Evaluation of the Contralateral Breast in Patients with Ipsilateral Breast Carcinoma: The Role of Mammography

M Muttarak, S Pojchamarnwiputh, W Padungchaichote, B Chaiwun

ABSTRACT

<u>Objective:</u> To assess the value of mammography in the detection of cancer in the contralateral breast in women with ipsilateral breast carcinoma.

<u>Materials and Methods:</u> From February 1994 through May 2001, a total of 500 patients with unilateral mastectomy from breast carcinoma had mammograms performed for the first time following mastectomy. We retrospectively reviewed the clinical findings and mammograms of these patients. Four hundred and sixty-four patients were asymptomatic and 36 patients presented with palpable breast or axillary masses. Specific mammographic features of a mass, microcalcifications, architectural distortion and asymmetric density were evaluated. Diagnosis was confirmed by fine needle aspiration biopsy or surgical excision in all patients.

<u>Results:</u> Four hundred and sixty-four patients had screening mammograms and 36 patients had diagnostic mammograms. All 36 symptomatic patients had abnormal mammograms. Of these, 12 (33.33%) patients were found to have second primary breast carcinoma, 12 (33.33%) had metastases to the contralateral breast or axillary lymph nodes, six (16.66%) had fibroadenomas, two (5.55%) had abscesses, three (8.33%) had fibrocystic change, and one (2.77%) had axillary node reactive hyperplasia. Of the 464 asymptomatic patients, five (1.07%) had second primary breast carcinoma, five (1.07%) had fibrocystic change, and two (0.43%) had fibroadenomas. The mean age at the time of diagnosis of the first primary carcinoma in the symptomatic patients was 41.9 years (range 35-60 years), and was 43.4 years (range 36-56 years) in the screening group. The mean time interval between the two carcinomas was four years (range one to 13 years) in symptomatic group and 3.4 years (range one to four years) in screening group. The tumour stage in the screened group was in situ (n=2), stage I (n=3) and in the symptomatic group was stage I (n=2), stage II (n=5), stage III (n=5).

<u>Conclusion:</u> Patients who have ipsilateral breast carcinoma have a strong risk to develop a second primary carcinoma in the contralateral breast. Close follow-up of the second breast with careful clinical examination and mammography are necessary for the early detection of cancer.

Keywords: Bilateral breast carcinoma, mammography, breast diseases

INTRODUCTION

Women with breast carcinoma (BC) have a strong risk to develop a second cancer in the contralateral breast. On average, the risk of a second carcinoma developing in the contralateral breast is about five to eight times greater than that for development of an initial breast carcinoma in the general population[1,2]. The risk remains constant for the rest of the woman's life[2]. Therefore, physicians should increase their vigilance with respect to the contralateral breast. Diagnosis of the second primary BC can be achieved by random biopsy or prophylactic mastectomy at the time of diagnosis of the first primary BC, physical examination, and mammography. However, the positive detection rate of breast cancer by means of random biopsy or mastectomy is not considered high enough to justify routine use of these two procedures[3].

Although, physical examination and annual mammography are the best currently noninvasive methods of monitoring the second breast[4-7], mammography is not routinely performed for follow-up patients with a mastectomy from previous breast carcinoma in our institution. This study was undertaken to evaluate mammographic findings in patients with unilateral mastectomy for breast carcinoma, and to compare the stage of tumour detected at annual screening with those detected at mammograms performed for reasons other than screening.

MATERIALS AND METHODS

From February 1994 through May 2001, a total of 500 patients with unilateral mastectomy from breast

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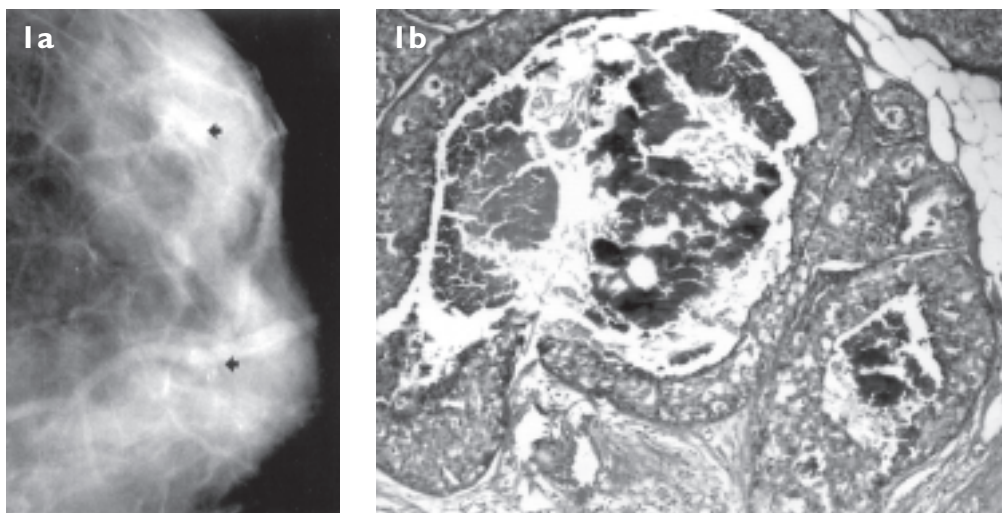Email: mmuttara@ med.cmu.ac.th

Fig. 1 The first baseline mammogram of a 41-year-old woman who had a right mastectomy for breast carcinoma four years ago. (a) Magnification mammogram shows two clusters of pleomorphic microcalcifications (arrows). (b)Histologic study shows ductal carcinoma in-situ (comedo type) (Haematoxylin-eosin stain, X200 original magnification).
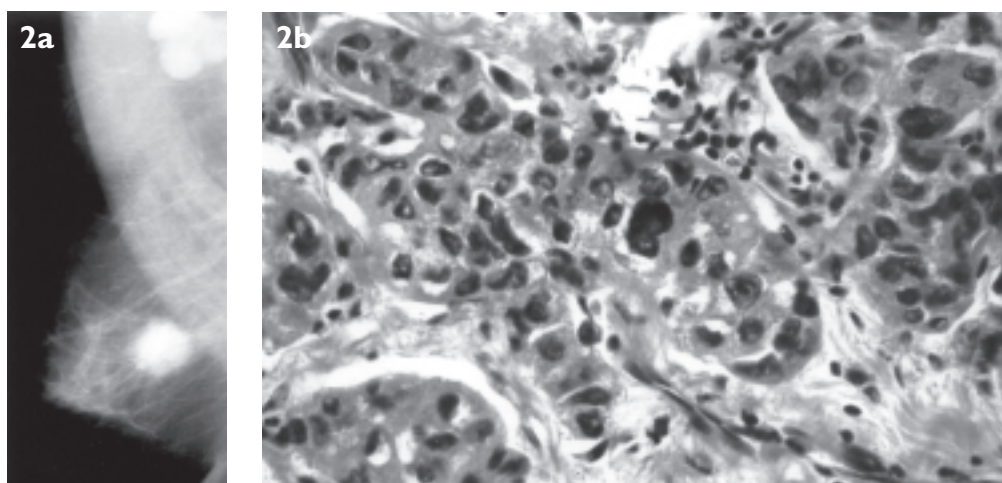

Fig. 2 A 65-year-old woman presented with a palpable mass in the right breast and axilla. She had history of a left mastectomy for breast carcinoma five years ago. (a) Right mediolateral oblique mammogram shows a 2.5 cm irregular and multiple enlarged nodes. (b) Histologic study reveals invasive ductal carcinoma (Haematoxylin-eosin stain, X200 original magnification).
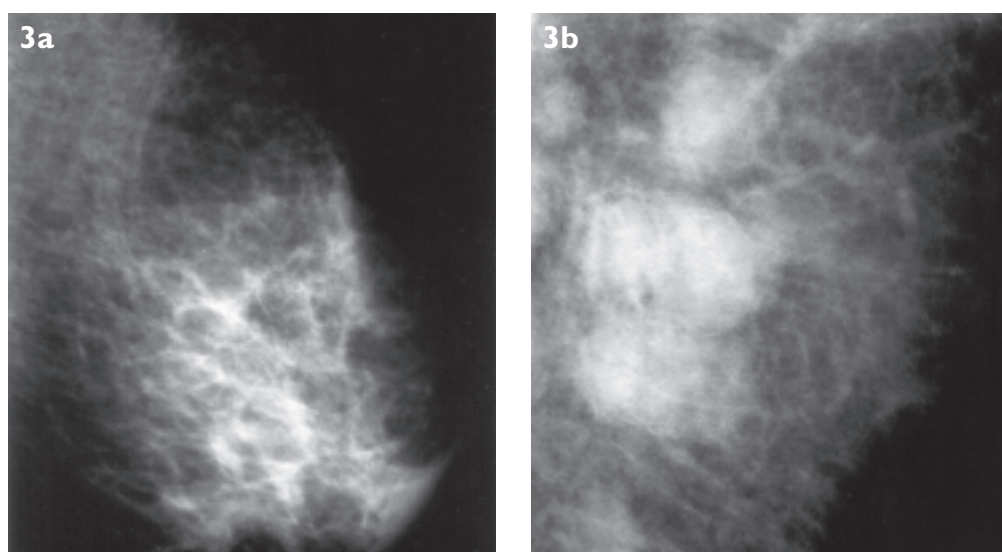

Fig. 3 Lymphatic metastasis. A 69-year-old woman presented with swelling of the left breast. She had history of a right mastectomy for breast carcinoma one year ago. (a) Left mediolateral oblique mammogram shows diffuse increased breast density and stromal coarsening. (b) Left axillary view shows multiple matted, dense nodes.
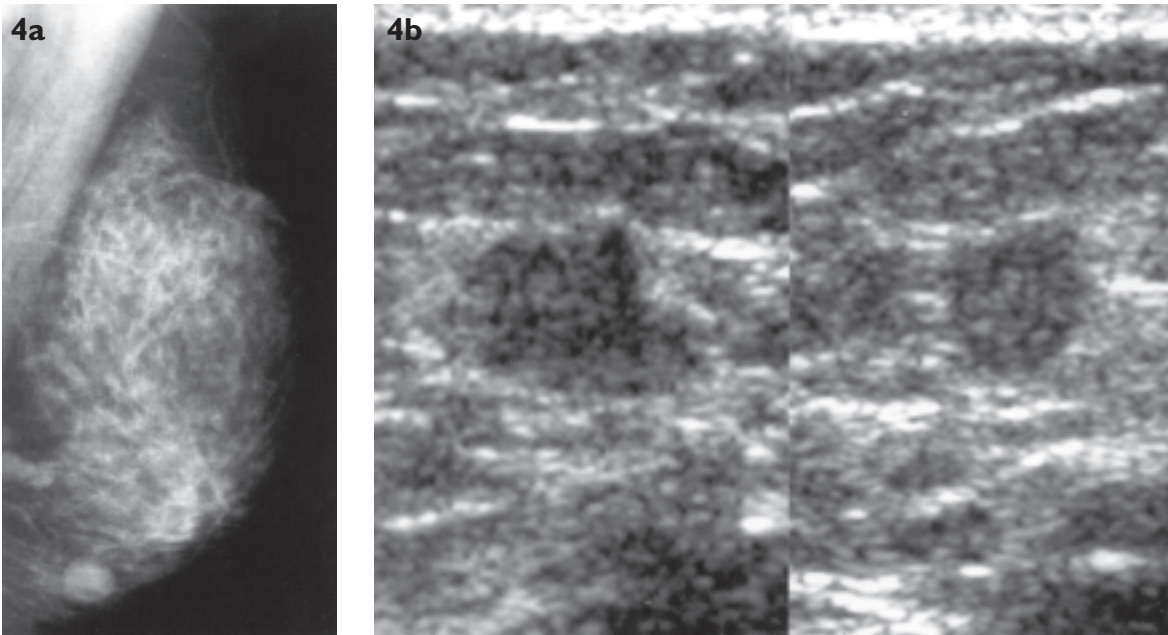
Fig. 4 Haematogenous metastasis. A 52-year-old woman with history of a right mastectomy for four years presenting with a palpable mass in the left breast. Left mediolateral oblique mammogram shows two well-defined masses. (b) Ultrasonogram shows two circumscribed lobulated masses.

Fig. 5 Axillary nodal metastasis. A 58-year-old woman with history of a left mastectomy for breast carcinoma two years ago presenting with a palpable mass in the right axilla. Right mediolateral oblique mammogram shows an enlarged spiculated axillary node. The breast is normal.

carcinoma had mammograms performed for the first time following mastectomy at the Maharaj Nakorn Chiang Mai Hospital, a large teaching and referral hospital in Northern Thailand. We retrospectively reviewed the clinical features and mammograms of these patients. Of these, 464 patients were asymptomatic and 36 patients presented with palpable breast or axillary masses. Clinical records included age at diagnosis of the first and second primary breast carcinomas, duration between the first and second primary breast carcinomas, familial history of breast carcinoma, pathologic features, histologic types and stage of tumour.

The criteria for diagnosis of a second primary BC were: 1. No clinical or radiological evidence of local recurrence or distant metastasis from the first primary at the time of the second BC; 2. The time interval between the two independent primary carcinomas was greater than six months; and 3. The second tumour was of a different histologic type, or demonstration of in situ change and different grade of differentiation. Mammograms were performed using a dedicated film-screen unit (LoRad MIII). Specific mammographic features of a mass, microcalcifications, architectural distortion and asymmetric density were evaluated. Diagnosis was confirmed by fine needle aspiration biopsy or surgical excision in all patients.

RESULTS

There were 464 screening mammograms and 36 diagnostic mammograms. All 36 diagnostic mammograms had abnormal findings. Of these, 12 (33.33%) patients were found to have second primary

Table I. Tumour stage in the screened versus unscreened (symptomatic) patients.

Stage	Screened (n=5)	Unscreened (n=12)
DCIS	2	0
I	3	2
II	–	5
III	–	5

BC, 12 (33.33%) patients had metastases to the contralateral breast or axillary lymph nodes, six (16.66%) had fibroadenomas, two (5.55%) had abscesses, three (8.33%) had fibrocystic change, and one (2.77%) had axillary node reactive hyperplasia. Of the 464 screening mammograms, five had second primary BC, two had fibroadenomas, and five had fibrocystic change. The mean age at the time of diagnosis of the first primary carcinoma in the symptomatic patients was 41.9 years (range 35-60 years), and was 43.4 years (range 36-56 years) in the screening group. The mean time interval between the two carcinomas was four years (range one to 13 years) in symptomatic group and 3.4 years (range one to four years) in the screening group. The tumour stage of the symptomatic and asymptomatic patients is shown in Table I.

Mammographic features of the second primary BC include microcalcifications (Fig. 1), architectural distortion, and a spiculated or ill-defined mass (Fig. 2). Mammographic features of metastases to the breast include breast oedema (Fig. 3) and multiple well-defined nodules (Fig. 4). Metastatic axillary nodes were seen as multiple dense enlarged nodes with ill-defined or spiculated margins (Fig. 5). Histology of all primary the primary BC was invasive ductal carcinoma, except one who had both invasive ductal and invasive lobular carcinomas. Histology of the second primary include ductal carcinoma in situ (N=2), and invasive ductal carcinoma (N=15). All patients had no familial history of breast carcinoma.

DISCUSSION

The subsequent occurrence of primary BC in the breast contralateral to the initial breast with primary carcinoma varies from a few percent to more than 20%, according to different authors[1,8]. This wide variation of data may be explained by different criteria used to define primary cancer in the opposite breast versus metastasis from one breast to the other, the methods of detection of the second primary cancer, the duration and intensity of follow-up, and probably to differences in the distribution of risk factors in the population studied[5,6,8]. Factors associated with increased risk include young age at diagnosis, familial history of breast cancer, multicentricity, lobular carcinoma in situ, and invasive lobular carcinoma. According to Robin and Berg, the risk of having a second primary was 10 times greater than in the normal population when the first primary cancer was diagnosed at an age under 50 years[1]. In our series, the mean age at the diagnosis of the first primary was 41.9 years in the symptomatic group and 43.4 years in the screening group. We could not find any relationship between second primary carcinoma and familial history of breast carcinoma as well as multicentricity of the first primary breast carcinoma since most of the patients did not have mammograms before mastectomy of the first breast.

The highest risk for developing BC is the personal history of breast cancer[1,2]. Overall, the risk of developing cancer in the contralateral breast is about 1% per year. The risk remains constant for the remainder of the patient's life[2]. In spite of this increased risk, the prevalence of breast cancer detected by means of random biopsy or prophylactic mastectomy is not considered high enough to justify routine use of these procedures[3]. Clinical examination and mammography have proved to be particularly useful and noninvasive methods to monitor the second breast[4-7]. Our study showed that the second primary BC in symptomatic patients was palpable and had a higher stage than those of asymptomatic patients. In addition, the majority of lesions in the contralateral breast were second primary growths rather than metastases. Therefore, the prognosis for a woman with a second breast cancer depends on the stages of both the first and the second cancers. The cancer detection rate from screening mammography in general women in western countries varies from four to seven per thousand[9,10]. In Asia, cancer detection rate ranges from three to 4.9 per thousand[11-13]. In this study, cancer detection rate in asymptomatic patients was five per 464 or 10.7 per thousand which is more than two times higher than the general population. However, our sample size is too small. We intend to continue our study.

Mammography can contribute not only to the earlier detection of the second primary BC, but also to differentiate primary from metastatic carcinoma[4,5]. Careful clinical examination and mammography of the contralateral breast are important for early detection of a second breast carcinoma. In conclusion, patients who have ipsilateral BC are at increased risk for developing cancer in the contralateral breast. Regular follow-up with careful clinical examination and mammography of the second breast are recommended for all postmastectomy patients to detect early, potential curable disease.

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