Mammographic Findings in Breast Cancer Patients, Who were Treated with Breast Conserving Therapy

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Purpose : *To evaluate the mammographic findings and role of detection of local recurrence in breast cancer patients, who underwent breast conserving surgery and radiation therapy.*
Design : *Descriptive retrospective study*
Material and Methold *From 1988 to 1998, 78 women with early breast cancer (stage I, II) were treated with lumpectomy and axillary nodes resection, followed by radiation treatment. Mammographic imagings were taken yearly after complete treatment. Needle biopsy was done for suspected local recurrence on mammographic findings.*
Results : *Duration of follow-up ranged from 3 years to 10 years. Seventy-three of 78 patients (93.6%) had evidence of parenchymal changes on serial annual mammography. Twenty-eight of 73 patients (38.4%) had diffuse dense parenchymal changes.Twenty-four of 73 patients (32.9%) had focal fibrotic changes, and 21 of 73 patients (28.8%) had evidence of parenchymal distortion with a mass like lesion. Skin thickening was found in 54 of 78 patients (69.2%). Calcification was the least change, found in only 2 of 78 patients (2.6%). Nine of 78 patients (11.5%) had mammographic signs of local recurrence. Seven of 9 patients had suspected local recurrence by needle biopsy. Four of seven patients had proven local recurrence on mastectomy, and 3 of 7 patients (42.8%) had false positive on mastectomy.*
Conclusion : *Annual mammography in post breast conserving treatment showed beneficial results for detection of recurrent cancer.*

Keywords : *Mammography, CA breast*

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Many randomized trials have published comparable results between breast conserving treatment and mastectomy[1-4]. There was no statistically significant difference in the overall survival or disease-free survival. However, some reported a higher risk of local recurrence in the breast conserving treatment group than in the mastectomy group[2].

In Thailand, breast cancer is the second most common cancer in women cancer of the uterine cervix. Before the last decade, most of the early stages of cancer (stage I and II) were treated by mastectomy. Because of the excellent cosmetic result of breast conserving treatment, which assured a woman's self-esteem, this treatment protocol became more recognized and more popular as an alternative choice of treatment. However, the goals of cancer treatment were to obtain a cure rate and prolong disease-free survival. So, early detection of curable local recurrence was the most important challenge.

The purpose of the present study was to evaluate the mammographic findings of post conserving treated breasts and the role of detection of local recurrences in the earliest stage possible.

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Material and Method

From 1988 to 1998, 78 women with a pathological diagnosis of early stage invasive ductal carcinoma were treated with breast conserving treatment.

Inclusion criteria:

1. Stage I and II invasive ductal carcinoma
2. Primary tumor less than 5 cm in diameter
3. No evidence of distant metastasis

Exclusion criteria:

1. Multifoci carcinomas
2. Presence of extensive intraductal carcinoma components
3. Pendulous and fatty breasts
4. Poor compliance for regular follow-up

Treatment protocol:

Surgical procedure consisted of lumpectomy with axillary nodes dissection. Free surgical margin was required. Radiation therapy was started within 2-3 weeks after surgery. The radiation dose of 4,500 to 5,040 cGy in 5-5 weeks was delivered to the afftected breasts, using Linac 6 MV photon, by medial and lateral tangential fields technique.

The tumor-bed were boosted with an additional 1000 cGy in 5 fractions with Electron beam.

Mammography was done after 12 months of completion of and then annually radiation. Routine imaging consisted of cephalocaudad and lateromedial oblique views. Spot and magnification views were obtained in cases of interval changes. Needle biopsy was done in patients who had mammographic changes which suspected local recurrence.

The purpose of the present study was to evaluate the mammographic findings of post conserving treated breasts and the role of detection of local recurrences in the earliest stage possible.

Results

From 1988 to 1998, 78 women with pathological diagnosis of stage I and II invasive ductal carcinoma were included in the present study. Age of the patients ranged from 26 years to 63 years, median age was 35 years. Primary tumor size ranged from 1 cm to 4 cm in diameter. The majority of patients, 75 of 78 patients (96.2%) had a tumor less than 4 cm in diameter, only 3 patients had 4 cms tumor masses. Duration of follow-up ranged from 3 to 10 years. Median follow up was 4.6 years.

Parenchymal changes were the most common findings on mammography, accounting for 73 of 78 patients (93.6%). Twenty-eight of them showed diffuse dense parenchyma on mammography Fig. 1. Twenty-four of 73 patients (32.9%) had focal fibrotic changes Fig. 2, and 21 of 73 patients (28.8%) had parenchymal distortion with mass like lesions Fig. 3. Skin thickening was found in 54 of 78 patients (69.2%). Calcification was uncommon, and was found in only 2 of 78 patients (2.6%). Most of the patients had more than one mammographic changes.

Table 1. Showed mammographic findings

Mammographic findings	Number	Percentage
1. Parenchymal changes	73	93.6%
- diffuse dense	28	38.4%
- focal fibrosis	24	32.9%
- mass like with parenchymal distortion	21	28.8%
2. Skin thickening	54	69.2%
3. Calcification	2	2.6%
4. No significant change	5	6.4%
Total 78 patients		

Fig. 1 Diffuse dense parenchymal changes of radiated breast (arrows)

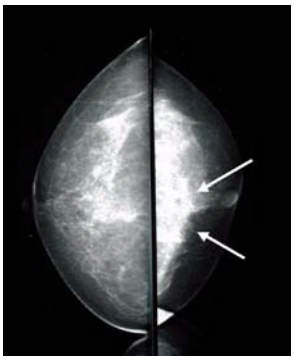

Fig. 2 Focal fibrotic changes of the radiated breast (arrows)

Nine of 78 patients had mammographic signs of suspected local recurrence, (criteria included new appearance of a mass-like lesion with parenchymal distortion with or without palpable mass on physical examination). Seven of them had cytologic suspected malignant cells on needle biopsy. All patients underwent mastectomy.

Four of seven patients had proven recurrent invasive carcinoma in mastectomy specimens. The

A

B C

Mammographic Findings of mass like lesion
MR imaging of mass like lesion

nts had false positive of recurrent
ectomy specimens. Case report of a
mography: A 52 years woman was
asive ductal carcinoma, primary
in diameter. She underwent breast
y (pathological report of free sur-
negative involvement of all 16 dis-
es). She was treated with a complete
n therapy within 10 days after surgery. At the third year of her annual follow-up mammography, a new mass-like lesion, without microcalcification was found at the surgical scar. MR imaging with gadolinium-DTPA showed an enhanced lesion, suggestive of recurrent tumor. Fine-needle biopsy showed suspected malignant cells. Mastectomy was performed 7 days later. The pathological report showed a cluster of microabscesses with fibrosis of the suspected lesion, there was no evidence of malignant cells on the surgical specimen (Fig. 3).

Discussion

In this decade, mammography has proven to be the gold standard for early detection of breast cancer. It has shown to produce about 25-30% reduction in breast cancer mortality for the screening program [5-7]. However, false negative rate of cancer detection in mammography for the screening program remained high, up to 15-20%[8-11]. For breast cancer patients who underwent breast conserving surgery and radiation therapy, mammography also played an important role in the detection of local recurrence in the affected breast and possible cancer in the contralateral breast.

In the present study, the main mammographic finding after conserving surgery and radiation were parenchymal tissue changes (either diffuse or focal). The diffuse parenchymal changes of increasing in breast density were secondary to radiation, while the focal changes of fibrosis, were usually located at the surgical sites. The other feature of parenchymal change was a mass-like lesion with parenchymal distortion. There were 21 of 73 patients (28.8%) in the present study, with this change. The second most common change was skin thickening, which accounted for 54 of 78 patients (69.2%). This finding was more common in Thai women than Western women, which may be due to rather smaller breasts among them. Calcification was rare in the present study, occurring in only 2 patients, and appeared as dense benign calcifications. The majority of patients whose mammography findings mimic the signs of local recurrence in the affected breasts, (mass-like lesions with parenchymal distortion) showed stability of findings on close serial studies. Only 9 patients demonstrated a progression of changes, and interventional cytology was performed. Seven of 9 patients had findings suspected for malignant cells on fine-needle biopsy. Only 4 of the 7 patients were proven to have recurrent cancer in the mastectomy specimens. Two patients had false positive in the mastectomy specimens and evidence of fat necrosis and massive fibrosis noted at the surgical sites. Because of more concern about a false positive mastectomy, additional MR imaging was performed in the last patient (shown above). The MR imaging also showed an enhanced lesion at the surgical site. But the mastectomy specimen was shown to have a cluster of microabscesses.

The false positive result of MR imaging might be due to its limited specificity for cancer detection with reports of specificity ranging from 30 to 90%, even if it demonstrated a high sensitivity for the detection of abnormal breast lesions, both malignancy and some benign lesions, such as atypical hyperplasia and sclerosing adenosis[12-15].

Conclusion

Annual mammography after breast conserving surgery and radiation showed effeciency in early detection of local recurrence. To reduce the false positive rate, close communication between the surgeon, radiologist and pathologist is recommended.

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ภาพถ่ายแมมโมแกรมในผู้ป่วยมะเร็งเต้านมที่รักษาด้วยการผ่าตัดเก็บเต้านมร่วมกับรังสีรักษา

สายพิน ตั้งครัชต์

วัตถุประสงค์ *: ศึกษาผลการตรวจพบของการใช้ภาพถ่ายแมมโมแกรมและการค้นหาการกลับเป็นซ้ำของโรคเฉพาะที่ในผู้ป่วยมะเร็งเต้านมที่ได้รับการรักษาด้วยการผ่าตัดเก็บเต้านมร่วมกับ รังสีรักษา*

วัสดุและวิธีการ *: รวบรวมผู้ป่วยตั้งแต่ปี พ.ศ. 2531 ถึง พ.ศ. 2541 มีผู้ป่วยมะเร็งเต้านม ในระยะเริ่มแรก (ระยะที่ 1 และ 2) 78 ราย ที่ได้รับการรักษาโดยการผ่าตัดแบบเก็บเต้านมและผ่าตัดเลาะต่อมน้ำเหลืองบริเวณรักแร้ร่วมกับรังสีรักษา ผู้ป่วยได้รับการตรวจถ่ายภาพแมมโมแกรมทุกปีหลังสิ้นสุดการรักษา และได้รับการเจาะตรวจชิ้นเนื้อเพื่อตรวจค้นหาการกลับเป็นซ้ำของโรค เมื่อมีภาพแมมโมแกรมผิดปกติ*

ผลการรักษา *: ระยะเวลาในการติดตามผู้ป่วยอยู่ในช่วงระหว่าง 3-10 ปี มีผู้ป่วยจำนวน 73 ราย ใน 78 ราย (93.6%) ที่มีการเปลี่ยนแปลงของภาพแมมโมแกรม ในจำนวนนี้พบว่ามี ผู้ป่วย 28 ราย จากจำนวน 73 ราย (38.4%) มีการเปลี่ยนแปลงแบบกระจายทั้งเต้านม มีผู้ป่วยจำนวน 24 ราย ใน 73 ราย (32.9%) พบการเปลี่ยนแปลงเป็นพังผืดและมีผู้ป่วย 21 ราย ใน 73 ราย (28.8%) พบว่ามีการดึงรั้งและมีลักษณะคล้ายก้อนเนื้อ การหนาตัวของผิวหนังบริเวณเต้านมพบในผู้ป่วย 54 ราย จาก 78 ราย (69.2%) ความผิดปกติที่พบน้อยที่สุดเป็นแบบมีหินปูนคือ พบเพียง 2 ราย ใน 78 ราย (2.6%) ภาพแมมโมแกรมที่บ่งชี้ว่ามีการกลับเป็นซ้ำพบในผู้ป่วย 9 ราย จาก 78 ราย (11.5%) ในจำนวน 9 รายนี้พบว่าผู้ป่วย 7 ราย มีผลการเจาะชิ้นเนื้อที่สงสัยว่ามีการกลับเป็นซ้ำ ผู้ป่วย 4 ราย ใน 7 รายนี้ ได้รับการพิสูจน์ว่ามีการกลับเป็นซ้ำจากการผ่าตัดเต้านม และมีผู้ป่วย 3 ราย ใน 7 ราย (42.8%) ที่ไม่พบเซลล์มะเร็งหลังจากการผ่าตัดเต้านม*

สรุป *: ภาพถ่ายแมมโมแกรมทุกปีในผู้ป่วยมะเร็งเต้านมที่ได้รับการรักษาโดยการเก็บเต้านมร่วมกับรังสีรักษาจะให้ประโยชน์ในการค้นหาการกลับเป็นซ้ำของโรคเฉพาะที่ด้วยความแม่นยำ*