2028

Impact of Level I Evidence on Radiation Therapy Utilization in Breast Cancer


Purpose/Objective(s): Conventional radiation therapy (RT) regimens in breast conservation therapy (BCT) involve whole breast RT (WBRT), 45-50 Gy in 1.8-2.0 Gy fractions. The UK START and OCGO Trials showed the efficacy of hypofractionated (HF) regimens (39-42.5 Gy in 2.5-3.0 Gy fractions) in early stage breast cancer. CALGB established omission of RT as an option in select early stage breast cancer patients over 70. WBRT is most commonly delivered via 3D conformal RT (3DCRT) or intensity-modulated RT (IMRT). IMRT is estimated to be at least twice the cost of 3DCRT. In 2013, the American Society for Radiation Oncology released 5 practice recommendations as part of the national “Choosing Wisely” campaign. For breast cancer, clinicians are encouraged to (1) consider short treatment schedules for women ≥50 with early stage breast cancer and (2) not routinely use IMRT to deliver WBRT. To assess our uptake of new evidence and adherence to recommendations, we evaluated RT use in select breast cancer patients at our institution in two periods, 2006-2008, and 2011-2013.

Materials/Methods: Inclusion criteria were completion of BCT at our institution, post-menopausal, invasive ductal carcinoma, T1-T2, N0, M0, ER/PR+, and HER2 normal. Two periods were assessed, 2006-2008 and 2011-2013, defined by date of surgery. Patients were identified from a prospective breast cancer database. Medical records were reviewed to define RT modality, dose, and fractionation schedule. Cases were analyzed on intent to treat basis.

Results: From 2006-2008, 66 cases met inclusion criteria (mean age 71.2, SD 9.0, range 51-89). RT utilization was as follows: HF WBRT in 12%, conventional WBRT in 52%, and brachytherapy (BT) in 20% of cases. RT was omitted in 17% of cases (mean age 80.6, SD 6.3, range 67-89) and 26% of patients over 70. From 2011-2013, 88 cases met inclusion criteria (mean age 70.7, SD 8.9, range 51-97). RT utilization was as follows: HF WBRT in 52%, conventional WBRT in 18%, and BT in 3% of cases. Of the 16 traditional schedule WBRT cases, 5 had received contraindications to HF WBRT, and 6 patients chose traditional over HF schedules. RT was omitted in 26% of cases (mean age 78.5, SD 7.4, range 61-97) and 44% of patients over 70. All WBRT was 3DCRT. No cases used IMRT.

Conclusion: Among select early stage breast cancer patients pursuing WBRT at our institution, HF rate increased from 19% in 2006-2008 to 74% in 2011-2013 with no IMRT. National HF rates in this population were 11% in 2008 and 35% in 2013 with 9% IMRT. RT omission in patients over 70 at our institution increased roughly two-fold between the two periods. Our data shows rapid uptake of new evidence, adherence to national recommendations, and cost-effective practices at our institution. If national HF rates matched our institutional rates, the healthcare system could save as much as $22.7 million each year.


2029

An Emulsion Containing Hyaluronic Acid and Chondroitin Sulfate for Prevention and Treatment of Radiation Dermatitis in Breast Cancer Patients - A Randomized Study

J. Pardo,1, 2 H. Mercier,3 R. Soto,1 J. Gonzalez,2 S. Montemuiño,1 I. Alastuey,1 E. Jimenez,3 and I. Ortiz1; 1Hospital Universitari Son Espases, Palma de Mallorca, Spain; 2IdISPa, Institut d’Investigació Sanitaria de Palma. RO Research Coordination IDC Salud, Palma de Mallorca & Barcelona, Spain, 3Radiation Oncology Department, Hospital Sant Joan Reus, Spain

Purpose/Objective(s): To evaluate the effectiveness of a body emulsion containing 0.25% hyaluronic acid, 0.25% chondroitin sulfate, Aloe vera, carrot oil, vitamin F and vitamin E for preventing and treating skin toxicity in breast cancer patients (BCP) undergoing radiation therapy (RT).

Materials/Methods: A randomized, open-label, controlled study was made involving 60 BCP undergoing RT, and a historical series of 30 controls. The 60 patients were divided into two groups of 30 subjects each (prevention group: emulsion use starting 2 weeks before radiation therapy; and treatment group: emulsion use starting upon appearance of skin problems). The two groups were compared with a historical series of 30 controls who received no specific dermatological controls.

Results: A total of 90 patients were included, with a mean age of 60.75 years (SD 9.6). Significant differences (p<0.0001) were observed among the 3 groups in terms of the development of skin toxicity based on the RTOG/EORTC criteria. The controls accumulated a larger number of dermal toxicity manifestations (184 vs 103 in the treatment group and 80 in the prevention group). Time to appearance of skin toxicity after starting radiation therapy was significantly longer in the prevention group than in the control series (51.72 vs. 42.23 days, respectively; p=0.01). 4 patients presented mild allergic skin reactions resolved with suppression of the emulsion. The product characteristics were very positively rated by the patients. The percentage of positive responses (quite satisfied/very satisfied) in reference to general satisfaction, rapid absorption, more hydrated and soft skin, easy application, symptoms improvement and rapidity of symptom relief being 97.05%, 97.04%, 96.75%, 96.73%, 96.45% and 94.97%, respectively. Therefore, patient satisfaction was highly positive in the majority of cases.

Conclusion: The body emulsion with hyaluronic acid and chondroitin sulfate is effective both in delaying the appearance of skin toxicity and in reducing the number of dermal toxicity manifestations in BCP undergoing RT.


2030

Patient Reported Cosmesis Following Accelerated Partial-Breast Irradiation Using Intensity Modulated Radiation Therapy: A Single-Institution Experience

M. Sittig,1 T.D. Fogel,1 J. Rodnick,2 C.D. Bletscher,2 and B. Wilkinson3; 1LSU Health Sciences Center, New Orleans, LA, 2Coastal Radiation Oncology, Ventura, CA, 3Willis-Knighton Cancer Center, Shreveport, LA

Purpose/Objective(s): Intensity modulated radiation therapy (IMRT) is one of a number of methods of delivering accelerated partial breast irradiation (APBI). Patient satisfaction regarding cosmesis following APBI using other technologies including three-dimensional conformal radiation therapy (3D-CRT) and applicator-based APBI is well-described in the literature, but to date, the authors know of no study that has examined patient satisfaction following intensity modulated APBI (IM-APBI). This study was performed to investigate patient satisfaction with cosmesis using this technique.

Materials/Methods: After review board approval, patient charts and radiation therapy plans were reviewed at a single radiation oncology facility. Study eligibility included age >45 years with Stage I disease treated using IM-APBI between 2007 and 2012. The prescribed dose (range: 34.37-5 Gy) was delivered in ten BID fractions over five days. Gross tumor volume (GTV) was defined by the seroma cavity, post-operative changes, and surgical clips, when available. The clinical target volume (CTV) was defined by the GTV + 1.5cm and limited by 0.5cm from the skin and chest wall. The planning target volume (PTV) was defined as the CTV with a 1.0 cm margin. A telephone script was developed for patient assessment of the treated breast, including changes to skin, breast size, and post-treatment complications. Patients were also asked to rate their overall satisfaction with the appearance of the treated breast compared to the untreated breast, consistent with the four-point Harvard Breast Cosmesis Grading Scale but framed in patient-oriented language. Additionally, clinical endpoints
including local control, disease-free survival, and overall survival were collected.

Results: Fifty-two patients underwent IM-APBI without breath holding following partial mastectomy. Thirty-seven eligible patients (71%) were reached by telephone and agreed to participate in the survey. Of participating patients, 3 (8%) and 1 (3%) reported skin hyperpigmentation and hypopigmentation, respectively. Five patients (13%) reported skin thickening after treatment, and seven (19%) reported decreased breast size following radiation therapy. Overall satisfaction with appearance of the treated breast after completion of therapy was very high, with 35 patients (95%) reporting either “excellent” or “good” cosmesis, defined at a median follow-up of 37 months. Only two patients (5%) reported “fair” cosmesis when surveyed. Local control, disease-free survival, and overall survival were all 100% at follow-up.

Conclusion: IMRT, intensity modulated radiation therapy may offer an improved cosmetic outcome as compared to the 3D conformal-based technique.


2031
Choosing Wisely Campaign: Radiographic Surveillance in Triple Negative Breast Cancer

Purpose/Objective(s): The Choosing Wisely campaign recommends no more than annual mammograms for patients treated with radiation therapy as part of breast conservation therapy (BCT); however, high risk subsets such as triple negative breast cancer tend to have earlier and higher rates of locoregional recurrence (LRR) than other phenotypes. Our institutional practice for patients receiving BCT has been surveillance mammograms every 6 months for the first 2-3 years post-treatment. The purpose of this study is to evaluate the mammographic surveillance interval as a means of early local recurrence detection in triple negative breast cancer at one institution.

Materials/Methods: One hundred thirty-seven patients with ER-, PR-, and HER2- breast cancer diagnosed between 2001 and 2013 and treated with BCT were identified and retrospectively reviewed to capture demographic, treatment, radiographic surveillance, and outcomes. Patients with bilateral disease, mastectomy, or unavailable radiographic follow-up were excluded.

Results: Median age at diagnosis was 55 years (range 25-85), and 42% were African American. The majority of patients had Stage I-II disease, and 65% presented with a palpable lesion at initial diagnosis. All patients were treated with lumpectomy and radiation +/- neoadjuvant or adjuvant chemotherapy. The most common imaging surveillance modality was mammography +/- ultrasound. More recent patients had surveillance with MRI or PET. Median time from completion of radiation to first and second surveillance imaging was 3.6 (range < 1-10.2) and 9.6 (range 2.8-23.9) months, respectively. Twenty-six (19%) patients experienced local, regional, and/or distant disease within 3 years of treatment completion. Eleven (8%) patients had isolated LRR as a first site of failure, 6/11 (54%) of which were detected radiographically. Of the aforementioned patients, one was salvaged, one is alive with disease, and 4 are deceased due to disease progression. Five additional patients developed palpable LRR between scheduled surveillance imaging. Three patients were salvaged and are alive without evidence of disease. One is alive with disease, and 1 is dead due to progression of disease. Two additional patients developed isolated LRR or a new primary > 3 years after treatment completion for their index primary.

Conclusion: While events are small, biannual mammographic surveillance in a high risk subset of breast cancer patients detected only 50% of isolated LRR and did not improve disease outcome in comparison to those presenting with palpable interim recurrences. These data support current annual imaging surveillance recommendations in patients with triple negative breast cancer.


2032
K. Han,1 M.L. Yap,2 J. Yong,1 N. Mittmann,3 J. Hoch,1 T.W. Fyles,4 P.R. Warde,5 E. Gutierrez,5 T.D. Lymberiou,6 S. Foxcroft,5 and F.F. Liu7
1Princess Margaret Cancer Centre/University of Toronto, Toronto, ON, Canada
2Princess Margaret Cancer Centre/University of Toronto, Toronto, ON, Canada
3St. Michael’s Hospital, Toronto, ON, Canada
4University of Toronto, Toronto, ON, Canada
5Princess Margaret Cancer Centre, Toronto, ON, Canada
6Cancer Care Ontario, Toronto, ON, Canada
7Princess Margaret Cancer Centre / University of Toronto, Toronto, ON, Canada

Purpose/Objective(s): The economic burden of cancer care is substantial, including steep increases in costs for breast cancer management. There is mounting evidence that women age ≥ 60 with grade I/II T1N0 luminal A (ER/PR-positive, HER2-negative, and Ki67 ≤ 13%) breast cancer have such low local recurrence rates that adjuvant breast radiation therapy (RT) might offer limited value. We aimed to determine the total savings to a publicly-funded health care system should omission of RT become standard of care for these patients.

Materials/Methods: The number of women aged ≥ 60 who received adjuvant RT for T1N0 ER+/Her2- breast cancer in Ontario over 2010/2011 was obtained from the provincial cancer agency. The cost of adjuvant breast RT was estimated through activity-based costing from a public payer perspective. The total saving was estimated by multiplying the number of luminal A cases that received RT by cost of RT minus Ki-67 testing.

Results: In 2010, 748 women aged ≥ 60 underwent surgery for pT1N0 ER+/Her2- breast cancer; 539 (72%) underwent adjuvant RT, of whom 329 were estimated to be grade I/II luminal A subtype. The cost of adjuvant breast RT per case was estimated at $6,135.85; the cost of Ki-67 at $114.71. This translated into an annual saving of approximately $2.0M if RT were omitted for all low-risk luminal A breast cancer patients in Ontario, and $5.1M across Canada.

Conclusion: There will be significant savings to the health care system should omission of RT become standard practice for women with low-risk luminal A breast cancer.


2033
Comparative Dosimetric Study of 3DCRT, IMRT and VMAT for Whole Breast Irradiation Following Breast Conserving: A Single-Institution Experience
A. Vasudevan,1 S. Kariyarambath,2 S. Bhasi,3 P.S. George,3 and B.S. Mathew; 1Division of Radiation Oncology, Regional Cancer Centre, Thiruvananthapuram, India
2Division of Radiation Oncology, Regional Cancer Centre, Thiruvananthapuram, India
3Radiotherapy Physics, Regional Cancer Centre, Thiruvananthapuram, India

Purpose/Objective(s): Radiation therapy for breast cancer has evolved from conventional 2D radiation therapy techniques to 3-dimensional radiation therapy (3DCRT) and more precise yet expensive, labor intensive and time-consuming techniques such as Intensity modulated radiation therapy (IMRT) and Volumetric Modulated Arc Therapy (VMAT) intended...