

Is Baseline Bone Imaging in High-Risk Breast Cancer Patients Justified?

To the Editor:

The value of initial breast imaging [BI] in breast cancer [BCa] patients is debatable. Some investigators (1) have calculated that the overall yield of bone scintigraphy to be 1% in the preoperative setting. This consideration conveys “a poor return for the time and money invested” (2). On the other hand, accurate cancer staging is critical in determining the optimum treatment in most solid malignancies.

The emergence of managed care has compelled all medical participants to be more aware of cost containment within health care facilities, and this has become an issue of great concern. There is a need to find a reliable and objective clinical parameter to aid the decision regarding which BCa patients to send for baseline BI. The most important consideration is how one could suspect and detect neoplastic spread to the skeletal system early, when timely intervention may even be life saving or prevent worsening of the condition.

Plain radiographs of bone may not reveal a metastatic lesion until extensive marrow replacement has occurred. Currently, bone scintigraphy and positron emission tomography are recognized to be more sensitive tests to detect bone metastases [BOM], because such imaging can suggest the presence of BOM before conventional radiographs will. However, increased tracer uptake in bone is nonspecific on account of the fact that inflammation, prior trauma or metabolic bone disease may yield scintigraphic images identical to those seen with metastatic tumors. Computed tomography, on the other hand, is normally reserved for the assessment of positive bone scans with negative radiographs.

Lymph node involvement is a marker for tumor aggressiveness. With the objective of identifying BCa

individuals at high risk for developing BOM, Colleoni *et al.* (3) evaluated the data from 6,792 patients, who participated in the International Breast Cancer Study Group trials. The investigators observed that BCa patients with four or more involved axillary nodes [$\geq 4N+$] at the time of diagnosis were at a higher risk to experience BOM at any time [a finding also confirmed in a retrospective study of 1,220 BCa patients (4)]. It is in this context that we undertook a retrospective study to determine the merit of baseline BI in high-risk people with $\geq 4N+$.

The computerized and/or radiation oncology records and histopathology reports of patients who underwent definitive BCa surgery [breast conservation, 19 cases or modified radical mastectomy, 83 cases] between September 1981 and June 2010 were reviewed. BOM was considered present when the imaging abnormalities were confirmed on plain radiographs as an osteolytic lesion or were histologically proven.

A total of 102 patients had more than three positive axillary nodes. The mean age was 50.8 years [range 24–72 years]. Thirty-two women [31%] were 45 years old or younger, whereas the remaining people were older. Breast neoplasms were staged as T1 [18%], T2 [44%], T3 [28%], and T4 [10%]. Imaging studies of the skeletal system consisted of bone scintigraphy [54%], computed tomography [10%] or positron emission tomography [36%]. BI was performed within 3 months following the establishment of BCa diagnosis in all patients except one; a bone scan later obtained at 5 months was proven to be false-positive because of a normal cervical spine radiograph. The median number of positive nodes was 8.5 [range 4–44 nodes], and the total number of examined nodes was 16.5 [range 8–46 nodes].

Bone metastases were demonstrated in the spine or humerus [Table 1] in three women [3%]. These very few instances precluded a meaningful correlation to size and stage of the tumor [links which other investigators (5,6) have observed], receptor markers status and other influential unfavorable factors. Few studies

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Table 1. Clinical Summary of Patients with Bone Metastases [BOM]

Patient no.	Age (years)	T stage	≥4N+ status	BOM site	Additional histopathology
1	75	T3*	[17/20] [†]	Spine [‡]	NA
2	69	T2	[8/24]	Humerus [‡]	Triple receptor negative tumor
3	59	T3	[14/14]	Humerus [‡]	Triple receptor negative tumor

*American Joint Committee on Cancer staging system.

[†][Number of positive nodes/total number of examined axillary nodes].

[‡]Multiple locations in the spine or osteolytic lesion observed on radiograph/histologically documented humeral metastasis.

NA, not available.

designed to diagnose potentially treatable BOM at presentation have provided the positive yield of initial BI in BCa patients with more than three involved nodes. The reported frequencies of BOM have been between 9% and 16% [the larger percentage reflecting the small number of evaluated cases] (4,7).

In conclusion, this retrospective study showed that the chance of having asymptomatic BOM at presentation is small in BCa patients with ≥4N+. It is therefore suggested that the practice of routine, baseline BI in all BCa women be abandoned, and a more selective (i.e., for individuals with pain) approach be adopted instead. Nonetheless, finding osseous disease in these women is of vital importance in choosing appropriate therapy, because the development of BOM usually indicates that a cure is unlikely. It has been reported that more than half of the patients with detected osseous systemic disease died within 5 years (8).

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