Materials and Methods: dosimetric results of MR IGABT at our institution. Followed by 4 fraction of 7 Gy each within two different BT concomitant to chemotherapy (weekly cisplatin 40 mg m2) radio-chemotherapy consisting 3DCRT (45 Gy in 25 fr.) was obtained in selected cases. All patients had laparoscopic consisted in thorax and abdomen CT and pelvic MR. PET CT cancers. All cases were Diagnostic routine for all patients IIIA, 13 had IIIB (11 because pelvic wall invasion), 7 had IVA invasion, 12 had IIB with distal parametrial invasion, 1 had Ib2, 1 had IIA, 28 had IIB with mid proximal parametrial invasion, 12 had IIB with distal parametrial invasion, 1 had IIIA, 13 had IIIB (11 because pelvic wall invasion), 7 had IVA cancers. All cases were Diagnostic routine for all patients consisted in thorax and abdomen CT and pelvic MR. PET CT was obtained in selected cases. All patients had laparoscopic retroperitoneal lymphadenectomy. All patients received radio-chemotherapy consisting 3DCRT (45 Gy in 25 fr.) concomitant to chemotherapy (weekly cisplatin 40 mg m2) followed by 4 fraction of 7 Gy each within two different BT insertions. Median overall treatment time was 43 days. 2-3 days before 1 BT implant all patients had a T2 MR scan to define tumor regression during radio-chemotherapy. All BT applications were performed under spinal anesthesia with TRUS and trans-abdominal US guidance. We used MR compatible Tandem Ovoids applicators (Elekta Utercht type) or Tandem Ring applicator (Elekta Vienna type) with either plastic or titanium needles if needed. At first application all patients had an MR with the applicator in place and a i.v. contrasted CT. A direct reconstruction approach based on applicator library or template was used to reconstruct applicators on MR images. Target volumes and OAR were contoured on MR according GEC ESTRO recomendations. In all cases we started the planning process with a standard point A plan which was subsequently modified in order to reach our planning aims that are the following: HRCTV D90 86Gy EQD2, Bladder D2cc<90 Gy EQD2, Rectum and Sigmoid bowel D2cc<70 GyEQD2. In the present study we report DVH comparison between Standard and optimized plans.

Results: Preliminary dosimetric results are summarized in fig. 1. At the present moment we had 2 patients with persistent disease after BT. Both cases were large IIIb tumors with infiltrative growth pattern and received a D90 dose of 85.21 and 85.51 Gy EQD2 respectively. No intraoperative or perioperative events have been registered so far. Conclusions: In our preliminary experience MR based IGABT is strikingly superior to standard treatment.

Purpose/Objective: Preliminary dosimetric results of MR-based IGABT for cervical cancer in comparison to standard plan M. Federico1, A.M. Tornero Lopez2, S. Torres Pozas3, M.D. Rey Baltar Oramas1, M. Lloret Saez-Bravo1, P.C. Lara, (1)
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Purpose/Objective: Brachytherapy is the cornerstone of radiotherapy treatment in cervical cancer. In the last decade an increasing number of publications based on single institution large series indicate MR based IGABT as the new gold standard of treatment allowing a dramatic decrease of morbidity and at the same time an increase in local control especially for large tumors. Hereby we describe preliminary dosimetric results of MR IGABT at our institution.

Materials and Methods: Since December 2012, 71 consecutive patients (median age 50,5; range 31- 88,5) with a histologically proven diagnosis of locally advanced cervical cancer have been referred to GYN tumor board at our Institution. FIGO stage distribution was the following: 5 had Ib1, 4 had Ib2, 1 had IIA, 28 had IIB with mid proximal parametrical invasion, 12 had IIB with distal parametrical invasion, 1 had IIIA, 13 had IIIB (11 because pelvic wall invasion), 7 had IVA cancers. All cases were Diagnostic routine for all patients consisted in thorax and abdomen CT and pelvic MR. PET CT was obtained in selected cases. All patients had laparoscopic retroperitoneal lymphadenectomy. All patients received radio-chemotherapy consisting 3DCRT (45 Gy in 25 fr.) concomitant to chemotherapy (weekly cisplatin 40 mg m2) followed by 4 fraction of 7 Gy each within two different BT insertions. Median overall treatment time was 43 days. 2-3

PO-1028
Intra-fractional organ position variation evaluation during HDR intracavitary brachytherapy of cervical cancer
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Purpose/Objective: Image-Guided brachytherapy (IGBT) is related to treatment based on the 3D imaging for the planning procedure, not for the evaluation of the precision and accuracy of the treatment, which is the goal of the Image-Guided radiotherapy (IGRT). The aim of this study was assessment of probable intra-fractional organ displacement after the 3D imaging of the planning purpose.

Materials and Methods: Thirty intracavitary brachytherapy insertions (with Rotterdam's tandem and ovoid applicators) of cervical cancer patients were studied. A CT scanning were done for each of the cases, for treatment planning, after the applicator insertion. Treatment planning was based on getting 80-90 Gy total dose to D90 of the HR-CTV (EQD2) and 70Gy and 80Gy for rectum and bladder (D2cc), respectively. For each of those insertions a second CT scan were performed for the patients, just after the finishing of her treatment and before the applicators removed from her body. The scanning protocols (e.g. the amount of normal saline injection to the bladder Foley) were the same as the first CT imaging. Organ contouring and applicators reconstructions were performed with the same physician and physicist. The first 3D treatment planning were copied
manually (by dwell times and dwell positions insertion) to the second CTs. DVH parameters of OARs for two image series were compared and analyzed. It was tried to have a minimum time interval between the finishing of the treatment and second CT scanning. Paired samples T-test (Confidence Interval = 95%) was done for comparing the DVH parameters of two planning.

Results: Mean(%)±SD of the absolute DVH parameters differences for bladder, rectum and sigmoid, as the OARs of cervical cancer patients are reported in the following table.

<table>
<thead>
<tr>
<th>OAR</th>
<th>D1cc (Mean±SD)</th>
<th>D0.1cc (Mean±SD)</th>
<th>D1cc (Mean±SD)</th>
<th>D0.1cc (Mean±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bladder</td>
<td>11.6±0.97</td>
<td>15.6±0.35</td>
<td>12.4±0.6</td>
<td>16.4±0.9</td>
</tr>
<tr>
<td>Rectum</td>
<td>15.7±0.11</td>
<td>18.3±0.30</td>
<td>19.6±0.3</td>
<td>20.6±0.9</td>
</tr>
<tr>
<td>Sigmoid</td>
<td>32.5±0.19</td>
<td>35.6±0.52</td>
<td>33.6±0.4</td>
<td>34.6±0.9</td>
</tr>
</tbody>
</table>

Some example of the Paired samples T-test results in term of Mean(%)±SD(P-value) are: -0.24±1.63 (0.428), 0.063±0.72(0.635) and -0.11±0.74(0.425) for D2cc of bladder, rectum and sigmoid, respectively.

Although, results of the statistical analysis showed no meaningful variations between DVH parameters of before and after treatment CTs, but the absolute differences are not negligible, as it can be seen from the table.

Conclusions: Despite the fact that statistical results were not significant, but, the differences were large and even sometimes re-planning may be needed, if pre-treatment CT significant, but, the differences were large and even during, the source loading, provides a useful insight about the precision of the treatment. Conventional CT scan is not a best choice for online imaging, because of its high exposure, but the other modalities like ultrasound or C-arm can be used an alternative, if be available in the brachytherapy departments.

PO-1030 COBRA ontology: a proposal for a standardized data collection (SDC) for H&N patients treated with brachytherapy

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Purpose/Objective: Collecting data is expensive in terms of time and human resource. However data are collected differently and it is difficult to perform multi-center research based on previously stored data. The general objective of COBRA (COnsortium for BRachytherapy data Analysis) ontology is to define a specific data-set for SDC for H&N patients (pts) treated with brachytherapy (BT).

Materials and Methods: ENT-COBRA is a consortium for SDC for H&N pts treated with BT. It is linked with H&N GEC-ESTRO Working Group (WG) and composed by 11 centers (10 European and 1 Asian) from 6 countries. The ontology was defined by a multicenter WG, then, the proposal was evaluated by the consortium and by a multi-professional technical commission (TeCo) composed by a mathematician, an engineer, a doctor with experience in data storage, a programmer and a software (SW) expert.

Results: 227 variables were defined. Each variable has 4 properties: Name, Form, Type of Field and Levels. 13 Forms were proposed: 1) registry and history, 2) histology, 3) Staging, 4) Protocol, 5) Surgery, 6) Radiotherapy, 7) Neoadjuvant Chemotherapy (CT), 8) Concomitant CT, 9) Adjuvant CT, 10) BT, 11) Follow-up (repeated), 12) Outcome (automatically calculated based on F-up), 13) Images and Treatment files. Field types are: text, number, date, table, files. The chosen standard file formats are ‘DICOM’ for image and ‘TXT’ files for data treatment. All tables linked with variables are defined. The toxicity is stored with CT4 scale and the RTOG scale (for back comparison with retrospective studies). RTOG scale was a forced choice because many data are stored using this and a direct mapping with CT4 is not possible. There are 3 levels, each allowing for a specific type of analysis: 1) Registry level (epidemiology analysis), 2) Procedures level (standard oncology analysis), Research level (radiomics analysis). The variables of ‘Registry level’ are: pts code, Date of Birth, Gender, Ethnicity, Age, Site cancer, Multidisciplinary management, Institution, Histology type, therapy sequence, Death, Death Date, Cause of death. The third level includes image files. All other variables are in the ‘Procedures’ level. The ontology was approved by the consortium and by the TeCo. The ontology has allowed to implement an automatic function (brokers) in COBRA SW, so it is not time-consuming because can take the data from common storage systems already in use in various centers. Possible update of the ontology repository are planned on regular bases among Consortium partners.

Conclusions: The Ontology is a good answer to a multi-dimensional problem that involves data collection, retrieval, and usability. This allows to create SW for large multi-centers database with the implementation of specific functions such as ‘brokers’. The latter seem to be well received by all involved parties, primarily because it does not change the center storing technologies, procedures and habits.

PO-1031 ENT-COBRA (COnsortium for BRachytherapy data Analysis) : Standardized data collection (SDC) for H&N patients

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