adjuvant intent. We compared plans with Forward Planning -IMRT (FP-IMRT) adjusted to the delineated breast volume with two other plans without the breast delineated (one with standard tangential beams with wedges and another with FP-IMRT). The AOSOG Z0011 trial showed the non inferiority of the irradiation of axillary levels I and II (included in the irradiated volume when using standard tangential beam radiotherapy to the breast) when compared with axillary dissection of the same levels, in selected patients with breast cancer.

Materials and Methods: We analyzed data from 40 patients undergoing radiotherapy after breast conserving surgery, with the PTV, when compared with axillary dissection of the same levels, in selected patients with breast cancer. We conclude that the breast volume, and this technique has shown a higher rate of skin wedge, it happens at the expenses of a lower conformity index to the breast PTv adjusted to the PTV. We then outlined the axillary levels I and II, for analysis, on one CT data and copied it to the other. Mean dose (Dmean) and V95 were evaluated for axillary levels I and II. The Conformity Index (CI) of the PTV was also analyzed.

Results: Both V95 and Dmean for axillary level I were higher in the standard tangential beams with wedges technique and in the FP-IMRT technique without the breast volume delineated. When compared with these plans, the plan adjusted to the breast PTV achieved a lower V95 value to axillary level I. When evaluating the axillary level II, these differences were more pronounced. We found a higher CI value in the plan adjusted to the breast target volume.

Conclusions: We found a higher conformity index to the breast target volume using the FP-IMRT technique with the breast target volumes delineated, and a lower V95 for the axillary levels evaluated. This shows that when conforming the dose to the breast alone the unintended irradiation of the axilla is lower. Although a higher V95 was achieved with the standard tangential breast irradiation with wedges, it happens at the expenses of a lower conformity index to the breast volume, and this technique has shown a higher rate of skin toxicity, which lead to being less used. We therefore recommend the use of standard tangential breast irradiation techniques in the treatment of breast cancer.

POSTER: CLINICAL TRACK: GASTROINTESTINAL TUMOURS (UPPER AND LOWER GI)

PO-0691 Impact of genetic polymorphisms related inflammatory response mediated NFkB in resistance to nCRT in rectal cancer

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Purpose/Objective: To prospectively validate the efficacy of 18F-fluorodeoxyglucose (18F-FDG)-positron emission tomo-graphy (PET)-CT imaging for predicting histopathological response and clinical long-term outcomes in locally advanced rectal cancer (LARC).

Materials and Methods: 38 patients with confirmed diagnosis of LARC (cT3-4 or cN+) were prospectively studied with 18F-FDG PET/CT before and after neoadjuvant therapy (NAT). Total mesorectal excision (TME) was programmed 6 weeks after NAT followed by expert histopathological analysis of the surgical specimen. Baseline variables and previously identified cutoff values of pre-NAT (SUVmax≥6), post-NAT (SUVmax≥2), absolute (≥SUVmax≥4) and percentage reduction (≥SUVmax≥65) of the baseline maximum FDG standardized uptake value (SUVmax) criteria were applied to differentiate metabolic tumor responders from non-responders. These features were correlated with disease-free survival (DFS) and overall survival (OS).

Results: 19 responder patients (TRG 3-4) showed a statistically significantly higher 5-year disease-free survival (DFS) and overall survival (OS) compared with 19 non-responders (TRG 0-2) patients (94.4 vs 48.8%, p=0.001; 94.7 vs 63.2%, p=0.02). At multivariate analysis the only presurgical variables correlated to the likelihood of recurrence and survival were ≥SUVmax≥65 vs < 65% (HR=5.2 (p=0.01); HR=4.4 (p=0.03)) and tumor histologic grade (I or II vs III) [HR=6.2 (p=0.001); HR=4.1 (p=0.03)].

Conclusions: This prospective study has proven that 18F-FDG PET/CT is a valuable imaging tool for assessing rectal cancer TRG and long-term prognosis, and could potentially serve as an intermediate endpoint in treatment optimization research and rectal cancer patient care.

PO-0693 Image guided volumetric modulated arc therapy with concurrent Cisplatin for inoperable esophageal cancer

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Purpose/Objective: This prospective study evaluates feasibility, toxicity and early clinical outcomes of concurrent image guided volumetric modulated arc therapy (IG-RA) and weekly cisplatin in the setting of a definitive chemoradiotherapy for locally advanced esophageal cancer.

Materials and Methods: 41 Patients diagnosed with squamous cell carcinoma of esophagus deemed unsuitable for surgery were included in the study. Patients with performance status (ECOG) more than 1, involvement of cervical esophagus or gastroesophageal junction,
visceral metastasis were excluded from the study. All the patients were treated in two phases to a total dose of 5940Gy. Phase I CTV (treated to a dose of 45Gy in 25 fractions) was generated by expanding the GTV primary cranio-caudally by 4cm and laterally to include elective the corresponding level mediastinal nodes. Phase II CTV was generated by expanding the GTV by 2cm cranio-caudally and 1cm radially. Bilateral supracervical regions were electively included for supracarinal lesions. ITV was generated by expanding the CTV by 0.5cm which was then expanded by 0.5cm to yield PTV. IG-RA plan consisted of 2 conformal arcs with a high priority to reduce lung V20, mean lung dose and heart dose. The set-up was verified by daily KV imaging as well as thrice weekly CBCT with oral barium. Chemotherapy consisted of 4-6 cycles of weekly cisplatin 40mg/m2.

Results: The median age of patients was (43-72). The worst length of involvement of esophagus was 6cm with 80% of the lesions in the upper and middle third. 37/41(90%) patients completed planned chemotherapy with at least 4 cycles of cisplatin and 40/41 patients completed full dose of radiotherapy. 4/41 (10%) patients required tube feeding. 2/41 (5%) patients required hospital admission for supportive care but none of the patients had grade IV hematological toxicity during treatment. Endoscopy at 8 weeks post treatment was performed in 38/41 patients of whom 20 (53%) had CR, 16 (42%) had PR and 2 (5%) had stable disease locally. With a median follow up of 15 (6-20) months, 18/41(44%) patients are alive at last follow-up of which 13 (32%) are disease free with no dysphagia, the 1 and 2 year overall survival are 70% and 42% respectively and median survival of 13.5 months. 3/18 surviving patients had significant stricture requiring occasional dilatations. Unfortunately none of the patients underwent salvage surgery because of various medical and social reasons. After analyzing KV image datasets, the modal corrections were found to be adequate only with image guidance.

Conclusion: The ITV and PTV margins of 0.5cm each were found to be adequate with current imaging protocol.

Figure 1: Deformable co-registered image of relapse CT and planning CT

Table 1: D95% (i.e. dose (Gy) to 95% of volume) results for relapse patients

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<th>Contour</th>
<th>Patient</th>
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<tr>
<td>GTV</td>
<td>49.99</td>
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<td>49.54</td>
<td>50.24</td>
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<td>CTV or CTVb</td>
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<td>n-a</td>
<td>49.37</td>
<td>49.24</td>
<td>49.58</td>
<td>49.24</td>
<td>48.83</td>
<td>48.99</td>
<td>47.47</td>
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<tr>
<td>PET</td>
<td>48.13</td>
<td>49.84</td>
<td>n-a</td>
<td>49.70</td>
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<tr>
<td>Volume</td>
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<td>49.99</td>
<td>49.80</td>
<td>50.21</td>
<td>49.93</td>
<td>50.43</td>
<td>48.57</td>
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<td>Relapse Tumour</td>
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Conclusions: Deformable image registration is a valuable tool that allows relapse CT data to be compared accurately to the original planning CT and therefore determine if current target definition is adequate. Investigation of a larger cohort is required to confirm these observations by including this this procedure in the analysis of future