



:
 : 6 32,289 (25,541)
 (American
 College of Radiology Breast Imaging Reporting and Data System; ACR BI - RADS)
 ACR - BIRADS category
 , category 0, 4, 5
 , 1
 가 가
 : 48.6 10 가 32,289
 2,016 (: 6.2%), cate -
 gory 4, 5 256 51
 2.0/1,000 (51/25,541), 1 (PPV1:
) 2.5%, 2 (PPV2:
) 20% 가 23
 (45%) 가 25 (49.0%) 37 (72.5%)
 6 (27%)
 85.0% , 가 78.5% ,
 99%
 : 2.0/1,000 ,
 72.5% , 가 78.5%
 가 가
 (performance) 가

가 가 (1).

:

30 가 256 51 , 1 (PPV1) 2.5% (51/2,016), 2 (PPV2) 20% (51/256) ACR 5 - 10%, 25 - 40% 51 8

DMR (General Electric Medical System, Milwaukee, WI) , 20 , 8 , Hook - wire 15 (cancer detection rate) 2.0/1,000 (51/25,541), 1.6/1,000 (51/32,289) 51 25 (49%), 26 (51%) 0.7 - 5.0 cm (1.7 cm) 0 49% (25/51), 0 - 1 90.2% (46/51) , (minimal breast cancer: 1 cm) 72.5% (37/51) . (3 - 4) 50% 가 . 22 6 (27%) 가 . 50 가 22 (43%) 가 , 40 가 14 (27%), 60 가 12 (24%) . 2.8/1,000 60 가 , 30 60 가 가 (Table 3). 9 3 (interval cancer; 1 가) 4 가 가 2 가 1 5 2 85.0% (51/60) ACR 가 가 78.5% (51/65) 99 % (Table 2).

48.6 10 가 (1, 5, 6), (3, 4). 40 가 12,123 (37.6%) 가 , 50 가 9,570 (29.6%), 30 가 6,146 (19%) (Table 1).

Table 2 (3, 4). 32,289 BI - RADS 0, 4, 5 2,016 (recall rate) 6.2% . 가

Table 1. Age Distribution of Population of Screening Mammography by Year

Year/Age	< 39	40 - 49	50 - 59	60 - 69	70	Total
1994	56	184	67	21	2	330
1995	918	1,901	1,381	547	63	4,810
1996	1,268	2,514	1,762	650	80	6,274
1997	1,149	2,465	1,807	691	81	6,193
1998	1,493	2,484	2,310	960	133	7,380
1999	1,454	2,575	2,243	898	132	7,302
Total (%)	6,338 (19.6)	12,123 (37.6)	9,570 (29.6)	3,767 (11.7)	491 (1.5)	32,289 (100)

Table 2. Comparison of Medical Audit Data of Screening Mammography with Previously Published Data in Korea and the Ideal Goal of ACR in America

Audit Data	Goal	This study	Kim et al	Choi et al
Total examinations		32,289	15,308	43,329
Total patients		25,541	13,889	36,802
PPV1*	5 - 10%	2.5%	0.8%	2.3%
PPV2*	25 - 40%	20%	18%	27.7%
Tumor found-stage 0 or I	> 50%	90.2%	47%	73.2%
Tumor found-minimal cancer	> 30%	72.5%	47%	48.8%
Node positivity	< 25%	27%	64%	22.0%
Cancers found/1,000cases	2 - 10	2.0	1.2	1.2
Recall rate	< 10%	6.2%	13%	5.1%
Sensitivity1*	> 85%	85.0%	89.5%	91.5%
Sensitivity2*	> 85%	78.5%	No data	No data
Specificity	> 90%	99%	> 99%	95.0%

Goal : Desirable goal of screening mammography in U.S.A.

*PPV1; positive predictive value (PPV) based on abnormal findings

*PPV2; PPV when biopsy or surgical consultation recommended

*Sensitivity1; if an inquiry to Korean Central Cancer Registry are not made.

*Sensitivity2; if an inquiry to Korean Central Cancer Registry are made.

Table 3. Age Distribution and Detection Rate of Breast Cancer

Age	< 40	40 - 49	50 - 59	60	Total
No. of MMG	6,338	12,123	9,570	4,258	32,289
No. of Cancer (%)	3 (6)	14 (27)	22 (43)	12 (24)	51 (100)
Cancer Detection Rate (/1,000cases)	0.5	1.2	2.3	2.8	1.6

*No. ; Number

*MMG ; Mammography

가 23 (45%) 19
7 (14%), 12 (24%)
9 (18%) (Table 4).
14
, 7
, 4
3

Table 4. Mammographic Findings of Breast Cancer on Screening Mammography

Findings	No. of Lesions	Percentile(%)
Microcalcification only	23	45
Mass or density	19	38
with calcification	7	14
without calcification	12	24
Architectural distortion	9	17
Total	51	100

No. ; Number

가
(7, 8). , 가 , 40
, (9-
1997 13.3% 2000 15.1% 가 가
가, 2001 10, 12). 40
16.1% 1 (9 - 11). 30 , 35
, , 가 가 (3, 4).
30
가 30
가
50 가
, 22 (43%) 가 , 40 가 14 (27%), 60 가

$$\vdots$$

12 (24%) .
60 2.8/1,000 가 , 30 60 가
가 가 40 (Stereotatic guided core needle
가 가 (9 - 10, 12) biopsy or mammotome biopsy)
(Table 3).

1994	Agency for Health Care Policy and Research (AHCPR)	Quality Determinants of Mammography Guidelines	3	가	가	9
		1, 2 (PPV1, PPV2)가		가		
		1 (PPV1)			가	

(21 - 23), 가 (dense breast) 가 (pseudolesion) 40 가 , (2 - 4, 13). , 6.2% 가 ,

Category	Percentage
(breast imaging specialist)	78.5%
(5)	10%
가	4.9%
	7.1%

(Stereotatic guided core needle biopsy or mam -
motome biopsy) 가 가 가 ,
4 가 가 . ,
2.0/1.000 가

1.2/1,000 (3, 4) .
0
14 , 2.0/1,000 , 72.5% 가
2.5/ 1,000 . 78.5% .
1.0/1,000 0.8/1,000 ,

1.0/1,000 . 1 cm (performance) , 가
가
.
(14).
, 가

[illegible]

(45%) 가 , American College of Radiology, 1998
가 . 3. ' ' ' ' ' : 4
51 25 (49%) 4. ' ' ' ' ' 2000;42:1003-1008
5

- 859-864
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Screening Mammogram in Health Center: Medical Audit for Six Years¹

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Purpose: To report the findings of a six-year medial audit performed at our mammographic screening centre, comparing those findings with the follow-up data stored at our hospital and at the Korea Central Cancer Registry.

Materials and Methods: We analyzed the findings of 32,289 mammographic examinations of 25,541 women performed at our screening center between 1994 and 1999. For follow-up and outcome monitoring, the guideline of the American College of Radiology Breast Imaging Reporting and Data System (ACR BI-RADS) was used. All mammograms were categorized by means of BI-RADS, and cases in categories 0, 4, and 5 were followed up through a review of our hospital information system. To determine whether any cases were false negative, we compared breast cancer patients registered in our medical record department and in the Korean Central Cancer Registry during the study period, with women whose mammograms were interpreted as normal or benign at our screening center within a year prior to cancer diagnosis.

Results: The mean age of women enrolled in this study was 48.6 years, ten years less than reported in the West. The recall rate was 6.2%. Among 256 women whose final assessment category was 4 or 5, breast cancer was diagnosed in 51. The cancer detection rate was 2.0/1,000 women; positive predictive value 1 (PPV1: PPV, based on abnormal findings at screening examination) was 2.5% of cases and PPV2 (PPV when biopsy or surgical consultation was recommended) was 20%. The most common mammographic finding was microcalcifications only (45%). The rate of minimal breast cancer, including invasive cancer less than 1 cm in diameter and ductal carcinoma *in situ*, was 72.5%. Node positivity was 27%. Sensitivity was 85.0% based on the tumor registry of our institution's medical record department, and 78.5% based on the tumor registry of the Korea Central Cancer Registry. Specificity was 99.0%.

Conclusion: In our study, the cancer detection rate at screening mammography was 2.0/1,000 women. The rate of minimal breast cancer (72.5%) was very high but measurable sensitivity was 78.5%, somewhat lower than the ACR guideline of 85%. To improve the performance of screening mammography, appropriate interpretation of mammography and constant, follow-up and outcome monitoring are important.

Index words : Breast neoplasms, diagnosis
Breast neoplasms, radiography
Cancer screening

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