Conclusions: According to ICRU 83 report, to correctly evaluate PTV volumes extended outside the body surface, several methods have been proposed, for example by extending the beam intensity values from the breast periphery to the regions outside the body. By attributing a density value to PTV-SV2 we were able to achieve this same goal even without the use of any inverse IMRT tools.

EP-1047

VMAT for accelerated partial breast irradiation (IPAS).

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Purpose/Objective: Different techniques of accelerated partial breast irradiation have been described in the literature. Using a volumetric modulated arctherapy technique (VMAT) allow a better target coverage and better protection of critical organs compare to three-dimensional conformal radiotherapy (RC3D). We present here the dosimetric results of the first patients treated with CRLC Val d'Aurelle in Montpellier for an accelerated treatment (IPAS).
Materials and Methods: Between may 2011 and July 2012, ten patients were treated by IPAS for breast cancer using a VMAT technique. Dose was 40 Gy, 4 Gy per fraction twice fractions per day separate from 6 hours, spread over a week. PTV was generated by expansion of the lumpectomy cavity of 1.8 cm. Treatment was delivered by two arcs of 270 degrees using the technology RapidArc (Varian 21 EX) with a collimator rotation of 45 degrees. The optimization and dose calculation were performed with version 10.0.28 of the planning system and Eclipse AAA algorithm with a 2.5 mm calculation grid. The constraints were for the PTV $D_{99\%} \geq 95\%$, $D_{95\%} \geq 100\%$ of the prescribed dose. For the ipsilateral lung: $V_{20Gy} <3\%$ $V_{10Gy} <10\%$ $V_{5Gy} <20\%$ and $V_{20Gy} <1\%$ $V_{10Gy} <2\%$ $V_{10Gy} <3\%$ for the contralateral one. Concerning the eart for $V_{20Gy} <1\%$ $V_{5Gy} <70\%$.
Results: The average volume of the PTV was 99.9 cc [39.8 to 219.5] (mean and range). An average of 95% of the PTV received 99.7% of the prescribed dose [99.4 to 99.9]. Hotspots: V_{110Gy} represented 0.34% [0 to 1.42] PTV. The homogeneity index defined as: $HI = \frac{(D2\% - D98\%)}{D\ median}$ was 0.056 [0.040 to 0.085]. The dose to healthy tissues (OAR) was optimal. For the ipsilateral lung V_{20Gy} was 0.27% [0 to 2.67], the V_{10Gy} 1.60% [0 to 10.47], 6.17% V_{5Gy} [0 to 19.94] . Regarding the contralateral lung V_{20Gy} and V_{10Gy} are equal to 0% and V_{5Gy} to 0.28% [0 to 2.78]. For the heart V_{5Gy} was 3.10% [0 to 23.59], all other constraints were largely reached. The average number of monitor unit was issued 580UM [473-655] and the processing time was 3.2 minutes for two arcs.
Conclusions: IPAS by RapidArc provides excellent coverage of the PTV while preserving healthy tissue. Processing speed improves its quality because intrafractions movements are reduced. We have not observed severe acute toxicities.

EP-1048

Compliance to multi-modality cancer therapy in carcinoma of the breast.

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Purpose/Objective: To evaluate compliance of patients with carcinoma breast to cancer directed therapy in multidisciplinary cancer care setting.
Materials and Methods: The study included a total of 117 patients. Patients were assessed as per patient, disease & treatment related factors. Surgery included modified radical mastectomy or breast conservation surgery. Chemotherapy comprised of 6 cycles of FEC based or 4 FEC/4Docetaxel in neoadjuvant & adjuvant setting respectively. Herceptin therapy was offered to patients with HER/neu2 overexpression. Radiation therapy delivered was 50 Gy/25#/5 wks, a boost of 16Gy/8#/1.5 wks was delivered to the lumpectomy cavity for patients undergoing BCS. All patients were considered for tamoxifen/aromatase inhibitors depending upon receptor & menopausal status. For the purpose of study compliance was defined as all patients who were able to complete the stipulated treatment (excluding the hormone therapy) as intended at the primary multidisciplinary clinic The key factors evaluated for compliance and overall treatment time were date of initiation of cancer directed therapy, surgery date, chemotherapy initiation & completion dates, radiation start & completion date. Overall treatment time was calculated from the day of initiation of cancer directed therapy to completion of therapy (before the initiation of hormone therapy).
Results: Seventy percent of the patients presented in loco-regionally advanced disease. Most of the patients (66%) were between 40-69 years of age group. Receptor status positivity for Estrogen and progesterone receptor were 43% & 36 % respectively whereas Her-2/neu was over-expressed in 36% of the patients. Eighty nine percent of the patients were subjected to curative therapy whereas 11% of the patients were subjected to palliative treatment. Modified radical mastectomy was performed in 72% of the patients whereas only 14% of the patients underwent breast conservation therapy. Neoadjuvant chemotherapy was administered in 51%of the patients while 34% of the patients received adjuvant chemotherapy. Sixty eight per cent of the patients received 50Gy/25#/5 wks whereas 14% received further lumpectomy boost. Eighty six per cent of the patients were compliant to cancer directed therapy. The overall median treatment time was 262 (92-335) days.
Conclusions: Eight six per cent of the patients were compliant to cancer directed therapy whereas fourteen per cent of the patients failed to comply to the stipulated treatment before the initiation of hormonal therapy. For compliant patients the median overall treatment time was 262 days.

EP-1049

Application of artificial intelligence for breast cancer classification before adjuvant radiation therapy

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Purpose/Objective: Although electronic health records are currently more common place, not all the information can be used in automatic processes, mainly due to the use of free text structured to abstract certain values in a table related to the health records. The objective of this study is to test a simple natural language processor (NLP) for automatic identification of tumor size from the pathology report (PR) before adjuvant radiotherapy for breast cancer (BC).
Materials and Methods: Consecutive PRs were identified by searching a database of BC patients treated with surgery and adjuvant radiation therapy between January - April 2012. The inclusion criteria included: (1) patients having an unstructured free-text PR; (2) non-metastatic BC; (3) non simultaneous contralateral BC. Our approach starts with the detection and extraction of the tumor's size characteristics in unstructured free text from an electronic health record source (PR) using a simple NLP. Secondly, based on the data extracted, we applied different classification trees from the java data-mining open source software: weka. Three data mining algorithms were used: J48 based on C4.5 algorithm, LADtree, and NaiveBayes. A classification algorithm not based on data-mining was also applied. The PRs were reviewed and annotated by a 3rd year radiation oncology resident according to the 7th edition TNM staging system. Finally, an expert senior radiation oncologist revised the divergent classification results found between the resident and the different algorithms.
Results: A total of 68 PRs (test set) met the inclusion criteria. The pathological tumor size classification is shown (Table). The median PR length was 88 words (range, 69–244). Compared to human classification (resident), the coincidence rates with the non-data mining based algorithm and the J48, LADtree, and NaiveBayes algorithms were 86%, 83%, 82%, and 77%, respectively. After the expert revision, the coincidence rates between algorithms and human classification were: 96%, 93%, 87%, and 82%, respectively. There were only 3 errors when using the non-based on data mining algorithm, being 5, 9 and 12 when using J48, LADtree, and NaiveBayes algorithms, respectively. The errors in the classification by the algorithms were mainly due to lack of recognition of multifocal status and inflammatory disease. The resident´s classification errors mostly resulted from use of the clinical T stage when the PR revealed a complete response after neoadyuvant chemotherapy.