease-

free survival (DFS) and OS rates were calculated using the Kaplan-Meier method. Multivariate analyses were performed using the Cox proportional hazards model.

**Results:** The median follow-up for all patients and surviving patients was 25 months (range, 3-75 months) and 28 months (range, 15-75 months), respectively. Post-treatment MRI images were taken within a median of 3.2 months (range, 2.8-4.1 months) after the completion of CRT. At post-treatment MRI, 41 patients (93%) exhibited a complete response. The mean pretreatment and posttreatment ADCmean were  $0.882 \pm 0.096 \times 10^{-3}$  mm<sup>2</sup>/sec,  $1.159 \pm 0.168 \times 10^{-3}$  mm<sup>2</sup>/sec, respectively. Median percent ADC change was 33.7% (5.0 - 70.0%). The analyses identified pretreatment ADCmean of the primary tumor cutoff values of  $0.878 \times 10^{-3}$  mm<sup>2</sup>/sec for recurrence (area under the curve [AUC] = 0.818,  $p < 0.001$ ; 95% CI, 0.690-0.946, sensitivity 86.4%, specificity 72.7%), posttreatment ADCmean of the primary tumor cutoff values of  $1.132 \times 10^{-3}$  mm<sup>2</sup>/sec for recurrence (AUC = 0.810,  $p < 0.001$ ; 95% CI, 0.684-0.936, sensitivity 77.3%, specificity 72.7%), ADC change cutoff values of 32.8% for recurrence (AUC = 0.810,  $p < 0.001$ ; 95% CI, 0.683-0.937, sensitivity 77.3%, specificity 68.2%). In a multivariate analysis, pelvic lymph node metastasis and pretreatment ADCmean were significant prognostic factors for both OS and DFS. Additionally, ADC change between pretreatment and posttreatment DW-MRI was significant factor for OS.

**Conclusion:** Our findings provide evidence that posttreatment low ADCmean of the primary tumor is a useful clinical prognostic biomarker for recurrence and survival in patients with cervical cancer.

#### PO-0734

Justgin in the prevention of radio-induced vaginal mucositis

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**Purpose or Objective:** Radiation therapy on the pelvic region in women may induce disturbing vaginal irritation impacting on patients quality of life. We tested a hyaluronic acid based vaginal washing (Justgin) in the prevention of vaginal mucositis in patients treated with external beam radiation therapy for pelvic neoplasms.

**Material and Methods:** Fifty eight female patients affected by uterine tumors and undergoing radiation therapy on the pelvic region were considered for the study. Median age was 58. Twenty eight patients were affected by endometrial cancer, while 30 were affected by cervical cancer. Radiation therapy was delivered by 6 MV X ray of a linear accelerator with 4 fields 3D conformal radiation therapy with a dose of 45-50.4 Gy in 25-28 daily 1.8 Gy fractions. Group A (28 patients) used Justgin every other day, and 30 patients (group B) did not use any prophylactic therapy. Patients were visited and interviewed about vaginal discomfort or symptoms every week.

**Results:** At the end of radiation therapy 13/28 patients of group A and 27/30 of group B, developed vaginal toxicity of any grade ( $p = 0.0005$ ). Overall, however the toxicity was mild or moderate in all patients.

**Conclusion:** Our study suggests that a vaginal washing with hyaluronic acid (Justgin) can reduce the incidence of the vaginal acute symptoms induced by external beam irradiation in women affected by uterine cancer.

#### PO-0735

Prognostic value of microRNA-205 in endometrial cancer patients treated with adjuvant radiotherapy.

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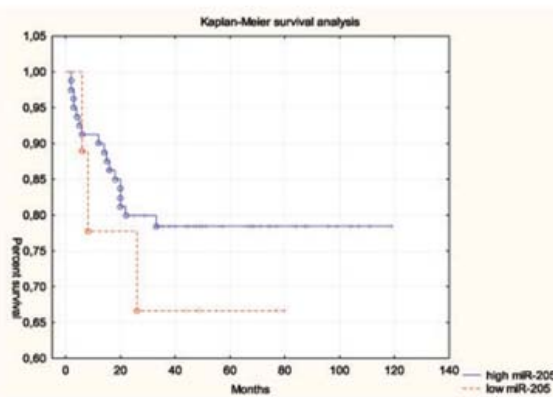
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**Purpose or Objective:** Endometrial cancer (EC) is the leading malignant tumour occurring in the female genital tract. miRNAs are small non-coding RNAs that have a broad impact on cancer progression. The aim of our study was to define tissue miRNA-205 expression levels, which could potentially serve as a prognostic marker in EC. We investigated miRNA-205 profiles in regard to clinicopathological characteristics of patients treated with adjuvant radiotherapy from 2002 until 2014.

**Material and Methods:** Expression profiling of miRNA-205 was performed in EC tissues from patients who were submitted to adjuvant radiotherapy after hysterectomy, according to the International Federation of Gynecology and Obstetrics (FIGO) guidelines. 90 patients were included in the study. The median follow-up period was 46 months (min.2 months;max.119 months). We analyzed the paraffin-embedded tissue samples and identified the areas of EC. We extracted total RNA from 90 EC samples. The reference group was constituted by 10 paraffin-embedded healthy endometrial tissue samples. Spectrophotometric assessment of the total RNA concentration was performed. cDNA was synthesized from total RNA with high capacity cDNA synthesis kit and miRNA-specific primers (miR-205 and internal control RNU6b). The expression of the miRNA-205 was determined using real-time quantitative PCR. The expression level of miRNA-205 was calculated  $\Delta\Delta CT$  values based on the internal control and plotted as relative value (RV).

**Results:** Our results indicate that the expression of miRNA-205 was significantly higher in EC samples ( $p = 0.000158$ ). The expression of miRNA-205 was differentiated considering different grading levels. The lowest miRNA-205 expression was observed in grade 3 ( $p = 0.02$ ). There was no correlation between FIGO stages of EC and miRNA-205 expression ( $p = 0.23$ ). When we divided patients into two subgroups: advanced EC (III, IV FIGO) and non-advanced EC (I,II FIGO) it turned out that the expression levels of miRNA-205 were significantly lower in the advanced EC patients group ( $p < 0.045$ ). The miRNA-205 expression was lower when there was over 50% invasion of the myometrium ( $p < 0.038$ ). Kaplan-Meier survival curves were generated to examine the relationship between the expression levels of miRNA-205 and patient's survival rate. Its analysis revealed that high levels of miRNA-205 are associated with longer survival (fig.1).



**Conclusion:** Increased miRNA-205 expression is a positive prognostic factor. Lower levels of miRNA-205 are characteristic of more advanced stages of EC.