

Comparative effectiveness and cost of preoperative breast MRI in elderly breast cancer patients

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Abstract: Preoperative breast magnetic resonance imaging (MRI) has been used increasingly in the preoperative evaluation of women with newly diagnosed breast cancer. Despite its rapid adoption, limited evidence exists to support the routine use of breast MRI, creating controversy in breast cancer management. Existing evidence suggests that breast MRI may change treatment patterns, leading to surgical treatment delay and more extensive surgeries but may not improve patient outcomes. This study is one of the first to examine the association between preoperative breast MRI and surgical planning (i.e., time to complete surgery and type of initial surgery), short-term outcomes (i.e., re-excision and second breast cancer event rates), and cost in the elderly women using a large, population-based dataset.

In this observational, retrospective analysis, we identified women diagnosed with early-stage (I-IIb), operable breast cancer from 2004-2007 in the Surveillance, Epidemiology, and End Results (SEER)-Medicare dataset. Medicare claims were used to define the initial treatment phase, to identify breast cancer treatments, and to categorize Medicare payments. Second breast cancer events (i.e., recurrence or a second primary breast cancer) were identified through an algorithm validated in breast cancer patients. To control for measured confounders, we used propensity score methods.

Twelve percent of our sample had a preoperative breast MRI. Compared to women who did not undergo breast MRI, we found that receipt of breast MRI was associated with a median 15-day delay in complete surgery and an increased likelihood of a mastectomy as the initial surgery. Breast MRI was not significantly associated with re-excision rates, but was associated with an increased hazard of a second breast cancer event. Women who received a breast MRI had higher total all-cause and breast cancer-attributable costs during the initial treatment phase than those women who did not undergo a breast MRI.

Since findings from this dissertation indicate that breast MRI was associated with a slight surgical delay and an increased likelihood of a mastectomy in the absence of evidence for improved short-term outcomes, healthcare providers and elderly breast cancer patients should consider these factors when making informed decisions about whether the use of breast MRI is appropriate.

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