into 2 treatment groups and stratified into 2 risk groups. The STAD treatment arm included 4 months of neoadjuvant and concomitant androgen deprivation with 3-dimensional conformal radiotherapy ≥ 76 Gy, and the LTAD treatment arm included an additional 24 months of adjuvant androgen deprivation. Risk groups were separated into intermediate risk, defined as T1–T2 with a Gleason score of 7 and/or a prostate-specific antigen (PSA) score of 10 to 20, and high risk, defined as T3 and/or a Gleason score of 8 to 10 and/or PSA > 20.

Patients who received previous surgical treatment, neoadjuvant hormonal treatment > 3 months, and concomitant chemotherapy were excluded from study. Baseline characteristics were similar in both treatment groups. Median radiotherapy prostate dose was 78 Gy, and median follow-up was 63 months.

Using intent-to-treat analysis, researchers found the biochemical disease-free survival rate at 5 years to be higher in patients receiving LTAD than in those receiving STAD (89.8% vs 81.3%; $P = .019$). Stratification analysis found biochemical disease-free survival rates to be significantly higher with LTAD in the high-risk group (88.0% vs 75.9%; $P = .058$).

As with biochemical disease-free survival, 5-year overall survival rate was also higher in the LTAD arm compared with the STAD arm (94.8% vs 86.1%; $P = .009$), and the LTAD arm had significantly higher rates in the high-risk group with stratification analysis (96.1% vs 81.5%; $P = .01$).

Unlike previous results, significant differences for 5-year metastasis-free survival were only found in overall analysis and not during the stratification analysis. For overall analysis, the 5-year metastasis-free survival rate was 93.6% for the LTAD arm compared with 83.4% for the STAD arm ($P = .009$).

Multivariate analysis identified 4 independent factors associated with biochemical failure: patient age, treatment arm, radiation dose, and PSA nadir. Biochemical failure was twice as likely in patients treated with STAD than in those treated with LTAD.

A total of 38 deaths occurred during the study, with 5 deaths attributed to prostate cancer. All 5 deaths were in the STAD arm, and they resulted in a significant cause-specific survival outcome ($P = .021$). Toxicity rates were similar in both groups and reported as low by investigators. The most common adverse event was rectal bleeding, which occurred in 17 patients receiving LTAD and 13 patients receiving STAD.

Researchers noted that the 5-year follow-up was short in duration, and studies with longer follow-up are necessary to validate findings. Other limitations mentioned included the limited number of events and the absence of a control arm, but overall study results suggest that LTAD has superior benefit compared with STAD in patients with prostate cancer treated with high-dose radiotherapy, specifically in those with high-risk prostate cancer.

HF of WBI Yields Improved Energy Levels Compared With CF

Written by Dennis Bittner

Previous trials comparing hypofractionation (HF) with conventional fractionation (CF) in whole breast irradiation (WBI) therapy have shown equal rates of local control, overall survival (OS), and cosmesis. Notably, none of these trials included a tumor bed boost as part of the standard of care, although a tumor bed boost is known to decrease risk of locoregional recurrence and is widely used in the United States and Europe.

Simona F. Shaitelman, MD, MEd, University of Texas MD Anderson Cancer Center, Houston, Texas, USA, described results at 6 months from an ongoing randomized trial (MD Anderson Protocol 2010-0559) comparing the impact of HF-WBI with that of CF-WBI (both including a tumor bed boost) on patient-reported cosmetic outcome at 3 years. Secondary objectives are determination of maximal skin and soft tissue toxicities arising from treatment and comparison of patient quality of life.

The protocol employed for CF-WBI was 50 Gy in 25 fractions over a period of 30 to 32 days with a tumor bed boost ranging from 10 to 14 Gy, whereas HF-WBI was administered at 42.56 Gy in 16 fractions over 20 to 21 days with a 10- to 12.5-Gy tumor bed boost. Standardized templates were used to collect data on acute toxicities using Common Terminology Criteria for Adverse Events (CTCAE) v4.0 criteria. In examining short-term (6-month) toxicities, the Late Effects in Normal Tissues Subjective, Objective, Management, and Analytic Scales and the Functional Assessment of Cancer Therapy-Breast (FACT-B) criteria were used in addition to CTCAE v4.0.

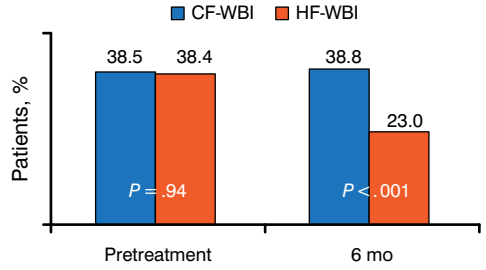
Eligibility required stage Tis to T2, N0 to N1, and M0 breast cancer. Patients were excluded if they had any prior history of breast cancer, concurrent bilateral breast cancer, history of prior radiotherapy (RT) to areas of potential overlap, or were pregnant. A total of 287 patients were enrolled and randomized, with 138 receiving HF-WBI. About 75% of patients were white (non-Hispanic), aged 50 to 70 years, had invasive cancers, and were either overweight or obese. Nearly 90% of patients

Figure 1. Fatigue Reported by Hypofractionation and Conventional Fractionation Groups

6-Month Patient FACT-B Scores

	CF-WBI	HF-WBI	*P* Value
Mean physical well-being score	24.7	25.4	.07
Lack of energy: somewhat or worse, %	38.8	23.0	< .001

Patient-Reported FACT-B Fatigue Score ≥ 2



CF, conventional fractionation; FACT-B, Functional Assessment of Cancer Therapy-Breast; HF, hypofractionation; WBI, whole breast irradiation.

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Table 1. WBI Toxicity Grade ≥ 2 Reported at 6 Months

	CF-WBI, %	HF-WBI, %	*P* Value
Fatigue	6.4	0.0	.009
Hyperpigmentation	7.8	11.4	.12
Skin induration	1.4	0.8	.38
Dermatitis	0.7	0.0	.64
Telangiectasias	0.7	2.4	.22
Skin ulceration	0.0	0.0	n/a
Wound complications, noninfectious	0.0	0.0	n/a
Breast infection	0.7	0.7	.36
Wound infection	0.0	0.0	n/a
Upper extremity edema	0.0	0.0	.92
Breast edema	5.0	1.6	.08

CF, conventional fractionation; HF, hypofractionation; n/a, not applicable; WBI, whole breast irradiation.

were postmenopausal. About 15% of patients had grade 3 tumors, most had T1, N0 disease, and the majority had hormone receptor–positive, human epidermal growth factor 2–negative tumors. About 10% of patients had received neoadjuvant chemotherapy.

Baseline FACT-B mean scores for physical well-being and level of energy were essentially identical between the 2 groups. At 6 months after RT, physical well-being scores showed a trend of being slightly worse among patients treated with CF-WBI (*P* = .07). The percentage of patients reporting lack of energy "somewhat or worse" at 6 months was much higher in the CF-WBI group (38.3% to 23.0% for the HF-WBI group) and was statistically significant (*P* < .001; Figure 1).

Acute grade ≥ 2 toxicity was recorded weekly during RT and again at 6 months (Table 1). During weekly reports, 46.4% of HF-WBI patients had any acute grade ≥ 2 toxicity, compared with 77.9% for CF-WBI (*P* < .001), and HF-WBI patients had no acute grade ≥ 3 toxicities, compared with 5.4% for CF-WBI (*P* = .006). Although acute toxicity reporting at 6 months showed HF-WBI to be lower in 4 of 6 categories, the data were less clear-cut, with only fatigue data being statistically significant. Cosmesis data per se were not reported, because these are interim data sets (6 months), although several categories of acute toxicity could be used to infer aspects of cosmetic appearance.

Dr Shaitelman concluded that by the end of RT, the HF-WBI patients had less acute toxicity than those who had received CF-WBI. She added that the HF-WBI patient scores for patient-reported and physician-reported rates of fatigue 6 months after completing radiation were lower than those for CF-WBI and trended toward improved physical well-being in the HF-WBI arm.

PT May Be Safer Than PF Chemoradiotherapy for LAEC

Written by Emma Hitt Nichols, PhD

Neoadjuvant chemoradiation therapy (nCRT) with carboplatin/paclitaxel (PT) has similar perioperative outcomes as platinum/5-FU (PF) in patients with locally advanced esophageal cancer (LAEC) but may have less toxicity. Abigail Berman, MD, University of Pennsylvania, Philadelphia, Pennsylvania, USA, presented findings from a retrospective analysis of patients with LAEC who were treated from 2008 to 2013.

Current nCRT for LAEC consists of radiation with PF chemotherapy. However, PT may be a favorable chemotherapy combination with preoperative radiation. This study investigated whether nCRT with PT would result in better perioperative outcomes.

A total of 100 consecutive patients were assessed; criteria included stage II to IV LAEC with a European Cooperative Oncology Group performance status of