30-year-old female presenting for follow-up on HER2/neu+ invasive ductal carcinoma
Ms. SH is a 30-year-old female presenting for follow-up on right HER2/neu+ invasive ductal carcinoma following 6 cycles of neoadjuvant chemotherapy. She was initially able to palpate the mass, but she is no longer able to palpate it.
List of imaging studies

* Bilateral breast MRI with contrast (pre/post neoadjuvant chemotherapy)
MRI demonstrated an irregular, avidly enhancing mass in the right breast 3:00 posterior depth approximately 2.5 x 1.6 x 2.4 cm.
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Known irregular, enhancing malignant index mass in the posterior depth 3:00 position right breast is significantly decreased in size. On today's MRI there is a residual 0.9 cm enhancing mass.
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Breast MRI Pre and Post Neoadjuvant Chemotherapy

Images cropped to show right breast are pre- and post-chemotherapy dramatic response. She receives the assignment of Assessment Category **BIRADS 6: Known Biopsy-Proven Malignancy** on each study because she a) has a known malignancy and b) has not yet undergone her definitive therapy (surgery).
Patient planned to undergo needle localized segmental mastectomy with sentinel node biopsy
Breast Imaging Reporting and Data System

* Developed in 1993 by ACR to improve the reporting of mammograms
* Standardized reporting to reduce confusion in breast imaging interpretations and management recommendations
* Late UNC Professor Emeritus Robert McLelland original BI-RADS® committee

* BI-RADS®-Mammography Fifth Edition 2013
* BI-RADS®-Ultrasound Second Edition 2013
* BI-RADS®-MRI Second Edition 2013
Discussion: Assessment Categories

* BI-RADS® Category 0: INCOMPLETE - NEED ADDITIONAL IMAGING EVALUATION AND/OR PRIOR MAMMOGRAMS FOR COMPARISON
* BI-RADS® Category 1: NEGATIVE
* BI-RADS® Category 2: BENIGN
* BI-RADS® Category 3: PROBABLY BENIGN
* BI-RADS® Category 4: SUSPICIOUS
* BI-RADS® Category 5: HIGHLY SUGGESTIVE OF MALIGNANCY
* BI-RADS® Category 6: KNOWN BIOPSY-PROVEN MALIGNANCY
* Category 0: INCOMPLETE - NEED ADDITIONAL IMAGING EVALUATION AND/OR PRIOR MAMMOGRAMS FOR COMPARISON
Recall for additional imaging and/or comparison with prior examinations
* Category 1: NEGATIVE  (0% risk of malignancy)
Routine mammography screening
* Category 2: BENIGN  (0% risk of malignancy)
Routine mammography screening
* Category 3: PROBABLY BENIGN  (<2% risk of malignancy)
Short interval 6 month follow-up OR continued surveillance
* Category 4: SUSPICIOUS  (2-95% risk of malignancy)
Biopsy should be performed in the absence of clinical contraindications
* Category 5: HIGHLY SUGGESTIVE OF MALIGNANCY  (>95% risk)
Biopsy should be performed in the absence of clinical contraindications
* Category 6: KNOWN BIOPSY-PROVEN MALIGNANCY  (100% risk)
Surgical excision when clinically appropriate
Neoadjuvant chemotherapy may reduce tumor size and improve overall prognosis, particularly in patients with Her2/neu+ (or ER+/PR+) breast cancers due to the development of targeted therapies based on immunohistochemically detected tumor markers.

- MRI is a useful imaging modality in assessing a patient’s response to neoadjuvant chemotherapy.
- The patient remains a BIRADS 6 while monitoring response to neoadjuvant chemotherapy.
Although tumors have traditionally been staged anatomically, we are beginning to recognize the important role of tumor biomarkers in determining a patient’s overall prognosis.

Effective January 1st, 2018, the eighth edition of the American Joint Committee on Cancer (AJCC) staging manual now incorporates a tumor’s HER2/neu and estrogen-/progesterone-receptor status into staging.
For example: Under the new staging system, a breast cancer formerly classified as T1N1 Her2+ would be considered Stage I

- Previously, any lymph node involvement would increase a cancer to Stage II or higher
- Staging manual revision reflects the fact that most patients with T1N1 Her2+ breast cancer respond very well to targeted therapy
