**SP-0645 New approaches to Radiotherapy biomarkers, the data has gotten big**

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Abstract not received

**SP-0646 Translation of biomarker signatures in daily clinical use?**

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**Abstract text**

During the past decades, cancer treatment has been improved in a technically and medically manner. Nonetheless, the 5-year overall survival rate for head and neck squamous cell carcinoma (HNSCC) is still at about 50%. Currently, most patients with functionally inoperable HNSCC are treated with primary radiochemotherapy (RCTx). In contrast to radiotherapy alone, clinical trials showed that patients who received RCTx benefit in terms of increased overall survival and loco-regional control as well as freedom of distant metastases. However, concomitant chemotherapy is leading to increased toxicity. Another obstacle is the heterogeneity of tumor response to this treatment. Therefore, biomarkers are urgently needed to identify patient groups who require de-escalated or intensified treatment schedules based on their tumor biology in addition to established clinical parameters. Currently, a panel of promising biomarkers is tested in numerous clinical studies, such as human papilloma virus (HPV) status. A positive HPV infection status may be a suitable biomarker for patient stratification towards de-escalation treatment regimens. However, additional biomarkers are needed for further stratification of patients with HPV-negative tumors. This talk will give an overview about the results of biomarker studies and ongoing clinical trials.

**OC-0647 Analysis of biomarkers for late radiotherapy toxicity in the REQUITE project**

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**Purpose or Objective**

The European Union funded REQUITE consortium aims to validate predictors of radiotherapy-related adverse reactions to develop clinically useful tools. Potential predictors include clinical and dose parameters, genetic markers, gene expression and the radiation-induced lymphocyte apoptosis (RILA).

**Material and Methods**

REQUITE is a multi-centre, observational study (www.requite.eu). Enrolment was open for two and a half years through 26 centres in eight countries. Follow-up was collected for two years ending in September 2018. The primary endpoints are change in breast appearance at 24 months (breast), rectal bleeding at 24 months (prostate) and breathlessness at 12 months (lung). 4442 patients have been enrolled in REQUITE: 2069 breast, 561 lung and 1808 prostate cancer patients. In addition a further 383 lung cancer patients from another study have been integrated. All the patient data is held in a central database, including clinical, treatment, CTCAE scored toxicity, patient-reported outcomes, DVH & DICOM and biomarkers. All blood samples are held in the CIGMR Biobank at the University of Manchester.

**Results**

All patients who complete the study have been SNP genotyped using Infinium OncoArrays, which tests for ~250,000 genome-wide SNPs and a similar number of cancer-specific SNPs, including some chosen from Radiogenomics studies. Results from the GWAS will be presented. RILA was carried out in three of the European centres using a standardised protocol; it assesses the percentage radiation-induced apoptosis in lymphocytes, detected by flow cytometry, 48 hours after ex-vivo irradiation of whole blood. 1317 samples have been analysed using the apoptosis assay. Factors that affect RILA have been identified, including cancer type and smoking status. As expected, analysis showed that RILA does not predict most acute toxicity endpoints. An exception was acute breast pain, which suggests a different biology to other endpoints. An interim analysis of one-year toxicity data showed predictive value for urinary endpoints in prostate cancer and for fibrosis in breast cancer. The final analysis of two-year toxicity end-points will be presented. A pilot RNA sequencing experiment using 50 lung cancer cases identified eleven differentially expressed transcripts as potential predictors.

**Conclusion**

This large scale prospective observational study is the largest to date to assess the use of predictive biomarkers for assessing radiotherapy related toxicity.

## Symposium: Palliation in RT - How much is enough?

**SP-0648 Criteria for choosing dose and irradiation techniques for palliative treatment**

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**Abstract text**

Radiotherapy is an important treatment modality for advanced cancer patients who experience clinical symptoms caused by metastatic disease or the primary tumour itself. And times are changing, with the possibility to treat oligometastastic disease using stereotactic techniques and ablative doses with the goal of prolonged symptom control, and maybe, even prolonged survival. When considering the use of palliative radiotherapy it is therefore recommendable to think about some important issues
1- How do we select our patients for palliative