

The Yield from Routine Chest X-Rays in Stage 3 Breast Cancer Patients

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Abstract

Context: Cancer of the breast is a common malignancy in Nigerian women and various imaging examinations, including the chest radiograph are routinely requested in all patients with this disease.

Objective: The objective of this study was to determine the positive yield from routine chest radiographs in Nigerian patients with locally advanced stage 3 breast cancers but who had no clinical symptoms or signs of pulmonary or pleural metastatic disease. *Methods:* This descriptive retrospective study evaluated clinical records and chest radiographs of 61 female Nigerian patients with local stage 3 histologically diagnosed breast cancers, who presented at the radiotherapy unit of the University College hospital, Ibadan, over a 12-month period. All abnormalities on the chest radiographs were documented.

Results: The ages of the study group ranged from 25 to 67 years with a mean of 47years. Forty-seven (77%) of the patients had normal chest radiographs. Of the 14 abnormal radiographs, bilateral lung parenchymal metastases were seen in 4 cases one of whom also had bilateral pleural effusion. Other abnormal findings included hilar adenopathy, right lower lobe collapse, lymphangitis carcinomatosa and cardiomegaly.

Conclusion: The authors conclude that a 23% detection rate from these screening chest radiographs is high and should be recommended as over 70% of Nigerian Patients with breast cancers present with advanced tumors.

Key words: Breast Cancer, Chest X-Ray, Stage 3

Introduction

Once a diagnosis of breast cancer is made, various imaging examinations are routinely requested even in asymptomatic patients, to assess distant potentially metastatic sites for occult metastatic diseases. The chest x-ray (CXR) is one of such requested studies. Stages 1 and 2 breast cancers are the commonest stages seen in the western world because of well-developed mammography screening practices and public awareness. Studies have been done in asymptomatic Caucasian patients with early primary breast cancers and a low positive yield of less than 5% was recorded from

the fear of mastectomy. The positive yield from routine chest x-rays in this group of patients has not been documented in this environment.

The objective of this study is to determine the positive yield from routine CXRs in Nigerian patients with locally advanced breast cancer but with no clinical signs suggestive of pulmonary or pleural spread.

Materials and Methods

This is a retrospective study. The clinical records and chest x-rays of randomly selected 61 female patients with histologically diagnosed breast cancer

These routine imaging studies¹⁻⁵.

In Nigeria, over 70% of patients present with more advanced tumours⁶⁻¹⁰ due to poor knowledge and low practice of self breast examination, lack of screening facilities and

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referred for radiotherapy between August 2002 and September 2003 were reviewed. All the patients had stage 3 disease with no clinical signs of pulmonary or pleural disease. All chest x-rays were reported by the consultant radiologist.

Result

The patients' ages ranged from 25 years to 67 years, with a mean of 47 years. All the patients were females.

47 (77%) of patients had normal chest x-rays. Of the 14 (23%) abnormal radiographs, 4 patients had only cardiomegaly with no visible pulmonary or pleural lesions. Lung metastases were seen in 4 patients and it was bilateral in all four cases. The only patient with pleural effusion also had bilateral lung metastases. There were two

presumably enormous. This is especially important in our country where the per capita income is low and health insurance is not widely available. Though important for staging, the rationale for carrying out any investigation in this environment must be justified in terms of yield versus radiation exposure and cost, as patients and relatives bear all costs of management. The routine chest radiograph provides information on the lungs, pleura, mediastinum, heart and thoracic cage. This study has shown a 23% positive detection rate from screening chest radiographs in patients with local stage 3 breast cancers but with no clinical evidence of pleural or pulmonary disease. This value corroborates with those of Ravaioli et al¹¹, who recorded a 10-68% metastases detection rate in patients with advanced

Table 1- Pattern of Chest X-ray (CXR) findings

Chest x-ray findings	Frequency
normal	47 (75.8%)
cardiomegaly	4 (6.5%)
Lung metastases (bilateral)	4 (6.5%)
Pleural effusion (bilateral) *	1 (1.6%)
Hilar lymph nodes	2 (3.2%)
Right lower lobe collapse	2 (3.2%)
Lymphangitis carcinomatosa	2 (3.2%)
Total	62 (100%) **

* Patient also had bilateral lung metastases

** One patient had two findings on same CXR

cases of lung collapse, both in the right lower lobe. Table 1 shows the CXR findings.

Discussion

Breast cancer has a rate frequency of 33.6 per 100,000 patients per year in Nigerian women⁶. The cost implication of investigating and treating these patients is

breast cancers. Of the positive CXRs, 4 (26.7%) revealed only cardiomegaly, which may be age-related as the four patients were aged 46, 46, 53 and 53 years. However, cardiac metastases and metastatic pericardial effusion may also cause cardiomegaly on CXR¹². Bilateral lung metastases were seen in 4 (26.7%) patients and only one (6.7%) of the

patients had pleural effusion, which was bilateral. This is surprising, as other authors have documented pleural effusions in 41% to 46% of patients with breast cancer^{12, 13}. Gawne-Cain et al¹³ concluded that patients with bilateral pleural effusion had significantly poorer prognosis than other patients with the same tumor stage. Lung metastases have been reported in up to 66% of patients.

Lung collapse was seen in 2(13.3%) of the patients studied in this report, this could have resulted from bronchial compression by enlarged hilar nodes or endobronchial metastases. Involvement of the right lower lobe in both cases is compatible with the increased susceptibility of the right bronchus to obstruction compared with the left due to its anatomy.

From this study, the 23% positive detection rate from routine CXRs in the study population is high. Since the radiation dose that a patient would receive from a single CXR is quite small and is equivalent to approximately three (3) days period of natural background radiation, it is the authors' opinion that routine CXRs are useful tools for detection of asymptomatic metastatic deposits in the chest of patients with local stages 3 breast cancer which represent majority of cases in our

environment. This is in agreement with Puglisi et al¹⁰ who made the same conclusion for patients with stage 3 disease in their study. In spite of the additional cost this would impose on patients who turn out to have negative CXRs, the radiograph has the additional advantage of serving as a baseline reference for early detection of complications of radiation and chemotherapy, which may need to be differentiated from metastasis on follow-up. Many previous studies had concluded that there was no need for CXR screening in asymptomatic patients with stages 1 or 2 breast cancers due to the low diagnostic yield²⁻⁴. However, a study of breast cancer in Nigerian women have shown that only 12% to 17.2% of patients present with stage 1 or stage 2 disease⁶⁻⁸.

In conclusion, the authors recommend that the practice of obtaining routine CXRs in Nigerian patients with stage 3 breast cancers should be encouraged, in order to identify those with asymptomatic metastatic deposits so that the correct tumor stage can be assigned and proper management instituted. The positive yield from other routine investigations also needs to be established to justify the enormous costs of treating these patients.

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