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Mass Screening for Breast Cancer in Hiroshima Prefecture*)

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ABSTRACT

Mass screening for breast cancer was began in Hiroshima Prefecture in April 1977 under the sponsorship of the Hiroshima Prefecture Adult Disease Prevention Association and with the cooperation of the Community Health Council. As a member of technical experts, the authors have being studied the methods for conducting the mass screening, and as the system for mass screening has generally been established. We wish to report the results.

During the seven years from April 1977 to April 1984, mass screening was conducted on 166,849 women and breast cancer were found in 62 (0.037%). The stage, method of diagnosis, and method of treatment of these cases are reviewed and the screening method are presented.

INTRODUCTION

Breast cancer is a disease whose prognosis can be expected to be more favorable than cancers of other organs by early detection and early treatment. Further, because most breast cancers are palpable as "mass", it is important that the patient herself have knowledge of breast cancer and mastered the self examination.

In Japan, breast cancer, which had been less frequent than stomach cancer, uterine cancer, etc, is tending to increase in recent years and attention has come to be given to early detection by mass screening. Around 1969, mass screening was begun in specific areas by doctor of the University Hospital. Mass screening gradually spread subsequently, and in 1975 a Breast Cancer Division was established within the Japanese Cancer Prevention Association, where the standard screeing system which is now carried out in 25 regions was decided. In Hiroshima Prefecture, Hiroshima's own mass screening system was decided in 1977 and is carried out in almost all areas of perfecture. The method of conduct which has been established will be presented.

MATERIALS AND METHODS

Mass screening is conducted with a city, town or village as a unit, by doctors of the area whose services are requested by one of the 19 comittee members elected from the area. Most of these doctors are surgeons of the area where mass screening is conducted. The screening, which is given to women 30 years or over, is conducted once a year, and it is a primary screening consisting of inspection and palpation the breast. The method of screening is go out system as screenee gather at the place prepared by the Health Center of the area, and the doctors come there to do the screening. The screening doctor records the screening results in individual chart to use as reference in the following and subsequent years. The findings are classified into (1) normal, (2) follow-up indicated, (3) precise examination indicated, and (4) treatment indicated, and those for women precise examination or treatment is indicated are given a letter of referral with the screening results entered there in and advised to be examined at a hospital in the area which is completely provided with examination and treatment facil-

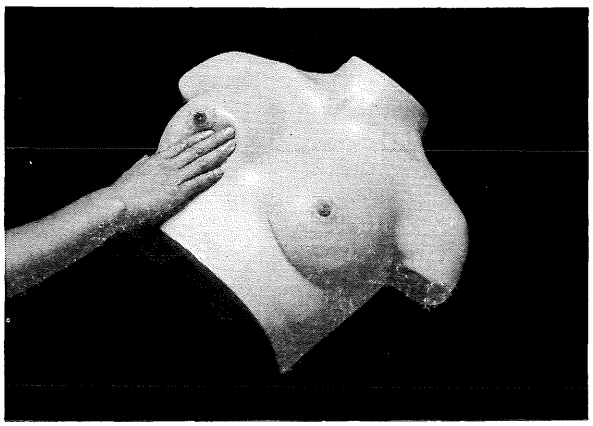
*) 西亀正之，江崎治夫：広島県における乳癌検診

ities. Under the system, a final report is sent by the doctor conducting the indicated examination and treatment to the Adult Disease Prevention Association. To those for whom follow-up is indicated, the importance of self examination is explained and the findings of the breast are described, and they are advised to be seen at a hospital if they find any change by their examination.

It is a characteristic of the Hiroshima system that mass screening can be conducted throughout almost the entire area of prefecture on a large number of persons. Subsequent follow-up is also easy to conduct because screenee knows the screener usually. Another characteristic is that efforts are being made for early detection by educating women to impart to them a correct knowledge of breast cancer and providing them guidance on the method of self examination. For this purpose, pamphlets containing basic information and description of the self examination method are distributed to screenee and enlightenment using video tapes is conducted availing of the waiting time before they undergo screening. Besides examination by a doctor at the time of screening, screenee are taught the palpation method by health nurses and trained nurses, using the breast cancer training model we prepared shown in Fig. 1 and 2. Employing such methods, emphasis is also placed in the education of women, with the ultimate aim of lessening the number of women dying of breast cancer.

The results of mass screening are as shown in Table 1. In the period of seven years, mass screening was conducted on 166,849 women, and 62 cases of cancer were detected. Although none was detected in the initial year, breast cancer cases were detected from the following year at rates ranging from 0.033% to 0.045% (0.037% on the average) of all women undergoing mass screening. The number of women undergoing mass screening, which was 10,898 in the initial year, gradually increased and

INSPECTION AND PALPATION OF BREAST CANCER TRAINING MODEL



目的：
乳癌は、働きざかりの婦人に比較的頻度の高い癌である。進行すれば、癌細胞は血中に入り全身に散布されやすい性質を持っている。しかし、早期すなわち局所にとどまっているうちに発見し、治療を行なえば予後は大いに期待出来る。
乳房は体の表面にある臓器であるため、その変化は目で見る視診、触れてみる触診が可能である。このような特徴から乳癌の皮膚における変化をとらえ、視診による乳癌の症状の会得を目的として作成した。また、乳癌の症状の大部分は"しこり"として触れ、小さいものほど予後が良好である。このことから、医師による診断だけでなく、自分自身で毎月欠かさず乳房をていねいに触れ、自己検診を行ない"しこり"を感じたら専門医を訪れるべきである。このモデルは乳癌の症状を教育したり、自己検診の訓練を目的として作成したものである。

Purpose:
The incidence of breast cancer is high in women in the prime of their life. Should breast cancer develop, cancer cells readily enter the blood stream and spread throughout the whole body. If it is detected and treated at an early stage while still localized, the chances of complete recovery are very high. Since the breast is an organ located close to the body surface, any change which develops on the skin can be seen and changes in the breast can be palpated.
We recently developed this breast cancer training model so that knowledge of typical cancer conditions can be acquired by inspection and by palpation of the organ on the basis of the symptoms of breast cancers at various stages. Most breast cancers are detected by palpation of "lump" The smaller the cancer, the more readily it heals after treatment. From this standpoint, not only professional examination by a doctor but also careful self-examination are recommended every month. If a lump or mass is detected, one should immediately consult a specialist.
This model is a teaching aid in detecting breast cancer symptoms and in training women in self-examination.

Fig. 1.

特徴：

モデルは、大きさや皮膚の感触などを可能なかぎり生体に酷似させた。"しこり"や皮膚の変化は病的所見を多少過大に表現した傾向もあるが、病巣の状態を正確に描写したつもりである。したがって、医学生、看護学生、保健婦などへの教育用モデルとして好材である。また、集団検診の普及により一般婦女子に対する自己検診の教育を行ない、検診時以外の時期に乳癌(間欠期乳癌)を発見する訓練に好都合である。

注意：

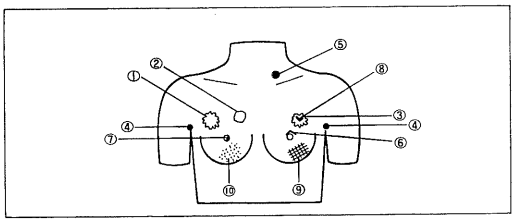
可能なかぎり生体に近い感触を表現するため、皮膚は軟かく、薄く作成してある。そのため、爪先や暴力的触診による破損に注意する必要がある。

Advantages:

The model is made of soft silicone and feels very life-like. Lump and skin changes typical of cancer symptoms can be realistically created with this model. It is an ideal educational model for nurses, students, doctors and other paramedical personnel. The model can be effectively used as teaching tool for self-examination of breast cancer in mass screening.

Caution:

The model, being not living, will not complain of any pain even when rough handling. However, do not push or pull the model with unreasonable force. It is recommended that this model be treated as carefully as a real human breast.



乳癌の症状：

1. 腫瘤(しこり)

乳癌の80～90%は痛みのない"しこり"として触れる。毎月ていねいに手のひらで乳房を触れ、"しこり"の早期発見につとめる。入浴中に施行するのが簡単でよい。①、③は硬く、表面不整で癌を疑わせる。②は比較的軟かく、良性を思わすが、腫瘤を触れたら癌の可能性を考え、精密検査を受けた方がよい。

2. リンパ節転移

同腋窩(わきの下)④頸部⑤に硬いリンパ節を触れる。

3. 乳頭の変化、分泌物

授乳期でないのに乳首を圧迫すると分泌物が出たり、下着に付着することがある。分泌物は水様、漿液性、血性などがある。血性の時は特に注意を要す。乳頭の変位（かたより)、陥凹(くぼみ)⑥する場合や湿疹様変化(ただれ)⑦がみられる場合もある(Paget癌)。

4. 皮膚の変化

癌が皮膚に波及すると陥凹し"えくぼ"を形成する⑧。特に乳房を何らかの方法で動かすと現われやすい。更に進行すると潰瘍を形成する。乳房の皮膚に部分的浮腫(はれ)がみられ、毛孔がよくみえ、オレンヂの皮様外観を呈す⑨。また、部分的に発赤、腫脹(赤くはれる)がみられることがある。通常痛みや熱感は殆どない(炎症性乳癌)⑩。

(文中の数字は図の部位を示す。)

Symptoms of Breast Cancer:

1. **Lump**

The initial symptom in 80－90% of breast cancer is painless lump. Lump should be detected as early as possible by palpating the breasts once a month with the palms while taking a bath. 1* and 3 are hard. The surface is rather irregular and resembles a cancer. 2 is relatively soft and the surface is flat. It is mostly a benign tumor.

2. **Lymphnode metastasis**

Hard lymphnodes are detected at both the axillar 4 and cervical 5 regions.

3. **Changes in and discharge of the nipples**

Even during the non-lactating period, compression of the nipples may lead to discharge and often the undergarment is stained. The discharge may be milky, watery, serous or bloody. If it is bloody, careful examinaiton is indicated. Depression of the nipple is indicative of an underlying cancer 6 and eczematic change of the nipple is pathonomonic of Paget's cancer 7.

4. **Skin changes**

If the cancer approaches the skin, the skin becomes depressed to form a dimple 8. The dimple readily appears especially when the breast is moved. As the cancer progress, ulcer is formed with partial edema of the breast skin, prominent hair holes and orange-peel appearance 9. Slight redness and swellimg sometimes appear. Pain and fever are usually not experienced or weak (inflammatory breast cancer) 10.

*Numbers refer to the indicated sites on the figure.

Fig. 2.

Table 1. State of mass screening for breast cancer in Hiroshima Prefecture

Screening year	Number of respondents (A)	Precise exam. indicated number (B) (B/A %)	Follow up indicated number (C) (C/A)	Breast cancer (D) (D/A %) cases
1977	10,898	112(1.1%)	587(5.4%)	0
1978	18,909	222(1.2%)	926(4.9%)	8 (0.040%)
1979	22,369	253(1.1%)	991(4.4%)	8 (0.035%)
1980	24,523	313(1.3%)	907(3.7%)	8 (0.033%)
1981	28,536	340(1.2%)	1,108(3.9%)	12 (0.040%)
1982	28,592	293(1.0%)	1,049(3.7%)	13 (0.045%)
1983	33,022	386(1.2%)	892(2.7%)	13 (0.039%)
Total	166,849	1,918(1.1%)	6,460(3.9%)	62(0.037%)

33,022 women were screened in 1983. After 1979, mass screening was conducted in 12 cities, 69 towns and 5 villages, accounting for the entire prefecture with the exception of two area. One of the two areas not participating in the mass screening program is an area where response to screening is limited and the other is an area where mass screening for breast cancer

Table 2. Stage of detected breast cancers by year

Stage	1978	1979	1980	1981	1982	1983	Total
I	3	2	2	5	5	5	22
II	3	5	4	6	7	4	29
III	2	1	1	1	1	3	9
IV	0	0	1	0	0	2	2
Total	8	8	8	12	13	13	62

Table 3. Methods of diagnosis for adaptation of operation by stage

Stage	Decision only by supplementary diagnosis method	Cytology	Needle biopsy	Surgical biopsy
I	2	1	2	17
II	5	1	1	22
III	3	0	4	2
IV	1	0	0	1
Total	11	2	7	42

Table 4. Stage of breast cancer and method of operation

Stage	ERM	RM	MRM	SM	L	Total
I	0	13	9	0	0	22
II	2	14	12	1	0	29
III	1	6	2	0	0	9
IV	0	1	0	0	1	2
Total	3	34	23	1	1	62

ERM: Extended Radical Mastectomy, RM: Radical Mastectomy, MRM: Modified Radical Mastectomy, SM: Simple Mastectomy, L: Lumpectomy

is conducted as a part of a general screening program including cancers of other organs. Those for whom precise examination was indicated, that is, those who required secondary screening, accounted for 1.0–1.3% of the women screened.

The stages (according to the TNM Classification decided in 1978 by the Japan Mammary Cancer Society) of the breast cancers detected in 62 cases were as shown in Table 2. Breast cancers of stage I and stage II accounted for 51 cases, or 82%, and advanced cancers were detected in 11 cases, 9 cases of stage III and 2 cases of stage IV, or 18%.

The methods of diagnosis when the final diagnosis was determined and operation was decided on are reviewed in Table 3. Operation was decided on only by physical examination and mammography in 11 cases. The diagnosis was made by nipple discharge and aspiration biopsy cytology in 2 cases, by needle biopsy in 7 cases, and by histologic diagnosis on surgical biopsy in 42 cases.

The operation performed for the detected breast cancer are received in Table 4 by the stage to which they thad advanced. Extended radical mastectomy was performed on 3 cases, radical mastectomy on 34 cases, modified radical mastectomy on 23 cases, simple mastectomy on 1 case, and lumpectomy in 1 case.

DISCUSSION

The purpose of mass screening for breast cancer are early detection of the cancer by screening and education of women, primarily with regard to self examination. To improve the detection rate of breast cancer at mass screening, use of mammography is often com-

bined in Europe and America. Patchefsky combined mammography and thermography with physical examination in screening 17,526 asymptomatic women and detected breast cancer at the high rate of 156 cases (0.89%)[2]. Moscowitz reported that mammography and aggressive surgical biopsy are necessary for the detection of minimal cancers[1], and Wolfe classified the parenchymal patterns obtained by xeromammography into 4 type and reported that it is necessary to follow up the high risk group[4]. However, Simon warned that to conduct mammography on all cases gave rise to the risk of developing radiation induced cancer[3].

In Japan, screening is conducted mostly inspection and palpation only. Echography, mammography and aspiration cytology are combined in some areas in recent years. The detection rate in Japan, according to the report of the Japanese Cancer Prevention Association in 1982, was the highest in Chiba Prefecture, where the rate was 0.15%, and the average rate was 0.07%. The rates in Hiroshima Prefecture, as shown in Table 1, averaged 0.037% and tended to be lower than the national average. Such differences, though attributable in part to regional difference in the incidence of the cancer, could be due to the mass screening method and the precise examination method. Now, the response rate to secondary screening of those cases for whom precise examination was indicated is almost 100% in areas where the detection rate is high, but it is 70% and low in the Hiroshima region. This shows that there is a need to improve the precise examination rate. The Hiroshima system adopts the policy of having each area conduct mass screening on its own which enables screening of large numbers, but decline of the response rate and fixation of the respondents brought on by the lowness of the area's positivity toward mass screening will have to be guarded against.

Observation of the stages of the detected breast cancers (Table 2) shows that, even in 1983, 5 cases (38%) are included among the advanced cases of stage III and IV, which gives us to consider that education, including self examination, for early detection of rbeast cancer is still insufficient. Exclusive of advanced cancer, some histologic method of diagnosis should perhaps be employed for early stage cases, such as cases of stage I and II. A review of surgical biopsies shows that excisional biopsy was conducted in most cases of stage I and II, and that 31% of such biopsies were performed at the time of operation. However, there was one advanced case of stage III on whom radical operation was performed on the 23rd day after the biopsy. Efforts should be made to perform radical operation as soon as possible after biopsy. As method of operation, extended radical mastectomy was performed in 3 cases, in all of whom the tumor was present in the inner half and parasternal lymph node dissection was performed. Simple mastectomy was performed in 1 case of intraductal carcinoma, and 1 case underwent lumpectomy was a stage IV case on whom palliative tumor resection was performed.

Operation for cases of stage I and II is gradually changing in the direction of modified radical mastectomy for functional preservation. However, there are still cases where redical mastectomy is performed for early cases, and it should be considered that there is a need to select the operation method according to the stage and the histologic type.

The foregoing is a review of mass screening in Hiroshima.

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