

ROUTINE LIVER IMAGING IS UNNECESSARY IN THE WORK-UP OF T1-2 N0-1 BREAST CANCER

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Approximately 180,000 women are diagnosed with breast cancer annually in the United States, and accounts for approximately 30% of all incident cancers among women.¹ In response to increasing demands to control cost, health care providers are re-examining their current methods of patient care to optimize the utilization of resources, in addition to allaying patients' psychological distress resulting from undergoing further investigations and false-positive results. Professional organizations, including the American Society of Clinical Oncology and the National Comprehensive Cancer Network (NCCN), recommend postoperative surveillance strategies.^{2,3} However, recommendations on how extensive metastatic work-up can be, especially in early breast cancer, are not compelling. We postulated that it might be possible to identify a low-risk subset of patients from whom omission of liver imaging (LI) might be appropriate. The current study was undertaken to re-evaluate LI in patients with T1-2 N0-1 breast cancer, a subset of patients in whom the diagnostic yield has been suggested to be minimal.

Materials and Methods

All consecutive T1-2 N0-1 breast cancer patients diagnosed between January 1997 and October 2000 were identified by the King Hussein Medical Center (KHMC) Tumor Registry (group A). All the patients had pathological documentation of T1-2 N0-1 postoperatively. Their medical records were reviewed to identify documentation of LI reports. Patients with a concomitant history of other documented malignancies were excluded. The latest version of the American Joint Committee on Cancer tumor-node-metastasis staging system⁴ at the time of entry into the KHMC Tumor Registry was used to identify patients with T1-2 N0-1 who were upstaged to stage IV by liver imaging, including liver ultrasound (US) and liver CT scans. All patients with T1-2 N0-1 M1 (based on liver metastasis) were identified by the Tumor Registry (group B). The total cost and charges for LI and healthcare provider visits were

Group A consisted of 620 patients of which 41 records could not be located. Of the 620 patients, 577 (93%) had medical records available for review, with radiological documentation which including 155 CT scans and 422 US scans. Group B consisted of two patients with stage IV disease presenting with T1-2 N0-1 but had positive LI on initial work-up. Liver US was performed in both group of patients. Both patients had epigastric pain requiring analgesia on initial presentation. Their liver biopsies proved to be metastatic breast carcinoma. Upon reviewing the medical records for symptomatic patients with upper abdominal discomfort and pain, 132 patients had undergone LI, and except for the aforementioned two patients, all LI were negative. The distribution of patients according to their T and N staging is shown in Table 1. These data demonstrate that in patients with T1-2 N0-1 breast cancer, there was a liver metastatic detection rate of 0.35% (95% confidence interval, 0.0% to 0.82%). At our institution, fiscal year 2001 cost for a liver US and liver CT scan (without contrast) were \$70 and \$200, respectively. Using 2001 rates, the total cost and charges for LI, including health care provider visits over the study period, would have reached \$100,000.

Discussion

This study updates and confirms the findings of Ciatto et al.⁵ who reported on 2816 Italian patients diagnosed with stages I and II breast cancer between 1973 and 1985. In that series, the detection rate of systemic metastasis of liver echography was 0.24% and liver scintigraphy was 0.23%. The present study conducted in an era of progressively fewer, mammographically detected tumors provides a more contemporary perspective on the diagnostic yield of staging asymptomatic patients. The role of LI was investigated by Samant et al.⁶ who reported on 250 Canadian patients diagnosed with breast cancer during a two-year period. In that study, none of the 161 patients with pathologic T1-2 N0-1 had liver metastasis on LI (either with US or radionuclide isotope scan). Similar findings have also been reported in other smaller series whose authors recommended that LI be reserved for symptomatic patients.^{7,9}

Although most clinicians concur that diagnostic imaging is indicated to evaluate a patient's symptoms, only a small proportion of LI is ordered for this purpose. Ravaoli et al. reviewed 406 patients with newly diagnosed breast cancer. They had three subsets of patients: the first was T1 N0-1, second T2-3 N0-1, and the third was T4 N1-2. They studied their patients for up to six months in order to exclude false-

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Results

positive cases. Patients with positive or suspicious initial staging but with no evidence of distant metastasis before surgery and with a disease-free survival longer than six months were considered false positive. The detection rate of LI was 0.59% , 2.94%, and 15.53% , respectively, and recommended full procedural staging for the third group.¹⁰

A survey done by the American Society of Clinical Oncology (ASCO) revealed that practice patterns among ASCO member physicians with regards to follow-up of postmenopausal women with early breast cancer (stage I and II) was in accordance with the society guidelines.¹¹

The extent of preoperative work-up is not standardized by most professional organizations except for a few. For example, the NCCN does not recommend LI in early breast cancer assessment.³ In addition, the existing recommendations need to be constantly reviewed. The NCCN recommends staging chest x-rays which was shown to be unnecessary in a recent study done by Chen et al.¹² Among 1003 patients with stage I and II breast cancer, only one asymptomatic patient was upstaged to stage IV based on staging chest x-ray. The authors conclude that staging chest x-rays neither changes the quality of life or overall survival, and that it should be limited to symptomatic patients in whom metastatic disease is suspected. In addition, radionuclide bone scan are not indicated in asymptomatic patients with early breast cancer.³

In Jordan, the age-adjusted incidence rate among women is 21.3 per 100,000 population¹³ and is much lower than the rate among American white women in Utah (98 per 100,000).¹⁴ The projection of a crude charge of \$100,000 for our series of the breast cancer population is a comparatively enormous amount. Physicians practicing in developing countries should be guided by clear strategies, in order to optimize the utilization of their limited resources.

In conclusion, LI of 579 patients with T1-2 N0-1 breast cancer at initial presentation identified two incurable patients at a projected cost of \$100,000 which, for a developing country, was uneconomic in terms of health resource utilization. Liver imaging does not contribute much information to the management of asymptomatic patients, and we recommend that it should be limited to symptomatic patients in whom metastatic disease is suspected.

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