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Purpose: Imaging and physical exam are considered less precise in determining the extent of disease in invasive lobular carcinoma (ILC) relative to non-lobular subtypes. Anecdotally, surgical axillary evaluation frequently reveals positive nodes in clinically N0 patients with ILC; however, few studies quantify the likelihood of unsuspected disease at the time of surgery to help set patient expectations. Here, the incidence of upstaging clinically node-negative patients to a stage where PMRT is indicated is compared by lobular versus non-lobular histology.

Methods: We examined patients from our institution treated with mas-
tectomy, 30% of patients with lobular histology were upstaged at the time of surgery to require PMRT. Therefore, it is important to counsel ILC patients regarding the incidence of radiographically occult disease to the brain. One complication of RT is radiation necrosis (RN), which has a similar appearance as tumor recurrence on MRI leading to a diagnostic dilemma. The purpose of this study was to assess the role of 18F-FDG-PET/MRI in differentiating RN from tumor recurrence in patients post CNS RT.

Methods: We retrospectively identified 10 patients (11 lesions) who received prior RT to the CNS and subsequently underwent 18F-FDG-PET/ MRI post RT in an attempt to differentiate RN from tumor recurrence. 18F-FDG-PET with MR-based attenuation correction and a diagnostic 18F-FDG uptake localizing to abnormal enhancement and/or relative cerebral blood volume calculated on perfusion weighted imaging was interpreted as tumor recurrence, while a lack of these findings was interpreted as RN.

Results: For all patients, the 1 and 2 year actuarial rates for LC were 82.3% and 75.2%; and rates for OS were 72.5% and 52.8% respectively. Among tumor histologies, 1 year LC rates for thyroid, breast, lung, colon, and other cancers were 90.7%, 93.5%, 70.7%, 60.4% and 82.5%. When analyzed together, NSCLC and colorectal cancers had significantly poorer local failure free survival rates at 1 and 2 years (67.5% and 58.4%, respectively), than all other histologies (90.4% and 84.0%, respectively; p = 0.0004). NSCLC/colorectal tumor status was a significant predictor of local failure on COX univariate (HR 2.71, 95% CI 1.38 – 5.33, p = 0.004) and multivariate (HR 3.14, 95% CI 1.57 – 6.29, p = 0.001) analysis, as well as a significant variable in a competing risk multivariate model (HR 2.07 95% CI 1.08 – 3.97, p = 0.029) when compared to other tumor types.

Conclusions: SSRS is a safe and effective strategy in achieving local control of spine metastases, particularly among radiosensitive histologies. However, a subset of these classically defined histologies (NSCLC and colorectal) has a propensity towards local failure. In addition to resulting in poorer OS outcomes, the poor LC rates seen in NSCLC and colorectal cancers in this study are more consistent with a radioresistant phenotype suggesting the need for optimized dosing regimens in this subgroup.

Reference:
1. Kommers J, Hassanzadeh B, Anupama Chundury, Jackson Rowe, Michelle Miller-Thomas, Christina Tsien, University of Missouri Kansas City, Department of Radiation Oncology, Washington University School of Medicine, Saint Louis University School of Medicine, Division of Neuroradiology, Mallinckrodt Institute of Radiology, Washington University School of Medicine.