BREAST CANCER DETECTED BY SCREENING MAMMOGRAPHY

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Purpose: The early detection of breast cancer by screening mammography is important to reduce breast cancer mortality rate. The purpose of this study was to investigate the characteristics of breast cancer patients detected by screening mammography.

Materials and Methods: Surgically-treated 1,265 patients at Asan Medical Center from Jul. 1989 to Dec. 1997 were evaluated. Among them, 119 patients (9.4%) were detected by screening mammography. These patients were compared with clinically detected symptomatic breast cancer group.

Results: The characteristics of breast cancer patients detected by screening mammography were that 1) the most common finding of mammography was microcalcifications (62.2%), 2) the minimal and non-destructive surgical treatments such as breast conserving surgery (21.0%), simple mastectomy (8.4%), breast reconstruction (8.4%) were performed much more, 3) the median tumor size of invasive cancers was 16mm, 4) node-negative cancers (83.2%) were more frequent, 5) the early breast cancer of stage 0, I was 70.6%, 6) DCIS (29.4%) was highly proportionated, and 7) the 5-year overall (95.8%) and 5-year disease free survival rate (92.0%) were significantly higher than in clinically detected symptomatic breast cancer patients.

Conclusion: The screening mammography is significant for detecting non-palpable, early stage breast cancer. USG is needed as an adjunct for the accurate detection in dense breast or young women.
EFFECTIVE MODALITIES FOR BREAST CANCER DETECTION
BY AGE GROUPS

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Purpose: The effectiveness of mammography screening has been proven in women aged 50 years
or more; however, this is not yet proven for women in their forties. We studied which modality
could detect breast cancer effectively.

Materials and Methods: The materials were the cases received all three examinations: physical
examination (PE), mammography (MMG), and breast ultrasound (US) in Tsukuba University
Hospital and Kinu Medical Association Hospital over the previous three years. Of the 211 patients,
55.5% were 50 years or over, and 30.8% were in their forties.

Results: 97.4% of breast cancer cases in women aged 50 or older were detected by PE and MMG
combined, which is now being planned for public screening in Japan. Concerning T1 breast cancer,
which is considered the target of screening, 94.3% of cancer cases in women 50 years or older
were detected by the same combination. However, for those in their forties, MMG alone detected
only 65.6% of T1 breast cancer cases, and 81.3% when combined with PE. In contrast US alone
detected all T1 cancer cases of this age group.

Conclusion: It is difficult to select the best screening modality from only these results, because we
discussed only detectability. However the combination of PE and MMG should not be applied to
those in their forties, flexible and meticulous consideration is needed.
SCREENING MAMMOGRAPHY IN THE HEALTH CENTER IN KOREA: MEDICAL AUDIT FOR 5 YEARS

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Purpose: We performed medical audit of screening mammography and evaluated screening mammography in detecting an early breast cancer.

Material and methods: We reviewed the results of 15,300 mammography of 12,104 women (30-80 years old) who took mammography at least once in the health center from 1994 to 1998. We recalled women who had abnormal mammographic findings for additional study and the women who had extremely dense mammographic parenchymal pattern for additional ultrasound. We categorized all women’s results into ACR BI-RADS final assessment category 1-5. We reviewed pathologic or follow-up results of all women who were categorized into category 4,5 and/or any women in any category who took the films out of the health center.

Results: The recall rate was 13%. The 96 women were recommended for biopsy or surgical consultation, of which biopsy was performed in 52 cases. Pathology revealed 17 cancers and 35 benign lesions. The positive predictive value 2 was 18% and PPV3 was 33%. The cancer detection rate was 1.4/1,000 and the sensitivity was 89.5%. The percentage of minimal cancers found was 47% (8/17). Percentage of node-positive invasive cancers found was 57% (8/14). Twelve out of 1,224 women who did additional ultrasound due to extremely dense parenchymal pattern were recommended for biopsy, and no cancer was detected (PPV 2=0%).

Conclusion: Screening mammography is an effective method to detect an early breast cancer in asymptomatic women. For medical audit of mammography, a standardized data coding system, a tracking system to follow-up with patients need to be established. Additional studies are needed before finalizing appropriate guidelines for screening mammography in Korean women.
CLUSTERING OF MICROCALCIFICATIONS: REVISITED

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Purpose: To verify the diagnostic value of traditional definition of "clustering" of microcalcifications (more than 5 in the area of 1cm² or 1 cm³) on mammography in the statistical diagnosis of benign and malignant breast disease.

Methods and Materials: Three radiologists without knowledge of the final pathology retrospectively counted the number of microcalcifications per 0.25cm²(0.5x0.5cm) unit area on mammography in 57 pathologically proven nonpalpable lesions including 26 cancers and 31 benign diseases. Pleomorphism of the microcalcifications, associated architectural distortion or mass or increased density and distribution of microcalcifications were also evaluated.

Results: The mean numbers of microcalcifications per 0.25cm² were 16.4 in malignant and 16.7 in benign diseases (no statistical significant difference between the two groups). Pleomorphism of the microcalcifications, associated architectural distortion or mass or increased density were, however, important determining parameters. Clustering was more frequently observed in benign diseases.

Conclusion: In this study, the mean number of microcalcifications per unit area is much larger than the traditional definition of "clustering" and clustering itself is not effective in the differential diagnosis of benign and malignant breast lesions. Imaging features other than numbers of calcification per unit area are more important in assessing the significance of mammographic clustered microcalcifications.
NONPALPABLE MAMMOGRAPHIC CLUSTERED MICROCALCIFICATION: INTEROBSERVER AGREEMENT AND THE POSITIVE PREDICTIVE VALUE OF ACR BI-RADS LEXICON AND FINAL ASSESSMENT CATEGORIES

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**Purpose**: To analyze interobserver agreement and assess the positive predictive value of mammographic finding and final assessment category described in the BI-RADS for nonpalpable mammographic clustered microcalcification on which localization guided surgical biopsy have been performed.

**Patients and methods**: Two experienced breast radiologists prospectively evaluated 85 nonpalpable mammographic clustered microcalcification according to BI-RADS descriptors (shape, distribution and final assessment categories). In addition to those descriptors, we subclassified mammographic calcification according to whether associated finding such as mass, architectural distortion or focal asymmetric density or not. Pathology was reviewed.

**Result**: The kappa value was 0.52 for shape, 0.59 for distribution, 0.37 for final assessment categories and 0.7 for associated finding. The detected cancers were 35, all of which were assessed as category 4 (33) or 5 (2). The highest predictive mammographic findings for malignancy was linear, fine linear branching calcification in shape (6/8, p=0.002), segmental distribution (10/13, p<0.005), and an associated finding (15/18, p=0.001). When using multiple logit regression analysis, associated finding (p<0.01) and shape (p<0.05) were still significant.

**Conclusion**: BI-RADS lexicon for mammographic calcifications can give a good standardization to describe mammographic finding and quantify the level of suspicion. When quantify the level of suspicion of malignancy, we also have to consider an associated mammographic finding such as mass, architectural distortion or focal asymmetric density as well as shape and distribution of calcifications.
COMPARISON BETWEEN PALPABLE AND NONPALPABLE BREAST CANCERS: MAMMOGRAPHIC AND PATHOLOGICAL FINDINGS

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Purpose: To analyze the differences of mammographic and pathologic findings between palpable and non-palpable breast carcinoma.

Methods and Materials: Among 362 patients with surgically proven breast carcinoma, we grouped 317 patients whose chief complaints were palpable masses in preoperative evaluation as group I and 45 patients who had no masses as group II. We compared mammographic and pathologic findings between the two groups.

Results: As regards to the pattern of mammographic presentation, mass alone was 51.4% in group I and 33.3% in group II, calcification only was 7.6% in group I and 24.4% in group II (p<0.05). In the shape of mass, irregular shape was 48.6% in group I, round was 46.2% in group II (p<0.05). According to the ACR-BIRADS, 47.6% of group I was classified to category 5, 51.1% of group II to category 4 (p<0.05). On the other hand, there is no statistical difference in the margin of the mass. Among those 362 patients, the group I showed 48.1 years (28-79yrs) and the group II, 51.7 years (30-73yrs) in mean age (p<0.05). In histology, the group I showed 84.9% infiltrative ductal carcinoma and 8.5% DCIS, and the group II 62.2%, 28.9%, respectively (p<0.05). The group I revealed 3.01 cm pathologically in mean lesional size, and 47.9% lymph node metastasis in axilla, and the group II 1.93 cm (p<0.05), 28.2% (p<0.005), respectively with statistically significant difference. While the stage II was 30.0% among group I, the stage I was 35.6% among group II in TMN system (p<0.05).

Conclusion: While palpable and non-palpable cancers showed statistically significant differences in mammographic findings, such as the shape of mass and category, but no in the margin of mass. There were also statistic significances in the age, histology, lesional size, axillary lymph node metastasis, and staging.