Conclusion: RT is highly effective for refractory degenerative joint diseases. Prognostic factors for outcome can be established. Due to minimal side effects and low costs, RT represents an excellent treatment compared to conventional methods of treatment and surgery in the chronic disease. This study confirms by objective criteria the anti-inflammatory efficacy of low dose RT

EP-1479
Integration of a minituarized linear accelerator in a 20 year IOERT expert institution
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Purpose or Objective: Hospital General Universitario Gregorio Maranon has a long-standing tradition of IOERT (Intraoperative electron Radiation Therapy), with over 1600 procedures in its 20 year history. Since december 2013, a minituarized linear accelerator (LIAC) started to operate in our center. We describe the 22 months technical and clinical experience with LIAC in our consolidated IOERT program.

Material and Methods: A review of technical and surgical parameters of IOERT procedures using LIAC was performed from December 2013 to October 2015.

Results: From december 2013 to october 2015, 222 procedures in 185 patients were performed (200 procedures with LIAC, 22 transported to a fixed lineal accelerator). Cancer types treated were 64 oligorecurrences / oligometastases, 34 breast cancers, 44 rectal cancers, 42 sarcomas, 6 pancreatic adenocarcinomas, 4 esophageal neoplasms and 6 other cancer types. The treated anatomic sites included 100 cases in pelvis, 40 in abdomen, 25 in limbs, 34 in breast and 1 in thorax. Relevant operational data included 39 days with more than 2 procedures in the same working day (22% of total days). Six different applicator sizes were selected (range 4-10) with 4 beveled ends (range 0-45). Selected energies ranged from 6 to 12.

Conclusion: LIAC is a versatile technology able to be incorporated to expert IORT institutions promoting efficient action with operative benefits in terms of availability of IOERT components for cancer patients.

EP-1480
A comprehensive analysis of immuno- and immunoradiotherapy trial design developments from 2000-2014
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Purpose or Objective: There has been a rapid growth in the number of immuno- and immunoradiotherapy trials over the last few decades. Long term durable responses occur, but only in a subset of patients. As yet no accurate method of identifying those patients most likely to benefit has been identified. The factors behind non-response are unclear but may include 1) inherent characteristics of the tumour, 2) factors influencing immunogenicity such as tumour burden and previous treatments and 3) clinical trial design. By performing a cross sectional analysis of registered clinical trials investigating agents thought to stimulate T-cells we aimed to detect trends in these factors. In particular we aimed to assess the extent to which trials sought to develop and identify novel biomarkers of response to immunotherapy.

Material and Methods: A pubmed literature search was conducted to establish a list of known T cell checkpoints, co-stimulatory receptors, ligands, and the antibodies targeting these. These search terms were entered into clinical trials.gov on October 11, 2014. Study details were downloaded as datasets for review by two independent assessors.

Results: We identified a total of 350 trials of immunomodulatory antibodies targeting PD-1, CTLA4, PD-L1, PD-L2, LAG3, B7-H3, CD137, OX40, CD27 and GITR. A longitudinal analysis by trial registration date shows a steady increase in the number of trials using immunostimulatory antibodies. As some cancer types are thought to be more immunogenic, we looked at the spread of trials by cancer type. Unsurprisingly, melanoma trials represent the largest proportion, but there has been a shift towards testing immunostimulatory antibodies in cancers that are considered less immunogenic with a significant increase in trials in NSCLC when comparing trials registered between 2000 and 2007 and those registered between 2008 and 2014. Only 39% of trials measured a dynamic immune endpoint as a specified outcome. T and B cell number or function were the most common markers analysed. However there was a significant increase in the measurement of PD-L1 expression in recent years.

Conclusion: This analysis provides comprehensive data on the rapid growth of immunotherapy trials and highlights that despite the multiplicity and variability of potential dynamic biomarkers available, there has been a poor uptake. What the future of immunotherapy is not in doubt, biomarkers are essential to understand the considerable lack of response and help guide further trial efforts.

EP-1481
Toxicity of concomitant application of radiotherapy with „new targeted therapies”
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Purpose or Objective: New targeted therapies (nTTs) are increasingly used in virtually every type of cancer. On the other hand radiotherapy (RT) is frequently applied in the curative and palliative setting of cancer treatment, confronting clinicians more and more with the problem, whether a previously initiated nTT-therapy could be continued during RT. The aim of this systematic literature analysis was to evaluate the toxicity of concomitant application of RT with nTTs in a qualitative descriptive manner.

Material and Methods: Clinical studies comprising concomitant application of RT with EGFRT-, VEGFRT-, HDACRT-, proteasom-, BRAFT-, m-Tor- or immune-checkpoint-inhibitors were eligible. Using fixed search terms 215 publications were identified including more than 6000 patients. Forty-eight studies analyzed combinations of nTTs with ZNS-RT including 1164 patients, 45 with head and neck-RT including 2390 patients, 59 with thoracic RT including 1647 patients, 33 with abdominal RT and 30 with pelvic RT including 492 and 1008 patients respectively.

Results: In most cases combined application produced no additional toxicity or a slight increase of the already known toxicity profile. Scarcely, however, combination of RT with nTTs resulted in serious side effects. These toxicities comprised tracheo-bronchial fistulas or GI-bleeding for combinations of thoracic or abdominal/pelvic RT with VEGF receptor-inhibitors, recall phenomena in combination of RT with tyrosinkinase inhibitors e.g. erlotinib and severe mucositis, dermatitis or paraplegia (case report) when combining RT with ipilimumab. For the majority of these