The effect of escalating boost dose in breast cancer

**Materials and Methods:** Between January 1998 and December 2010 at Asan Medical Center, among 4275 breast cancer patients who were treated with breast conserving surgery (BCT), a total 192 patients were treated with boost dose over 10 Gy for involved resection margin. We retrospectively analyzed the outcomes in 192 patients who had whole breast irradiation of 50.4 Gy followed by median boost dose 15.0 Gy (range, 12 - 16 Gy) for breast cancer with involved resection margin. Surgery preceded referral for radiotherapy with a 1-2 mm margin of macroscopically normal tissue. The resection margins were evaluated by pathologist for the presence of invasive carcinoma or ductal carcinoma in situ at the inked margin. Neoadjuvant chemotherapy was done in 3 patients (1.6 %). Adjuvant chemotherapy was given in 93 patients (48.4%), 157 patients (81.8%) received systemic hormone therapy. The median age was 46 years (range, 25-73 years). 182 patients (94.8%) were stage 0 to II and 10 patients (5.2%) with stage III breast cancer were also included. The boost dose delivered with electrons or tangential fields given in daily fractions of 1.5 to 2.5 Gy. The boost volume was described as the site of the primary tumor with a margin of 1.5 cm to the field borders after breast conserving surgery.

**Results:** The median follow-up duration for all patients was 6.7 years. IBTR were considered as any local failures on ipsilateral breast regardless of the location. The 5-year cumulative risk of ipsilateral breast tumor recurrence as a first event was 5.4%. The 5-year local relapse free survival (LRFS) was 94.4%. IBTR occurred as a first failure in 13 of 192 patients. In boost field recurrences were found in 11 patients (85%). 5 patients (39 %) were out-of boost field failures and 3 of them were both failures. On univariate analysis, age, cell type, pT stage, pN stage, extensive intraductal component (EC), multiplicity and location of resection margin were prognostic factor for IBTR (p <0.05). In multivariate analysis only young age (<40 years old) and positive radial resection margin were unfavorable prognostic factor for LRFS (p <0.037, p=0.021 respectively). pT stage was marginally significant prognostic factor for IBTR. (p=0.088)

**Conclusion:** Median boost dose of 15 Gy is comparable to historical boost research results for local control in breast cancer patients with involved resection margin after BCT. Young age (<40 years old) and positive radial resection margin rather than superficial or deep margin were important risk factors for ipsilateral breast tumor recurrence. More than 80% of local recurrences were in boost field, more boost dose escalation needs to be considered.

**Purpose and Objective:** Cancer-related fatigue is one of most prevalent symptom among women submitted to radiotherapy (RT) for breast cancer (BC). Despite its prevalence the mechanism of onset is unknown still: one possible mechanism is activation of the immune system, through the mediation by proinflammatory cytokines interleukin (IL), IL-1β, IL-6, and tumor necrosis factor-α (TNF-α) as host response to tissue damage determined by the radiant treatment. To purpose of this study was to determine the level of fatigue in a group of BC patients its relation to anxiety, depression, serum cytokines, cortisol and blood count levels.

**Materials and Methods:** Between October 2013 and May 2015 twenty-eight patients who received adjuvant RT after breast conserving surgery were studied. The patients’ subjective feeling of fatigue intensity was measured according to two standardized self-assessment instruments the Fatigue Assessment Questionnaire (FAQ) and a visual analog scale (VAS) on fatigue intensity before the start and weekly during RT, as well as 14 days and 3-6 and 12 months after RT. In addition, a differential blood cell count and the serum levels of the cytokines- IL-1β, IL-6, and TNF-α, were determined in parallel to the fatigue assessments.