Material and Methods: Thirty-four patients were included in a period from 1994 until 2013. Patients' charts were reviewed to obtain patients', treatment and tumor characteristics. DVH parameters were analyzed after reconstruction of the original brachytherapy plan plus delineation of intermediate risk CTV (CTVIR) and organs at risk. The target volume at time of BT was the GTVres and was defined by the treating doctor based on clinical examination and CT scan. The CTVIR was defined by the tumor extension at time of diagnosis. Survival rates were calculated using the Kaplan-Meier method. Morbidity was scored by CTCAE v3.0.

Results: Nine (26%) patients had FIGO stages I; 13 (38%) II; 5 (15%) III and 7 (21%) IVA. Median age at diagnosis was 68 years (33-91). Median follow-up was 37 months (3-224). Thirty-two patients received whole pelvic external beam radiotherapy (EBRT) to a median dose of 46 Gy (45-50.4 Gy), followed by BT in 31 patients; two patients received BT alone. The median D90 and D98 of the GTVres were 68 Gy and 67 Gy respectively, with a median V100 of 88%. The median D90 and D98 of the CTVIR were 65 Gy and 61 Gy respectively, with a median V100 of 62%. Complete remission at 3 months was achieved in all but one patient. Overall survival (OS) rates at 2- and 5-years were respectively 76% and 41%. Eight (24%) patients had any grade ≥3 toxicity. Local recurrences were seen in seven (21%) patients of whom three had an isolated local recurrence. Patients' and treatment characteristics of this group are shown in Table 1. Although the coverage of the GTVres seemed adequate, in retrospect it was often disputable if the tumor at BT was fully covered due to poor visibility of the tumor on CT scan.

Figure 1

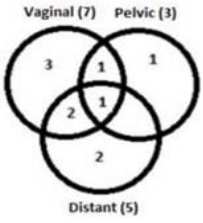

Table 1

Table 1. Patient tumour and treatment characteristics of 7 patients with local recurrence.

LN: lymph node, LF= Local failure, SCC: squamous cell carcinoma, AC= adenocarcinoma, CT= chemotherapy

	Year of diagnose	Age	Histology	FIGO stage	LN	Location	Treatment	Applicator
Local failure #1	2005	56	SCC	IVa	yes	entire length of the vagina, bladder invasion	EBRT+BT+chemo	interstitial needles
Local failure #2	2004	73	SCC	IVa	yes	entire length of the vagina	EBRT+EBRT boost+chemo	No BT
Local failure #3	2005	82	SCC	II	no	entire length of the vagina	EBRT+BT	intra-uterine tandem + interstitial needles mould
Local failure #4	2008	59	SCC	II	no	upper and middle third of the vagina	EBRT+BT+chemo	
Local failure #5	2009	34	AC	I	no	lower third of the vagina	Surgery+BT	interstitial needles
Local failure #6	2009	61	SCC	I	no	lower third of the vagina	EBRT+BT	Multichannel-cylinder
Local failure #7	2011	63	SCC	III	yes	lower and middle third of the vagina	Excision LN, EBRT+EBRT boost+BT+chemo	Multichannel-cylinder

Conclusion: The combination of EBRT and BT with or without concomitant chemotherapy provides reasonable outcomes in terms of tumor control and toxicity. However, there is still room for improvement. This study was too small to illustrate clear dose-effect relationships. In general, the prescribed dose on target at time of BT (GTVres) seemed low. In addition, coverage of the CTVIR was poor, which can however be explained by the fact that until recently our target at BT was exclusively based on GTVres. Finally, the use of MRI at time of BT seems necessary to better define the target.

EP-1331

Cancer of uterine cervix: PET-CT, IMRT and HDR.

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Purpose or Objective: To evaluate the treatment results, and complication rates in patients with locally advanced cervical cancer after external beam radiotherapy (EBRT) and high-dose rate (HDR) brachytherapy with dose escalation.

Material and Methods: All patients with locally advanced cervical cancer (FIGO: IB 7 patients, II 10 patients, III 7 patients, IV 4 patients) treated with radical radiotherapy in our center from 2007 to October 2015 were reviewed. Twenty eight patients were treated with EBRT using intensity-modulated radiation therapy (IMRT) technique following by HDR brachytherapy +/- chemotherapy. Planification included CT (50%) or PET-CT (50%) for GTV delineation. The most common prescription was 50.4 Gy (1.8Gy per fraction) for pelvic lymph nodes +/- paraaortic lymph node with concomitant boost up to 60, 48 Gy (2,16Gy per fraction) for macroscopic nodal disease and parametrium affectation. HDR brachytherapy was applied using tandem (25 Gy in 5 fractions) in most patients. Toxicity was assessed according to RTOG-EORTC criteria. All statistical analysis was performed using SPSS vs 22.0.

Results: There was no grade 3 acute toxicity associated with EBRT. Only one case of grade 4 acute toxicity was observed after HDR gynecological brachytherapy. The median age was 51 years (range 39 – 81). The median of follow up was 30 months (range 4 – 85). The actuarial progression-free survival was 77% at 36 months. Median time to local progression has not been reached. The median overall survival was 30 (range 4-85) month.

Conclusion: Radical radiotherapy +/- chemotherapy is still a standard treatment in locally advanced uterine cervical cancer with good local control and global survival. Dose escalation is possible using PET-CT and IMRT which allow *better conformation and better tolerance.*

EP-1332

Clinical results of Nimotuzumab Plus DDP and concurrent radiotherapy for primary cervix cancer

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Purpose or Objective: To determine clinical efficacy and toxicity of weekly nimotuzumab plus cisplatin concurrent with intensity-modulated radiotherapy in Chinese women with locally advanced cervical cancer.

Material and Methods: Between December 2013 and July 2015, a total of 27 patients with primary carcinoma of the cervix, FIGO stage IB1 to IVa, squamous cell carcinomas confirmed by histology were enrolled into this study. 26 patients received intensity modulated radiotherapy and 5 ~ 6 fractions HDR brachytherapy, 1 patient received intensity modulated radiotherapy followed by surgery because she had rectum carcinoma at the same time. Chemotherapy scheme was 200 mg nimotuzumab and 40 mg/m2 cisplatin weekly for six cycles. 2 patients (ages: 78 ~ 79) received only 200 mg nimotuzumab weekly for six cycles. The patients were

monitored for acute toxicity using the Common Toxicity Criteria, version 3.0 and late toxicity using the RTOG/EORTC.

Results: 3° (9/27) hematologic toxicity, principally neutropenia (9/27) and thrombocytopenia (2/27), occurs late cycles. No grade 4 toxicity occurred. 2 patients (ages: 78–79) finished 200 mg nimotuzumab weekly for six cycles with 1° hematologic. Others finished 5 ~ 6 cycles chemotherapy. All of patients finished radiotherapy in 7 ~8 weeks. The median follow-up was 9.5 months (3 ~ 22). At 4 months, 24 patients had attained complete response (23 CR, 1 pCR), 3 patients had achieved partial response (PR). 2 of 3 patients who had PR appeared local recurrent at 8 months and 9 months respectively. Local control rates were 92.6 %（25/27）. All of patients are still survive. 1 patient had haemorrhagic radiation proctitis at 7 months.

Conclusion: Combination nimotuzumab 200 mg and DDP 40 mg/m2 weekly for six cycles concurrently with intensity-modulated radiotherapy can be safely administered in Chinese women. Primary result showed a good clinical outcome. We need continue follow-up. Further development to determine if the combination will help yield a survival benefit.

Electronic Poster: Clinical track: Prostate

EP-1333

PSA kinetics after hypofractionated stereotactic body radiotherapy for localised prostate cancer

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Purpose or Objective: stereotactic body radiotherapy (SBRT) has emerged as an effective treatment for localized prostate cancer. However, prostate-specific antigen (PSA) kinetics after SBRT has not been well characterized. The objective of the current study is to analyze the rate of PSA decline and PSA nadir following hypofractonated SBRT in low- and intermediate-risk prostate cancer.

Material and Methods: From 2008 to 2014, thirty-six patients newly diagnosed, low- and intermediate-risk (NCCN definition) prostate cancer were treated with SBRT using Cyberknife. Total dose of 36.25 Gy in 5 fractions of 7.25 Gy were administered. No one received androgen deprivation therapy (ADT). PSA nadir and rate of change in PSA (slope) were calculated and compared.

Results: With a median follow-up of 52 months (range, 13-71), the median rates of decline of PSA were -0.359, -0.199 and -0.127 ng/mL/month, respectively, for durations of 1, 2 and 3 years after radiotherapy, respectively. The decline of PSA was maximal in the first year and continuously decreased for durations of 2 and 3 year. The median PSA nadir was 0.27 ng/mL after a median 33 months. 5-year biochemical failure (BCF)-free survival was 100% for low- and intermediate-risk patients.

Conclusion: In this report of low- and intermediate-risk prostate cancer, continuous decrease of PSA level for duration 1, 2 and 3 year following SBRT using Cyberknife resulted in lower PSA nadir. Also, SBRT leaded to long-term favorable BCF-free survival in low- and intermediate-risk prostate cancer.

EP-1334

PSA kinetics following SBRT versus conventionally fractionated EBRT for localised prostate cancer

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Purpose or Objective: Hypofractionated stereotactic body radiotherapy (SBRT) has emerged as an effective treatment for localized prostate cancer. However, prostate specific antigen (PSA) kinetics after SBRT has not been well characterized. The purpose of this study was to compare the PSA kinetics between SBRT using Cyberknife and conventionally fractionated external beam radiotherapy (CF-EBRT) in low- and intermediate-risk prostate cancer.

Material and Methods: A total of sixty-nine patients with low-and intermediate-risk prostate cancer were enrolled. 34 patients were treated with SBRT (36.25Gy in 5 fractions) using Cyberknife and 35 patients treated with CF-EBRT (45 Gy whole pelvis EBRT and boost of 25.2-30.6 Gy in 1.8 Gy fractions). PSA nadir and rate of PSA decline in PSA (slope) were calculated and compared.

Results: With a median follow-up of 53.6 months (range, 14-74), the median PSA nadir and median slope for SBRT were 0.23 ng/mL and -0.430, -0.199, -0.127 and -0.094 ng/mL/month, respectively, for durations of 1, 2, 3 and 4 years following radiotherapy. Similarly, for CF-EBRT, the median PSA nadir and median slopes were 0.37 ng/mL and -0.529, -0.138, -0.109 and -0.056 ng/mL/month, respectively. The slope of CF-EBRT was significantly different with a greater median rate of change for 1 year post radiotherapy than that of SBRT (p=0.018). Contrastively, the slopes of SBRT for duration for 2, 3 and 4 year tended to be continuously greater than that of CF-EBRT (p=0.028, p=0.058 and p=0.128, respectively). The significantly lower PSA nadir was observed in SBRT (median nadir 0.23 ng/mL) compared with CF-EBRT (median nadir 0.37ng/mL) (p=0.011). 5-year biochemical failure (BCF) free survival were 100% for SBRT and 80.8% for CF-EBRT (p=0.031).

Conclusion: Patients treated with SBRT using Cyberknife experienced a lower PSA nadir and tended to be continuously greater rate of decline of PSA for duration 2, 3 and 4 years than CF-EBRT. The improved PSA kinetics of SBRT over CF-EBRT leaded to favorable BCF-free survival. Further studies with more patients and longer follow-up duration are required.

EP-1335

Prostate cancer hypofractionation: impact of prostate gland dimension in genitourinary toxicity

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Purpose or Objective: to analyze predictors of genitourinary (GU) toxicity in a cohort of prostate cancer (PC) patients treated with moderate hypofractionation and simultaneous integrated boost (SIB) using volumetric modulated arc therapy (VMAT) technique.

Material and Methods: Clinical and dosimetric data were prospectively collected and retrospectively analyzed. Patients were stratified into low (43%), intermediate (30%) and high-risk (27%) groups. Target volumes (expanded to define the planning volumes (PTV)) were clinical target volume (CTV) 1: prostate; CTV2: CTV1 + seminal vesicles; CTV3: CTV2 + pelvic nodes. Low-risk patients received 73.5 Gy to PTV1; intermediate-risk 73.5 Gy to PTV1 and 60 Gy to PTV2; high-risk 73.5 Gy to PTV1, 60 Gy to PTV2, and 54 Gy to PTV3. All treatments were in 30 fractions. Androgen deprivation therapy (ADT) was prescribed upfront in intermediate and high risk patients. Rectal and GU toxicities were scored according to Common Terminology Criteria for Adverse Events v4.0 scoring system.

Results: From January 2012, 60 patients with localized PC were recruited in an internal protocol of moderate hypofractionation SIB schedule using VMAT technique with definitive intent. The median follow-up was 24 months (range 10 - 36 months). GU acute toxicity was recorded as follow: G0 = 16/60 (27%), G1 = 18/60 (30%); G2= 26/60 (43%); no case of toxicity≥ G3 was registered. GU late toxicity was recorded as follow: G0 = 20/60 (34%); G1 = 29/60 (48%); G2 = 11/56 (19%); no case of toxicity ≥ G3 was registered. The risk