Investigations for patients with early-stage breast cancer: oversetting the stage

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A systematic review of staging for early breast cancer by Cancer Care Ontario, published in 2001, showed that, for asymptomatic patients, no tests had a detection rate greater than 0.5% for stage I disease and only bone scans, at 2.4%, had a rate above 1% for stage II disease.¹ False-positive rates ranged between 10% and 23% for bone scans and between 33% and 66% for liver ultrasonography. Consensus conclusions recommended against tests with a detection rate of less than 1% accompanied by a substantial false-positive rate, leaving only bone scans for stage II disease as a recommended staging procedure.¹

In a linked *CMAJ* research article, Simos and colleagues² examined data for an Ontario population-based cohort with a diagnosis of primary breast cancer between 2007 and 2012. They observed rates of imaging for staging purposes of 79.6% and 92.7% for stage I and II disease, respectively, with an average of 3.7 tests performed for each patient imaged. The population included in the current analysis was essentially the same group targeted by the 2001 guidelines, and the findings justifiably raise the question of why such a disconnect exists between guidelines and clinical practice.

In general, radiologic imaging is performed to detect or rule out occult macroscopic disease, thereby potentially sparing a patient unnecessary, noncurative breast cancer surgery, radiation therapy and/or intensive adjuvant chemotherapy. The detection of metastases radically changes

prognosis, alters the goals of care, affects the choice and intensity of therapies and initiates a series of emotionally charged, multifaceted conversations with and between patients and their loved ones. A positive result on a staging test changes lives forever.

As most physicians will recall, the TNM staging system, developed as a tool to standardize nomenclature and disease evaluation,³ is key in the assessment of cancer. For patients with early-stage breast cancer, the tumour (T) and lymph node (N) staging of their disease will be well documented, aided by the widespread adoption of synoptic reporting by pathologists. It would be logical to assume that if “M” (with a value of either 0 or 1, corresponding to absence or presence of metastases, respectively) is part of the staging lexicon for all cancers, then staging must be a necessary element of care. This assumption has been reinforced over the years by the fact that eligibility for most clinical trials evaluating adjuvant chemotherapy has required negative staging examinations, although more recent trials have allowed symptom-directed imaging only.⁴

Although studies using linked, population-based administrative databases provide valuable information, they may lack clinical detail about the reasons for imaging. Simos and colleagues² acknowledge that some of the investigations documented in their study may have been symptom-directed and therefore performed not purely with the intent of staging. Moreover, about 20% of patients underwent “confirmatory” chest radiography (i.e., the chest had already been imaged), and about 20% of patients underwent “initial” skeletal imaging with computed tomography or magnetic resonance imaging (MRI). Both of these clinical situations lack face validity as staging tests. Chest radiography generally neither refutes nor confirms lung metastases if it follows some other form of chest imaging, and MRI is clearly inappropriate as initial bone imaging for an asymptomatic patient and thus likely was not a staging test. Finally, the most commonly performed imaging was pre-

KEY POINTS

- Routine radiologic staging investigations for asymptomatic patients with stage I and II breast cancer have low detection rates and high false-positive rates, necessitating further imaging.
- Consensus guidelines from Canada (available since 2001), the United States and Europe recommending against routine imaging have had little or uncertain impact on clinical practice.
- Physician communication and knowledge brokering, particularly among surgeons and oncologists when face to face with patients, are important to ensure that any staging in early breast cancer maximizes benefits and minimizes harms.

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operative chest radiography, usually ordered by a surgeon. It is likely that the intent of many of these imaging tests was not cancer staging, but rather a routine evaluation before a general anesthetic (ironically, another low-value practice that should be avoided⁵).

Notwithstanding the aforementioned shortcomings, this important study shows that substantial inappropriate staging undoubtedly occurs. Physicians are not following the 2001 Cancer Care Ontario guidelines,¹ and they are also running afoul of more recent guidelines from the American Society of Clinical Oncology⁶ and the European School of Oncology.⁷

Simos and colleagues² observed that it was surgeons and oncologists who ordered most of the imaging for staging purposes, with the major distinction being related to the timing of patient contact: surgeons ordered most of the preoperative tests and oncologists ordered most of the postoperative ones. Unfortunately, the motivations for ordering these tests remain unknown. Surgeons may order staging tests in an attempt to expedite care (assuming that oncologists will need the information for treatment planning), to assess clinical trial options or to frame the goals of surgical treatment as accurately as possible. Oncologists may order staging tests because certain information was not available at the time of surgery, to follow up on an incidental finding detected on preoperative imaging or to help in decision-making about adjuvant chemotherapy.

Both teams may order tests to reassure and support the anxious, newly diagnosed patient and her loved ones — clearly laudable goals. Patients are often blindsided by a cancer diagnosis and rely on the medical team to be as certain as possible that their disease can be cured and that they are not dying. Chronic aches, coughs and headaches, previously minimized or tolerated amid comforting reassurance from physicians, take on terrifying new significance following a cancer diagnosis, sometimes translating into paralyzing anxiety that can affect daily functioning and interactions. However, both surgeons and oncologists need to remember that the incidentally discovered 3-mm pulmonary nodule or benign bone island will trigger further testing recommendations from the radiologist in light of the newly diagnosed cancer. Similarly, both must consider that waiting for test results, needing confirmatory tests for benign, incidental findings and escalating use of radiologic technology (e.g., MRI, positron emission tomography) with uncertain goals will lead to increases in cost, resource utilization and wait times for treatment, while simultaneously exacerbating the very anxiety that the clinician was trying to settle.

Patients are unlikely to consult published guidelines in respected medical journals¹ or broad campaigns aimed at enhancing value⁶ for an understanding of what their disease means and how it should be evaluated or treated. It is the responsibility of physicians to be knowledge brokers between the evidence-based guidance and their patients. To do so effectively takes time, energy and good interdisciplinary communication. It also requires an understanding that, despite remarkable improvements in breast cancer survival since 1990, the diagnosis continues to strike terror, no matter what the disease stage or long-term disease-free expectations might be.

Like prescribing antibiotics for a viral upper respiratory tract infection, ordering staging investigations for most asymptomatic patients with stage I and II breast cancer is easy, even though it is usually wrong. Surgeons and oncologists need to take the time and do the hard work involved in helping patients adapt to, and cope with, the multifactorial stresses that come with a cancer diagnosis. For some patients, a negative result on staging evaluation may indeed bring the peace of mind and balance needed to move forward with recommended adjuvant therapies. However, for most patients with newly diagnosed stage I and II breast cancer, reflexively ordering staging investigations does not help relieve stress, nor does it detect disease.

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