ACR Appropriateness Criteria Stage I Breast Cancer: Initial Workup and Surveillance for Local Recurrence and Distant Metastases in Asymptomatic Women

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Women newly diagnosed with stage 1 breast cancer have an early-stage disease that can be effectively treated. Evidence provides little justification for performing imaging to exclude metastasis in asymptomatic women with stage I breast cancer. No differences have been found in survival or quality of life in women regardless of whether they underwent initial workup for metastatic disease. These women generally prefer intensive follow-up to detect an early recurrence. However, survival rates do not differ between women who obtain intensive screening and surveillance, with imaging and laboratory studies, and women who undergo testing only as a result of development of symptoms or findings on clinical examinations. In addition, quality of life is similar for women who undergo intensive surveillance compared with those who do not. American Society of Clinical Oncology and National Comprehensive Cancer Network guidelines state that annual mammography is the only imaging examination that should be performed to detect a localized breast recurrence in asymptomatic patients. Additional imaging may be needed if the patient has locoregional symptoms.

The ACR Appropriateness Criteria are evidence-based guidelines for specific clinical conditions that are reviewed every 3 years by a multidisciplinary expert panel. The guideline development and review by the panel include extensive analysis of current medical literature from peer-reviewed journals and application of a well-established consensus methodology (modified Delphi) to rate the appropriateness of imaging and treatment procedures. When evidence is lacking or not definitive, expert opinion may be used to recommend imaging or treatment.

Key Words: Appropriateness Criteria, early-stage breast cancer, metastatic disease, recurrence

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SUMMARY OF LITERATURE REVIEW

Introduction/Background

The incidence of breast cancer has increased, with more than 200,000 women diagnosed with invasive carcinoma yearly [1]. Fortunately, breast cancer mortality has decreased, owing to advances in screening and improved treatment [2]. As the proportion of women diagnosed with early-stage breast cancer increases, so does the population of breast

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The ACR seeks and encourages collaboration with other organizations on the development of the ACR Appropriateness Criteria through society representation on expert panels. Participation by representatives from collaborating societies on the expert panel does not necessarily imply individual or society endorsement of the final document.

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Variant 1. Newly diagnosed. Initial workup. Rule out metastases

Radiologic Procedure	Rating	Comments	Relative Radiation Level
Rule out bone metastases			
Tc-99m bone scan whole body	1		☢☢☢
X-ray radiographic survey whole body	1		☢☢☢
FDG-PET/CT whole body	2		☢☢☢☢
Rule out thoracic metastases			
X-ray chest	1		☢
CT chest without contrast	2		☢☢☢
CT chest with contrast	2		☢☢☢
CT chest without and with contrast	2		☢☢☢
FDG-PET/CT whole body	2		☢☢☢☢
Rule out liver metastases			
CT abdomen without contrast	2		☢☢☢
CT abdomen with contrast	2		☢☢☢
CT abdomen without and with contrast	2		☢☢☢☢
Ultrasound abdomen	2		O
MRI abdomen without contrast	2		O
MRI abdomen without and with contrast	2		O
FDG-PET/CT whole body	2		☢☢☢☢
Rule out brain metastases			
MRI head without contrast	2		O
MRI head without and with contrast	2		O
CT head without contrast	1		☢☢☢
CT head with contrast	1		☢☢☢
CT head without and with contrast	1		☢☢☢
FDG-PET/CT whole body	2		☢☢☢☢

Note: Rating scale: 1, 2, and 3 = usually not appropriate; 4, 5, and 6 = may be appropriate; 7, 8, and 9 = usually appropriate. FDG = fluorine-18-2-fluoro-2-deoxy-D-glucose.

cancer survivors, emphasizing the importance of follow-up care for these women. The premise for intense monitoring in breast cancer survivors is that the detection of an early recurrence, prior to the development of symptoms, will allow for earlier treatment and possibly improve overall survival rates [3]. However, randomized controlled trials have found that routine testing for distant metastatic disease provides no benefit in survival or health-related quality of life, and an intensive approach to surveillance is costly. Moreover, although many physicians and patients favor intensive initial workup and surveillance, patients overestimate the value of laboratory and imaging studies and may incorrectly assume they are free of cancer if they receive a normal test result [3].

Initial Workup

This appropriateness guideline criteria segment addresses the initial imaging workup of women with stage I breast carcinoma, specifically regarding which imaging tests should be done to rule out unexpected metastatic disease (see Variant 1).

Skeletal Metastases

Radionuclide scanning is more effective than conventional radiography for detecting skeletal metastases because radionuclide scans have higher sensitivity and can survey the entire skeleton in one examination [4]. However, several investigations have revealed that bone scanning is not useful in stage I breast carcinoma because of its low yield and lack of proven effect on management or survival. A large nonrandomized clinical study in Italy confirmed the lack of value of regular preoperative radiography and radionuclide bone scanning performed on stage I asymptomatic breast cancer patients [5]. Only 1 of 633 patients with stage I disease had metastatic bone disease detected. Several other nonrandomized clinical studies have also documented the low yield and lack of utility of radionuclide bone scanning for patients with stage I breast carcinoma [6-9].

Despite the low yield of bone scans, many clinicians order baseline bone scans for comparison with subsequent scans performed when patients develop symptoms or convert to an abnormal routine scan. In fact, routine baseline bone scans are unlikely to be useful in stage I disease because few patients will convert to positive scans. In addition, earlier detection of metastases does not reduce overall mortality [7,10,11]. Furthermore, several studies have reported false-positive scans when screening for metastases in asymptomatic patients [10].

The use of PET combined with CT in the initial cancer of early-stage primary breast cancer is not well defined. It is uncertain whether PET/CT will serve as a replacement for current imaging technologies [12-14]. A retrospective study of 163 women with suspected metastatic breast cancer showed a high level of concordance between PET/CT and bone scan in detecting bony metastases [15]. Their results support the use of PET/CT in detecting osseous metastases and suggest that PET/CT may render bone scintigraphy unnecessary.