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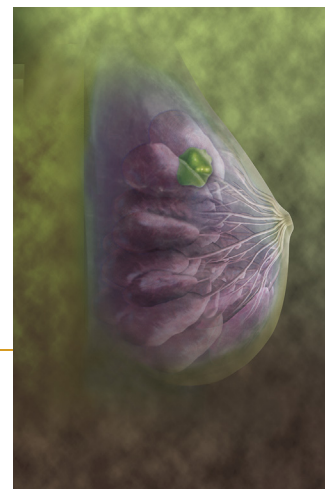


Illustration by Erin Moore

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- 1 Updates in Neoadjuvant Therapy for Triple Negative Breast Cancer
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Original Studies

- 26 Development and Implementation of an Algorithm to Guide MRI Screening in Patients With a Personal History of Treated Breast Cancer
Roberta M. Strigel, Erin Bravo, Amy J. Tevaarwerk, Bethany M. Anderson, Amy L. Stella, Heather B. Neuman
We developed an algorithm to inform the use of magnetic resonance imaging (MRI) screening in patients with a personal history of breast cancer, implemented it, and evaluated initial implementation at our community and academic practice sites. Use of MRI screening was projected to increase to 25% with algorithm implementation. In postimplementation review, we identified 183 patients with a personal history of breast cancer who underwent screening MRI, with 94% algorithm adherence. Clinicians can use this algorithm to guide patient discussions regarding the utility of MRI screening.
- 31 Utilization of Hypofractionated Whole-Breast Radiotherapy With Concurrent Anti-Human Epidermal Growth Factor Receptor 2 (HER2) Therapy
Mutlay Sayan, Irina Vergalasova, Sachin Jhavar, Shicha Kumar, Mridula George, Maria Kowzun, Lindsay Potdevin, Deborah Toppmeyer, Bruce Haffty, Nisha Ohri
While hypofractionated radiotherapy (Hypo-RT) is now recommended for the majority of patients receiving whole-breast irradiation, there are few data on its use in human epidermal growth factor receptor 2 (HER2)-positive patients receiving concurrent anti-HER2 therapy. In this National Cancer Data Base analysis of 15,776 patients with HER2-positive breast cancer, the utilization rate of Hypo-RT quadrupled between 2010 and 2015 and was not significantly associated with overall survival.

- 37 Treatment Decision Making and Financial Toxicity in Women With Metastatic Breast Cancer**
Clara Wan, Courtney P. Williams, Ryan D. Nipp, Maria Pisu, Andres Azuero, Monica S. Aswani, Stacey A. Ingram, Jennifer Y. Pierce, Gabrielle B. Rocque
 This cross-sectional study utilized surveys of 100 women aged ≥ 18 with metastatic breast cancer who received care at two academic hospitals in Alabama from 2017 to 2019 to investigate the relationship between shared decision making (SDM) and financial toxicity (FT). Patients preferring more patient-driven decision making reported worse FT, although differences did not reach statistical significance. Patient decision support is needed to help mitigate FT.
- 47 Effects of Germline Pathogenic Variants, Cancer Subtypes, Tumor-related Characteristics, and Pregnancy-associated Diagnosis on Outcomes**
Michaela L. Tsai, Monica Knaack, Parker Martone, Janet Krueger, Shari R. Baldinger, Tamera J. Lillemoe, Barbara Susnik, Erin Grimm, Susan Olet, Natasha Rueth, Karen K. Swenson
 Breast cancers in patients aged ≤ 35 years are more often associated with high-risk pathogenic variants. No differences were found in recurrence-free survival or overall survival between patients with breast cancer with high-risk pathogenic variants versus without known mutations. Overall survival in this age cohort was lowest with pregnancy-associated cancers, angiolymphatic invasion tumors, and higher cancer stage.
- 57 Werner Syndrome Protein Expression in Breast Cancer**
Constantinos Savva, Maaz Sadiq, Omar Sheikh, Syed Karim, Sachin Trivedi, Andrew R. Green, Emad A. Rakha, Srinivasan Madhusudan, Arvind Arora
 Werner protein (WRN) is a DNA helicase involved in genomic stability and commonly inactivated in breast tumors. Its clinicopathologic significance was investigated in a cohort of clinically annotated series of sporadic ($n = 1650$) and BRCA-mutated ($n = 75$) invasive breast tumors. Low WRN expression was associated with worse survival and aggressive molecular phenotype. Low WRN expression in topoisomerase-1-overexpressed tumors was also associated with poor survival. These findings can be used to optimize personalized treatment.
- 74 Surgeon Bias in the Management of Positive Sentinel Lymph Nodes**
Brittany J. Mathias, James Sun, Weihong Sun, Jun-Min Zhou, William J. Fulp, Christine Laronga, M. Catherine Lee, John V. Kiluk
 Emerging data suggest that not every node-positive patient requires an axillary dissection. This is a single-institution retrospective reviewing which factors guided surgical decision-making in performing an axillary dissection in node-positive mastectomy patients. Young age, lobular histology, tumor size, number of positive sentinel nodes, extranodal extension, and lymphovascular invasion influenced decisions on axillary dissection.
- 80 Final Efficacy Results of Neratinib in HER2-positive Hormone Receptor-positive Early-stage Breast Cancer From the Phase III ExteNET Trial**
Arlene Chan, Beverly Moy, Janine Mansi, Bent Ejlersen, Frankie Ann Holmes, Stephen Chia, Hiroji Iwata, Michael Gnant, Sibylle Loibl, Carlos H. Barrios, Isil Somali, Snezhana Smichkoska, Noelia Martinez, Mirta Garcia Alonso, John S. Link, Ingrid A. Mayer, Søren Cold, Serafin Morales Murillo, Francis Senecal, Kenichi Inoue, Manuel Ruiz-Borrego, Rina Hui, Neelima Denduluri, Debra Patt, Hope S. Rugo, Stephen R.D. Johnston, Richard Bryce, Bo Zhang, Feng Xu, Alvin Wong, Miguel Martin, for the ExteNET Study Group
 In the patient population with early-stage human epidermal growth factor receptor 2-positive/hormone receptor-positive breast cancer who initiate neratinib within 1 year of trastuzumab-based therapy, the absolute 5-year invasive disease-free survival benefit versus placebo is 5.1%, and absolute 8-year overall survival benefit is 2.1%. Among those with residual disease after neoadjuvant therapy (non-pathologic complete response), absolute gains with neratinib are 7.4% and 9.1%, respectively.

Letter to the Editor

92 Immunohistochemical Markers as a Surrogate Method for Differentiation of Luminal Subtypes of Breast Cancer and Their Prognostic Significance

Arun Kumar Goel, Vaishali Zamre, Gopal Sharma, Dinesh Singh, Prekshi Chaudhary

Available Exclusively Online at www.clinical-breast-cancer.com

e1 Effect of MicroRNA-766 Promotes Proliferation, Chemoresistance, Migration, and Invasion of Breast Cancer Cells

Xiumei Duan, Xiaona Liu, Yuqing Cao, Yuxin Li, Aidaeraili Silayiding, Li Zhang, Jiping Wang

We studied the role of microRNA (miR)-766 in the proliferation and chemoresistance of breast cancer (BCa) using BCa cell lines. miR-766 regulated the proliferation, invasion, and migration of BCa cells by binding to 3' untranslated region of phosphatase and tensin homolog and regulating the phosphatase and tensin homolog signaling pathway. miR-766 could act as a potential biomarker to predict the chemosensitivity and prognosis in BCa.

e18 Looking for Metastasis in Early Breast Cancer: Does Bone Scan Help? A Retrospective Review

Justin James, Melanie Teo, Vivekananda Ramachandran, Michael Law, Eugenia Ip, Michael Cheng

Despite clear guidelines, providing a strategy for systemic staging of early breast cancer (EBC) varies among institutions. Bone scan used in conjunction with computed tomographic scan of chest, abdomen and pelvis was found to be of limited benefit in EBC, with a yield of less than 1%.

e22 Comparative Effectiveness of Adjuvant Chemotherapy in Early-Stage Breast Cancer: A Network Meta-analysis

Preethi John, Mikala C. Osani, Abhigna Kodali, Rachel Buchsbaum, Raveendhara R. Bannuru, John K. Erban

National guidelines recommend several adjuvant chemotherapies for *HER2*-negative breast cancer that have not been compared in clinical trials. Our network meta-analysis of 7 randomized clinical trials showed that contemporary anthracycline-based regimens have similar efficacy compared to each other and to *N*-anthracycline-based regimens. These findings suggest that clinicians can tailor therapy toward patient preferences and tolerability without compromising benefit.

e38 Aromatase Inhibitor Symptom Management Practices: A Retrospective Study

Andrew Ernst, Kathryn E. Flynn, Elizabeth M. Weil, Bradley H. Crotty, Sailaja Kamaraju, Nicole Fergestrom, Joan Neuner

Aromatase inhibitor (AI)-associated symptom management is a poorly studied contributor to early AI discontinuation. This retrospective chart review included 179 randomly selected women prescribed an AI. Eighty-two percent of patients had at least one symptom, and 52% of those patients were treated on the basis of guidelines. AI-associated symptoms were well documented but were not treated to the same extent.

e48 A Retrospective Analysis of the Relationship Between the Result of *BRCA1/2* Genetic Testing and Surgical Method Selection in Japan

Mayuko Inuzuka, Chie Watanabe, Shiro Yokoyama, Takashi Kuwayama, Sadako Akashi-Tanaka, Masami Arai, Seigo Nakamura, and the Registration Committee of the Japanese HBOC consortium

This study examined the relationship between *BRCA1/2* genetic testing results and surgical method selection in patients with primary unilateral breast cancer in Japan. Compared with those without a mutation, patients with mutations tended to choose mastectomy. Additionally, all patients who underwent contralateral risk-reducing mastectomy were diagnosed with breast cancer before the age of 50 years.

- e53 Validation of CTS5 on a Retrospective Cohort of Real-Life Pre- and Postmenopausal Patients Diagnosed With Estrogen Receptor–Positive Breast Cancers: Is It Prognostic?**
Andrea Villasco, Francesca Agnelli, Marta D’Alonzo, Francesca Accomasso, Piero Sismondi, Nicoletta Biglia
Clinical Treatment Score at 5 Years (CTS5) is an algorithm developed to identify patients with estrogen receptor–positive breast cancers at higher late distant recurrence (LDR) risk. We tested its clinical validity on a retrospective cohort of 603 real-life patients. CTS5 was shown to be prognostic on the risk of LDR for pre- and postmenopausal patients, supporting its use to better tailor the prescription of extended endocrine therapy.
- e63 The Role of Immune Cells in Breast Tissue and Immunotherapy for the Treatment of Breast Cancer**
Stephanie L. Goff, David N. Danforth
- e74 Male Breast Cancer Risk Assessment and Screening Recommendations in High-Risk Men Who Undergo Genetic Counseling and Multigene Panel Testing**
Sushma Gaddam, Samantha L. Heller, James S. Babb, Yiming Gao
Mammography screening is the standard tool for early breast cancer detection in women. New data support utility of mammography screening in high-risk men. Current breast cancer risk management and screening recommendations remain inconsistent among high-risk men, with the majority undergoing clinical breast examination and a minority undergoing mammography screening. We provide male breast cancer risk assessment and screening recommendations in high-risk men who undergo genetic counseling and multigene panel testing.
- e80 Spontaneous Rib Fractures After Breast Cancer Treatment Based on Bone Scans: Comparison Of Conventional Versus Hypofractionated Radiotherapy**
Do Wook Kim, Jae Sik Kim, Kyubo Kim, Kyung Hwan Shin
A bone scan-based retrospective review of 1265 patients with breast cancer who underwent surgery revealed spontaneous rib fractures in 209 patients. Abnormal bone density, chemotherapy, and radiotherapy were identified as the significant risk factors for spontaneous rib fractures. In the radiotherapy subgroup, a hypofractionated scheme was identified as the risk factor for the ipsilateral rib fractures.
- e88 Implementation of a Brief Screening Tool to Identify Needs of Breast Cancer Survivors**
Allison L. McDonough, Yvonne Lei, Agnes H. Kwak, Dana E. Haggett, Rachel B. Jimenez, Katherine T. Johnston, Beverly Moy, Laura M. Spring, Jeffrey Peppercorn
Breast cancer survivors have complex and frequently unmet needs, but little is known about how best to identify such issues. We conducted a feasibility study for a brief questionnaire, self-administered by breast cancer survivors at follow-up visits. The tool was highly acceptable to patients and enhanced visits for clinicians. This simple, efficient intervention can identify the needs and concerns of each patient.
- e96 Breast Cancer and Secondary Cancer Recurrences After Autologous Tissue Reconstruction**
Amy P. Early, Wong Moon
A 20-year retrospective review of locoregional recurrences, secondary cancers, and atypical breast neoplasms after autologous tissue reconstruction for cancer of the breast identified an overall recurrence rate of 5.3%. The rate for secondary cancers was 1.2%. Survival rates after treatment for breast carcinomas were concordant with those reported in the literature. We report treatment and survival data for secondary cancers.

- e102 MR Elastography of the Breast: Evolution of Technique, Case Examples, and Future Directions**
Bhavika K. Patel, Naziya Samreen, Yuxiang Zhou, Jun Chen, Kathy Brandt, Richard Ehman, Kay Pepin
- e112 Late-Stage Diagnosis and Associated Factors Among Breast Cancer Patients in South and Southwest Ethiopia: A Multicenter Study**
Aragaw Tesfaw, Sefonias Getachew, Adamu Addissie, Ahmedin Jemal, Andreas Wienke, Lesley Taylor, Eva Johanna Kantelhardt
We examined data of patients with advanced stages of breast cancer in large regions of south and southwest Ethiopia to determine the occurrence of late-stage disease. We found the main factors that contributed to late-stage diagnosis included patient delaying in seeking care, having comorbid illnesses, and a rural residence.
- e120 Pregnancy-Associated Breast Cancer: A Multidisciplinary Approach**
Ida Paris, Danilo Di Giorgio, Luisa Carbognin, Giacomo Corrado, Giorgia Garganese, Gianluca Franceschini, Alejandro Martin Sanchez, Rosa Pasqualina De Vincenzo, Cristina Accetta, Daniela Andreina Terribile, Stefano Magno, Alba Di Leone, Sonia Bove, Riccardo Masetti, Giovanni Scambia
- e128 Breast Cancer Management During COVID-19 Pandemic in Madrid: Surgical Strategy**
Juana María Brenes Sánchez, Amanda López Picado, María Eugenia Olivares Crespo, José Ángel García Sáenz, Rosa María De La Plata Merlo, María Herrera De La Muela
Breast cancer experts share their experience in the management of surgical strategy for patients with breast cancer during the COVID-19 pandemic and subsequent crisis in the health care system. Minimal surgical procedures must be performed when resources are available, and a preoperative protocol is necessary for safe surgery following pandemic outbreak.
- e136 Resuming Breast Imaging Services in the Aftermath of the COVID-19 Pandemic: Safety and Beyond**
Sepideh Sefidbakht, Mehrdad Askarian, Bijan Bijan, Mohammad Eghtedari, Sedigheh Tahmasebi, Fariba Zarei, Reza Jalli, Pooya Iranpour