(IPSS) in prostate cancer patients who received image-guided volumetric modulated arc therapy (IG-VMAT).
Materials and Methods: From August 2008 to November 2011, 190 consecutive prostate cancer patients were treated with IG-VMAT to a dose of 76 Gy with daily correction of the target position based on cone-beam CT imaging. The IPSS and Common Terminology Criteria for Adverse Events (CTCAE) version 4.0 toxicity were prospectively scored before VMAT, at the end of VMAT, 1, 3, 6, 12, 18, 24 and 36 months after VMAT. IPSS resolution was defined as a return to within 1 point of the score at baseline. Clinical, treatment-related parameters were evaluated included patient age, alpha-blocker use, androgen deprivation therapy (ADT) use, body mass index, diabetes, hypertension, smoking and drinking habits, and prostate volume. Dosimetric quality indicators were also examined.
Results: The median follow-up was 24.2 months (range,11.3-47.6). 134 (70.5%) patients took ADT medications. At last follow-up, 67 (35.3%) patients took alpha-blocker medications. The 2-year actuarial rate of grade 2 or greater genitourinary toxicity was 2.6%. The median (inter-quartile range) IPSS before VMAT, at the end of VMAT, 1, 3 months after VMAT and at last follow-up were 3(1-7), 9(5-12), 6(2-9), 3(1-8), and 4(1-7), respectively. The IPSS returned to baseline at a median of 3.0 months. The IPSS of 49 patients (25.8%) didn't exceed baseline+2 throughout the follow up. In Cox regression analysis, only drinking habit was associated with increased IPSS exceed baseline+2 (95% CI 0.283-0.907, p=0.022).
Conclusions: In IG-VMAT, IPSS resolved within 3 months substantially, and late GU toxicity was very low. Cessation of drinking during radiotherapy may be useful for further improvement.

PO-0730
Stereotactic ablative radiotherapy (SABR) of primary and metastatic renal lesions for patients with single kidney.
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Purpose/Objective: Most researchers consider kidney cancer radioresistant and in light of this what seems to be the 'common knowledge' use of radiation therapy to treat those lesions is not effective. An analysis of traditional approach indicate the possibility of changing that dogma, aiming to of achieve positive results in the implementation of radiosurgical abilities to deliver ablative radiation doses by means of radiosurgical system CyberKnife.
Materials and Methods: Fifty patients with medically inoperable renal cell cancer (RCC), (from October 2009 to December 2012) were treated with robotic SBRT CyberKnife modalities. Eighteen (18) of them were diagnosed with single kidney (RCC). All 18 patients had metastases from malignant kidney to contralateral kidney and three of them had metastases spread to brain, lung, and pancreas. Dose/fractionation schedules varied between 10 to 13 Gy per fractionand 3 to 4 sessions on kidney and 15 to 20 Gy, 1 to 3 sessions on other metastases depending on target location, and size. Tumor volume varied from 5 to 180 cc. Follow-up times for patients who remained alive were 6 to 25 months and for those who died (2patients) were 14 to17 months.
Results: All eighteen patients were carefully followed by multidisciplinary team, contrasted CT scans, renal scintigraphy, and blood work was analyzed. Local controls defined as radiologically stable disease or partial/complete response was obtained in all eighteen patients with single kidney. A partial response as defined as a greater than 50% reductions tumor volume was noted in 12 patients. Kidney function remained unaffected after treatment in seventeen patients, the Creatinine levels remained normal, but one (slightly elevated up to 125 mmol/L). Parameters of the dynamic renal scintigraphy not affected by the radiosurgery. Side effects were mild, grade 1 in 8 cases. No patient was reported with grade 2 to 4 toxicity. No complications of the fiducial placement reported.
Conclusions: The results show positive effect of treatment. These can be evaluated as an alternative to surgery and provide local control while maintaining the function of a single kidney. Stereotactic body radiationtherapy (SBRT), also known as stereotactic ablative radiotherapy (SABR), is emerging as one of the new treatment options for renal cell cancer (RCC) mainly in medically inoperable patients especially reducing surgical risks in patients with single remaining kidney.

PO-0731
Focal dose escalation with prostate stereotactic body radiotherapy: Which is the best planning method?
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Purpose/Objective: Dose escalation is known to improve outcomes in prostate cancer at the expense of a higher risk of side effects. Focal dose escalation, targeting the area most at risk of recurrence, may improve outcomes without increasing the burden of toxicity, especially as the majority of intra-prostatic recurrence occurs at the site of the dominant disease nodule at presentation. Fast dose fall-off with new radiotherapy techniques such as Cyberknife and Rapid Arc improves our ability to dose paint.
Materials and Methods: Fifteen patients, who were previously treated with IMRT at our institution, and had dominant intra-prostatic disease nodules (DPDN) on MRI were selected. Their diagnostic MRI was fused with their radiotherapy planning CT and the DPDN was contoured with the assistance of an expert radiologist. For RapidArc plans, two PTV margins were employed: Cyberknife margins (5mm expansion of the prostate, except 3mm posteriorly) and larger margins (prostate + 8mm/4mm posteriorly) in order to account for intra-fraction motion. Trial plans were constructed in order to deliver 36.25 Gy in 5 fractions to the PTV (as defined above) with a simultaneous integrated boost (SIB) of 47.5 Gy to the DPDN which was planned with no PTV margin. Minor relaxation of our usual SBRT dose constraints were allowed to facilitate the boost dose, as long as the plan was deemed clinically acceptable.
Results: With 5/3mm margins, RapidArc and Multiplan wereboth able to produce SIB plans within constraints in most patients. Mean rectal D50% and D20% doses were lower for RapidArc compared with Multiplan (p=0.01 and 0.005 respectively) but the constraints were exceeded in approximately the same number of occasions. If the PTV (8/4mm) margin was increased, over half the tolerances were exceeded.

	Bladder				Urethra		
	D40%	D10%	10cc	3cc	V40 Gy	V42 Gy	V45.6 Gy
Mean	14.2 Gy	27.5 Gy	34.3 Gy	38.0 Gy	80.8 %	47.1%	3.1 %

Table 1: Mean DVH parameters in this series

Conclusions: Both RapidArc and Multiplan can produce clinically acceptable SIB plans, focally escalating to 47.5 Gy, within standard OAR constraints. However, if a margin large enough to account for intra-fraction motion is used, the RapidArc plans no longer meet the required dose constraints. Focal SIB treatments are feasible if intra-fraction motion can be tracked and corrected.

POSTER: CLINICAL TRACK: GYNAECOLOGICAL TUMOURS

PO-0732
Clinical trial of carbon ion radiotherapy for gynecological melanoma
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Purpose/Objective: To evaluate a toxicity and efficacy of carbon ion radiotherapy for gynecological melanoma, we conducted a Phase I/II clinical trial.
Materials and Methods: The eligibilitycriteria for enrollment in this study were (1) histologically proven malignantmelanoma, (2) a localized measurable tumor in gynecological region, (3) atleast a 5 mm gap between the tumor and radiosensitive organs, including bowel and bladder, and (4) a expected prognosis of more than 6 months. Tumors were classifiedby TNM classification for malignant melanoma. In principle, tumors with PTV margins were irradiated 3.6 GyE per fraction up to the total dose of 57.6 GyE in 16 fractions, 4 times a week. Acute toxicities were assessed according to NCI-CTCAE ver.4.0 within 3 months after the treatment. Treatment response was assessed at 3 month after treatment completion. Late toxicities were assessed according to RTOG/EORTC scoring system. Statistical analysis of local control and survival were calculated using the Kaplan-Meier method.
Results: A series of 23 gynecological melanoma patients were treated with carbonion radiotherapy between November 2004 and October 2012. The age ranged from 51 to 80 with a median of 71. The tumor