Relative Frequencies and Age Distributions of Breast Lesions at a Thai Tertiary Care Hospital

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Abstract   ***Background and Objectives***:   **To determine the relative frequencies and age distributions of various benign and malignant breast lesions at a Thai tertiary care hospital.**

Material and Methods: **Patients who consulted for breast problems at Ramathibodi Hospital during the years 2000 and 2010, and who underwent tissue biopsy or surgical excision were included. Pathological data were retrieved from a patient data base using appropriate codes corresponding to SNOMed (Systematized Nomenclature in Medicine) terminology. Breast lesions were the primary units of analysis. Relative frequencies of breast lesions were calculated and age distributions determined.**

Results: **We included 12,376 lesions. Patients commonly consult and undergo tissue diagnosis for breast lesions during the 2nd and 3rd decades of life, and then again during the 4th and 6th decades, resulting in a bimodal age distribution for both men and women. The most common benign condition in men was hypertrophy, i.e., gynecomastia, for all age groups. The most common benign lesion in women was fibroadenoma, predominantly in the 2nd and 3rd decades of life but continued to be a major finding till the 6th decade. For men with breast cancer, both ductal carcinomas and breast sarcomas were equally common. For women, invasive ductal carcinoma was the most common cancer for all age groups, but breast sarcomas were relatively common during the 2nd and 3rdrd decades of life. For older patients invasive ductal carcinoma was overwhelmingly dominant (> 90% of all invasive cancers). Breast sarcomas accounted for 3% of all invasive cancers in women, if malignant phyllodes tumors were included as well. Thai women with breast cancer were likely younger on average than their Western counterparts.**

Conclusion: **The pattern of age distribution for histologically diagnosed breast lesions was found to be similar for both men and women. Breast sarcomas were conspicuously more common in the present study than those previously reported. Otherwise most breast lesions, especially in women, were distributed according to age in a similar manner as reported elsewhere.**

Keywords: **Age distribution, breast lesions, pathology, benign, malignant**

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INTRODUCTION

Breast disorders encompass a wide spectrum of lesions that, for practical purposes, can be classified into two broad categories: benign and malignant. Although the vast majority of breast disorders are benign, breast cancer is the most common malignancy among women worldwide, and comprises 18% of all female cancers[1]. Moreover, breast cancer ranks second as a cause of cancer death in women[2].

The risk of developing breast cancer is strongly correlated with increasing age. In most countries, breast cancer incidence shows a characteristic age-specific distribution where a rapid increase in incidence occurs between the ages 40 and 50 years[2].　Weaver et al. [3] showed that both invasive and non-invasive (in-situ) breast cancers are more prevalent with increasing age, although the increase in the prevalence of invasive cancer is more striking than that of non-invasive cancer, with 81% of all breast cancers being invasive and the rest non-invasive in women aged 40 or older in the United States of America.

In contrast to malignant breast lesions, the incidence of benign breast lesions decreases with increasing age. Fibroadenoma is the commonest benign breast tumor that rarely turns malignant. It can be found in women of any age but a greater prevalence is seen in women during their 2nd and 3rd decades of life[4].　Schuerch et al.[5] observed an increase in the proportion of fibroadenoma from 50% of all breast biopsies to 75% for biopsies in women aged less than 20 years.

Although age distributions of various breast lesions have been studied extensively in Western countries, to our knowledge similar studies have not been done in Thailand. The present study was conducted, firstly, to determine the relative frequencies ("relative prevalence") of various types of breast lesions, and secondly, to determine the age distribution of these lesions as seen in a large number of patients who have undergone a tissue biopsy at a tertiary care hospital in Thailand.

PATIENTS AND METHODS

Patients who consulted for breast problems at Ramathibodi Hospital during the years 2000 and 2010, and who had tissue samples taken were included in the analysis. Tissue diagnosis was obtained by core needle biopsy, excisional biopsy, or surgical specimen (e.g., a mastectomy) examination. Breast lesions were the primary units of analysis. We excluded lesions without definite pathological diagnosis (according to the Systematized Nomenclature in Medicine - Clinical Terms, or SNOMed-CT, terminology) or those whose diagnoses were not decoded, as well as lesions in the same patient seen at a second or later visit.

There were 12,886 lesions, seen for the first time for each patient, examined within the 11-year period. After excluding undecoded lesions and lesions with unclear diagnosis, 12,376 lesions (seen in 12,376 patients) were available for analysis. All lesions were thus assumed statistically independent. All statistical analyses and graphs were done or created using Stata version 9 software (Stata Corp, College Station, TX, USA).

RESULTS

1. Overall age distribution and types of breast lesions

At diagnosis, 12,156 of 12,376 patients were women (98%), and 220 of 12,376 were men (2%). The average age of women with breast lesions at first diagnosis was 41.8 years (standard deviation [SD], 13.8 years) with a median age of 43 years and a range from 11 to 95 years. The average age for men was 41.5 years (SD, 20.7 years) with a median age of 36 years and a range from 13 to 92 years.
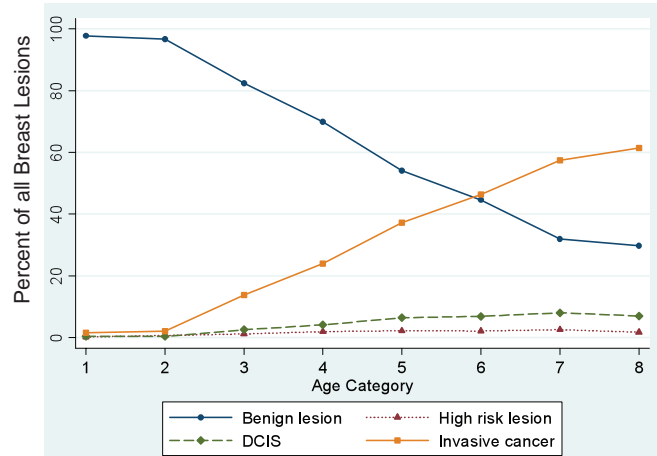
The age distributions for women and men,
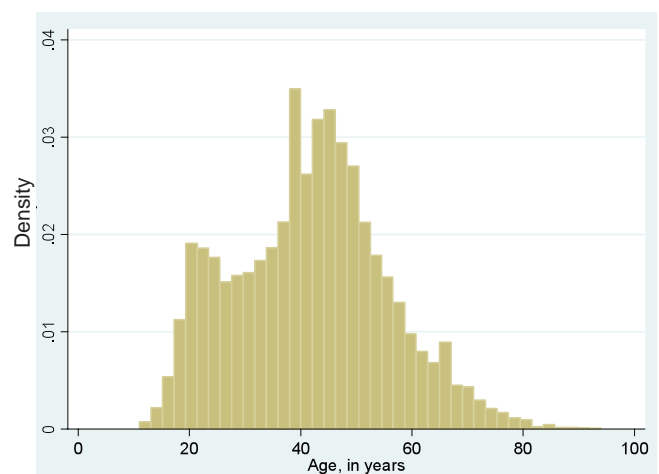
Figure 1　Age distribution of women with histologically examined breast lesions
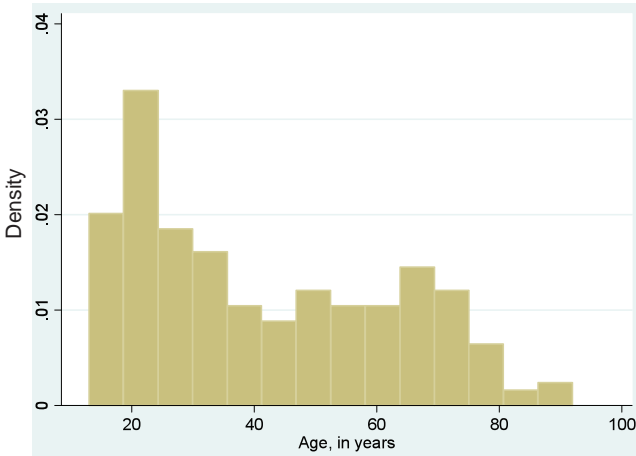
Figure 2 Age distribution of men with histologically examined breast lesions

Figure 3 The relative frequency of 4 major classes of breast lesions in women, according to age categories 1 to 10. These are defined as: category 1 - less than 20 years; category 2 - between 20 and 29 years; category 3 - between 30 and 39 years, and so on to category 8 - ages 80 and older.

respectively, are shown in Figures 1 and 2. For both women and men, two distinct peaks can be seen, comprising those in their early 20s and those in their 40s or 50s or older. The highest peak in women occurred at the ages of 40 to 50 years, representing those at a greater risk of developing breast cancer. The smaller peak is near the age of 20, which represented those consulting for breast problems for the first time. The highest peak in men is concentrated in the younger age group, while the smaller peak is concentrated near the ages 60 and 70 years. Both peaks mainly represented consultations for gynecomastia, but breast tissue was removed more frequently in the young.

The proportions or relative frequencies of 4 major classes of breast lesions in women according to age category or group are shown in Figure 3 and Table 1. A large proportion of all women (73%) were found with benign lesions (Table 1); this class of lesions was overwhelmingly dominant in the 2nd (98%) and 3rd (97%) decades of life. The proportion of benign lesions decreased with age, though these lesions continued to be the most common until the 6th decade of life before being overtaken by invasive cancer. In the 4th decade of life, invasive cancer abruptly increased in frequency, becoming the dominant lesion in the 7th and 8th decades of life. Non-invasive cancers, represented by ductal carcinoma in situ (DCIS), paralleled the pattern of invasive cancers, but to a much lesser degree: the proportion of DCIS never rose higher than 10%. The proportion of high risk lesions, comprising mainly atypical ductal hyperplasia (ADH) and lobular neoplasia, showed only modest increase with age.

Table 1 Types of breast lesions and their relative frequencies in women, according to age groups

Pathology\Age Group	<20	20-29	30-39	40-49	50-59	60-69	70-80	>80	Total
Benign/low risk	484	2,105	1,989	2,598	1,162	375	99	17	8,829
%	97.8	96.7	82.4	69.9	54.1	44.6	31.9	29.8	72.6
High Risk	1	15	29	72	48	18	8	1	192
%	0.2	0.7	1.2	1.9	2.2	2.1	2.6	1.8	1.6
Ductal carcinoma in situ	2	9	62	154	138	58	25	4	452
%	0.4	0.4	2.6	4.2	6.4	6.9	8.1	7.0	3.7
Invasive Cancer	8	47	334	891	800	390	178	35	2,683
%	1.6	2.2	13.8	24.0	37.2	46.4	57.4	61.4	22.1
Total	**495**	**2,176**	**2,414**	**3,715**	**2,148**	**841**	**310**	**57**	**12,156**

Table 2 Types of breast lesions and their relative frequencies in men, according to age group

| Pathology\Age Group	<20	20-29	30-39	40-49	50-59	60-69	70-80	>80	Total
Benign/low risk	32	52	25	19	16	24	14	6	188
%	94.1	94.6	92.6	90.5	61.5	82.8	63.6	100	85.5
High Risk	0	0	1	1	1	1	1	0	5
%	0	0	3.7	4.8	3.9	3.5	4.6	0	2.3
Ductal carcinoma in situ	0	0	0	0	1	0	1	0	2
%	0	0	0	0	3.9	0	4.6	0	0.9
Invasive Cancer	2	3	1	1	8	4	6	0	25
%	5.9	5.5	3.7	4.8	30.8	13.8	27.3	0	11.4
Total	**34**	**55**	**27**	**21**	**26**	**29**	**22**	**6**	**220**

Table 2 and Figure 4 present the relative frequencies of 4 major classes of breast lesions in men, according to age group. In contrast to women, in men the proportions of breast lesions showed fluctuations after the age of 40, without a clear trend. This was probably due to the small number of patients in each age group, with consequent prominence of random variation. Benign breast lesions (86% overall) were the dominant lesions in men of all ages, followed by invasive cancer (11%). The proportion of benign breast lesions was high until the 4th decade of life, and, instead of steadily decreasing as age increased, there was a sudden drop in the 5th decade, a sudden increase in the 6th decade, and another decrease in the 7th decade. The proportion of invasive cancers showed a reverse pattern compared to that of benign lesions: instead of increasing with age as observed in women, a sudden increase was observed in the 4th decade of life followed by a decrease in the next decade and continued

fluctuation until the 9th decade. Both DCIS and high-risk lesions showed no significant trend, as their proportions never exceeded 5% in any age group.
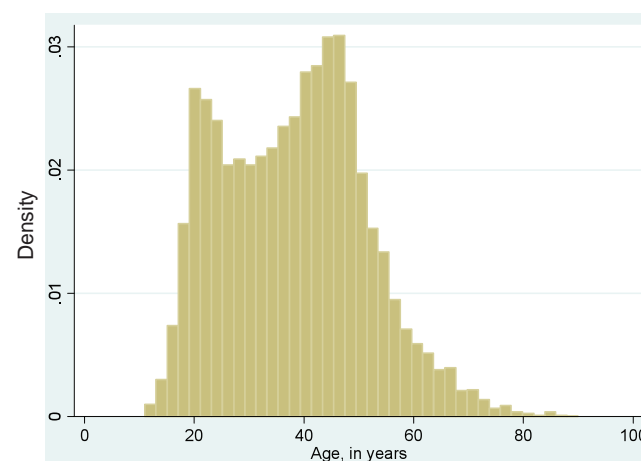
2. Benign breast lesions

The average age of women with benign lesions at diagnosis was 38.4 years (sd, 12.9 years) with a median age of 39 years among patients aged 11 to 90 years. The age distribution of these women is shown in Figure 5. The distribution shows a bimodal pattern with peaks at the ages 20 and 50 years, both of similar magnitude. This is in contrast to Figure 1, in which the later peak is much more prominent. The earlier peak represented young women with first symptoms requesting tissue diagnosis or excision of lesions. The later peak represented older women with a higher risk of cancer, with tissue diagnosis obtained for that very reason, but no malignancy was found.

The relative frequencies of the various types of
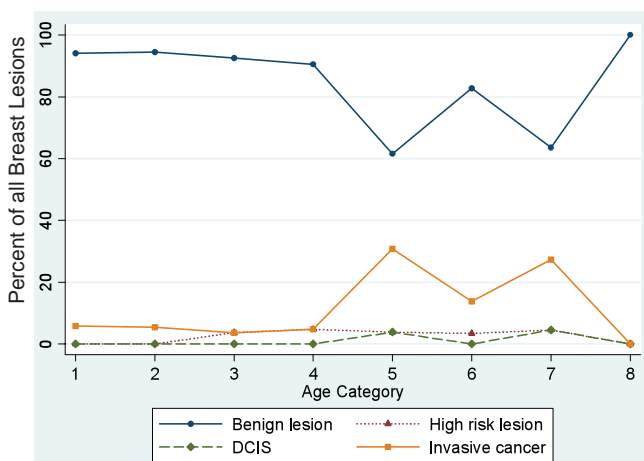
Figure 4 The distribution of 4 major classes of breast lesions in men, according to age categories as defined in Figure 3

Figure 5 Age distribution of women with benign breast lesions

Table 3 Details of the pathology of benign breast diseases in women, according to age group

Pathology\Age Group	<20	20-29	30-39	40-49	50-59	60-69	70-80	>80	Total
Abscess	2	3	8	10	4	0	1	0	28
%	0.4	0.1	0.4	0.4	0.3	0	1.0	0	0.3
Accessory breast	1	2	1	3	1	0	0	0	8
%	0.2	0.1	0.1	0.1	0.1	0	0	0	0.1
Adenosis	5	20	29	88	25	4	3	0	174
%	1.0	1.0	1.5	3.4	2.2	1.1	3.0	0	2.0
Atrophy	0	0	2	2	4	3	1	0	12
%	0	0	0.1	0.1	0.3	0.8	1.0	0	0.1
Benign breast tissue	2	15	34	96	68	15	16	3	249
%	0.4	0.7	1.7	3.7	5.9	4.0	16.2	17.7	2.8
Benign calcification	0	8	37	148	132	70	11	2	408
%	0	0.4	1.9	5.7	11.4	18.7	11.1	11.8	4.6
Benign phyllodes tumor	17	40	73	107	35	6	1	0	279
%	3.5	1.9	3.7	4.1	3.0	1.6	1.0	0	3.2
Duct Ectasia	0	0	0	3	1	0	0	0	4
%	0	0	0	0.1	0.1	0	0	0	0.1
Fibrocystic change	21	255	535	837	320	95	21	6	2,090
%	4.3	12.1	26.9	32.2	27.5	25.3	21.2	35.3	23.7
Fibroadenoma	370	1,560	995	776	263	44	8	0	4,016
%	76.5	74.1	50.0	29.9	22.6	11.7	8.1	0	45.5
Fibrosis	4	26	38	77	82	27	4	0	258
%	0.8	1.2	1.9	3.0	7.1	7.2	4.0	0	2.9
Galactocele	0	2	2	1	0	0	0	0	5
%	0	0.1	0.1	0.04	0	0	0	0	0.1
Hamartoma	0	7	7	5	3	1	0	0	23
%	0	0.3	0.4	0.2	0.3	0.3	0	0	0.3
Hematoma	0	1	1	8	3	1	2	0	16
%	0	0.1	0.1	0.3	0.3	0.3	2.0	0	0.2
Hyperplasia	4	21	32	63	27	15	3	0	165
%	0.8	1.0	1.6	2.4	2.3	4	3.0	0	1.9
Hypertrophy	2	5	4	1	3	0	0	0	15
%	0.4	0.2	0.2	0.04	0.3	0	0	0	0.2
Inclusion cyst	0	4	7	6	1	0	2	0	20
%	0	0.2	0.4	0.2	0.1	0	2.0	0	0.2
Inflammation	5	58	123	205	128	69	17	5	610
%	1.0	2.8	6.2	7.9	11.0	18.4	17.2	29.4	6.9
Juvenile fibroadenoma	45	49	0	0	0	0	0	0	94
%	9.3	2.3	0	0	0	0	0	0	1.1
Lipoma	0	0	0	4	1	3	1	0	9
%	0	0	0	0.2	0.1	0.8	1.0	0	0.1
Mastitis	2	5	8	11	2	3	0	0	31
%	0.4	0.2	0.4	0.4	0.2	0.8	0	0	0.4
Normal breast	0	3	6	14	5	2	1	0	31
%	0	0.1	0.3	0.5	0.4	0.5	1.0	0	0.4
Papilloma	4	16	41	123	49	17	7	1	258
%	0.8	0.8	2.1	4.7	4.2	4.5	7.1	5.9	2.9
Skin tag	0	5	6	10	5	0	0	0	26
%	0	0.2	0.3	0.4	0.4	0	0	0	0.3
Total	**484**	**2,105**	**1,989**	**2,598**	**1,162**	**375**	**99**	**17**	**8,829**

benign breast lesions in women are shown in Table 3. Beginning in the 2nd decade till the 5th decade of life, fibroadenoma was the dominant benign lesion, followed by fibrocystic change (FCC). Fibroadenoma was found in 46% of all women with benign lesions, but comprising 77% of women in their 2nd decade and 74% in their 3rd decade of life. Although fibroadenoma constituted a relatively high proportion until the 6th decade of life, after the 4th decade other benign lesions became dominant. In particular FCC was dominant in the 5th decade, i.e. the perimenopausal period, up to the 6th decade. Benign calcifications and breast fibrosis became more common with age as may be expected. Although the proportion of patients with inflammation seemed to increase with age, a large number of cases were concentrated near the 3rd (123/1,989), 4th (205/ 2,598) and 5th (128/1,162) decades of life. Benign phyllodes tumors made up a noticeable proportion of the total (3%), and although seen more commonly in the 4th and 5th decades as may be expected, an anomalously high proportion (3.5%) was seen in the 2nd decade of life. Papillomas or benign papillary lesions increased in relative frequency with age as

expected. Duct ectasia had the lowest relative prevalence in all age groups, with only 4 cases in total.

The average age for men with benign lesions was 39.5 years (SD, 20.5 years) with a median age of 32.5 years among patients aged 13 to 92 years. The age distribution of men with benign breast lesions is shown in Figure 6. This distribution is similar to that in Figure 2. This was because in all age groups the most or
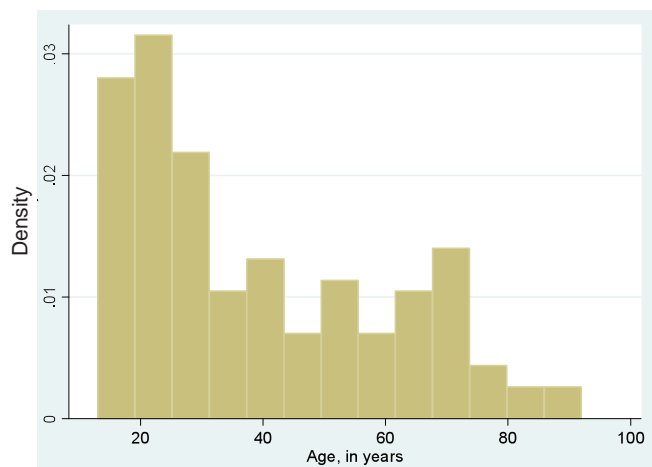

Figure 6 Age distribution in men with benign breast lesions

Table 4 Details of the pathology of benign breast diseases in men, according to age group

Pathology\Age Group	<20	20-29	30-39	40-49	50-59	60-69	70-80	>80	Total
Abscess	0	0	0	1	0	1	0	0	2
%	0	0	0	5.3	0	4.2	0	0	1.1
Benign breast tissue	0	0	0	0	0	0	0	1	1
%	0	0	0	0	0	0	0	16.7	0.5
Benign calcification	0	0	0	0	0	0	1	1	2
%	0	0	0	0	0	0	7.1	16.7	1.1
Fibrocystic change	1	2	0	0	1	0	2	0	6
%	3.1	3.9	0	0	6.3	0	14.3	0	3.2
Fibroadenoma	0	1	0	0	0	0	0	0	1
%	0	1.9	0	0	0	0	0	0	0.5
Fibrosis	0	2	1	0	1	0	0	0	4
%	0	3.9	4.0	0	6.3	0	0	0	2.1
Hyperplasia	1	0	1	0	3	0	0	0	5
%	3.1	0	4.0	0	18.8	0	0	0	2.7
Hypertrophy	29	46	21	15	9	21	8	4	153
%	90.6	88.5	84.0	79.0	56.3	87.5	57.1	66.7	81.4
Inflammation	0	0	0	2	1	1	2	0	6
%	0	0	0	10.5	6.3	4.2	14.3	0	3.2
Mastitis	0	0	1	0	0	0	0	0	1
%	0	0	4.0	0	0	0	0	0	0.5
Normal breast	0	0	1	0	0	0	0	0	1
%	0	0	4.0	0	0	0	0	0	0.5
Papilloma	1	1	0	1	1	1	1	0	6
%	3.1	1.9	0	5.3	6.3	4.2	7.1	0	3.2
Total	**32**	**52**	**25**	**19**	**16**	**24**	**14**	**6**	**188**

overwhelmingly common lesion was benign. The dominant pathology was hypertrophy, i.e., gyneco-mastia (Table 4). However, as was found for women, breast inflammation and FCC also increased with age in men.

3. Malignant breast lesions

Women with invasive breast cancer had an average age of 51.3 years (SD, 11.7 years), and a median age of 50 years with a range of 12 to 93 years. Men with invasive cancer had an average age of 52.6 years (SD, 19.2 years), and a median age of 56 years with a range of 17 to 78 years. The age distribution of women with invasive breast cancer is shown in Figure 7. The distribution is unimodal and symmetrical, as is typical of a more random, rather than highly selected, sample from a relatively homogeneous population. The peak is concentrated near 50 years of age, in agreement with the average value. The vast majority of invasive breast cancers, 2,683 of 2,708 or 99%, were observed in women while only 25, or 1%, were observed in men.

The relative frequencies of different types of malignant breast lesions in women according to age groups are shown in Table 5. The most striking finding for women, according to Table 5, was that most invasive
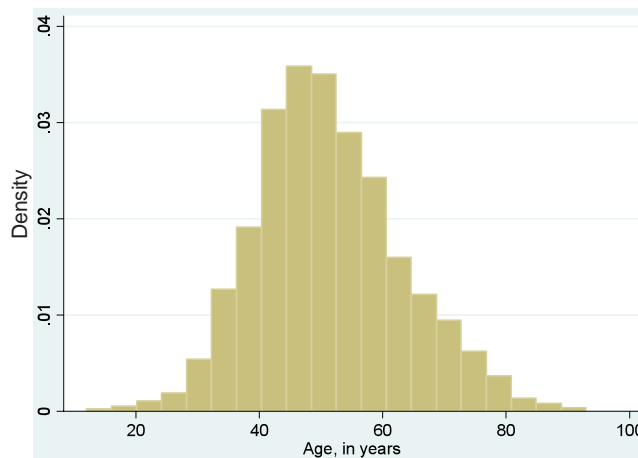

Figure 7 Age distribution of women with invasive breast cancer

breast cancers were overwhelmingly ductal carcinomas except during the 2nd and 3rd decades of life, where various "uncommon" cancers were actually relatively common. These included malignant phyllodes tumors, melanomas and various sarcomas. The sarcomas in Table 5 included, for example, spindle cell sarcoma, rhabdomyosarcoma, fibrosarcoma, liposarcoma, angiosarcoma, and clear cell sarcoma. Other malignancies included carcinosarcoma and mixed

Table 5 Relative frequencies of types of malignant breast lesions in women, according to age group

Pathology\Age Group	<20	20-29	30-39	40-49	50-59	60-69	70-80	>80	Total
Adenocarcinoma	0	0	0	1	1	0	0	0	2
%	0	0	0	0.1	0.1	0	0	0	0.1
Invasive ductal carcinoma	3	39	320	834	745	373	166	33	2,513
%	37.5	83.0	95.8	93.6	93.1	95.6	93.3	94.3	93.7
Invasive lobular carcinoma	0	0	4	19	18	6	2	1	50
%	0	0	1.2	2.1	2.3	1.5	1.1	2.9	1.9
Lymphoma	0	0	0	3	1	0	0	0	4
%	0	0	0	0.3	0.1	0	0	0	0.2
Malignant phyllodes tumor	0	1	3	5	4	0	0	0	13
%	0	2.1	1.0	0.6	0.5	0	0	0	0.5
Melanoma	0	1	0	2	0	1	0	0	4
%	0	2.1	0	0.2	0	0.3	0	0	0.2
Other malignancy	2	0	0	0	0	2	2	0	6
%	25.0	0	0	0	0	0.5	1.1	0	0.2
Paget's disease	0	0	1	4	6	5	4	1	21
%	0	0	0.3	0.5	0.8	1.3	2.3	2.9	0.8
Sarcoma	3	6	6	23	25	3	4	0	70
%	37.5	12.8	1.8	2.6	3.1	0.8	2.3	0	2.6
Total	8	47	334	891	800	390	178	35	2,683

Table 6 Relative frequencies of types of malignant breast lesions in men, according to age group

Pathology\Age Group	<20	20-29	30-39	40-49	50-59	60-69	70-80	>80	Total
Invasive Ductal Carcinoma	0	1	0	1	3	2	4	0	11
%	0	33.3	0	100	37.5	50.0	66.7	0	44.0
Sarcoma	2	2	1	0	5	2	2	0	14
%	100	66.7	100	0	62.5	50	33.3	0	56.0
Total	**2**	**3**	**1**	**1**	**8**	**4**	**6**	**0**	**25**

mesenchymal sarcoma.

For men, according to Table 6, no clear pattern could be inferred due to the small number of cancers. Nonetheless, it seemed that non-epithelial cancers were as common as ductal carcinomas, and these non-epithelial cancers were seen in all age groups. If true, then breast cancers seen in men are often different from breast cancers in women, in that malignancies are just as likely to arise from stromal cells as from ductal cells.

DISCUSSION

The present study is, as it were, a snapshot of clinical practice during the first decade of the 21st century, where imaging studies and minimally invasive biopsy techniques have a more dominant role in diagnosing and managing breast conditions[3]. In the past, excisional biopsies were both diagnostic and therapeutic, and ultrasonography was not routinely done or too primitive to be of practical use, so lesions examined histologically were commonly those associated with larger or palpable solid masses and cysts, and might not be comparable with more current experience.

Patients seen at Ramathibodi Hospital with breast problems are probably typical of those seen at many tertiary care hospitals in Thailand. However, all patients in the study had a histological diagnosis, hence these patients were either at higher risk of cancer, or more likely to request tissue biopsy or lesion removal. Also, since virtually all cancer patients seen at the hospital had tissue diagnosis, while patients with benign breast problems were much less likely to undergo biopsy procedures, it is clear that patients with cancer or malignant breast lesions were proportionately over-represented in the present sample[3]. Thus, we will discuss malignant and benign breast lesions separately. The bimodal age distribution in the present study is

also best discussed separately for men and women. For men, the first and much higher peak around the early 20's was most likely due to many more patients seeking medical attention around that age, and most would have had physiologic gynecomastia, which had failed to resolve sufficiently[6]. These male patients often requested removal of breast lumps because of pain or body-image problems and, in the past, surgery was usually carried out. It is possible that at the present time less surgery is being done for gynecomastia. Male patients were seen again at a much later age, during the 6th decade or later, at the time when physiologic senile gynecomastia, drug-related gynecomastia, and gynecomastia due to other causes are becoming common[6]. Tissue diagnosis was often obtained because of malignancy-related concern, rather than for symptoms or cosmesis, so this later peak in the distribution was not as high as the earlier peak simply because of the fewer number of patients seen and a low prevalence of cancer relative to women.

For women, the earlier peak in the age distribution was likely due to a first experience with symptomatic breast problems such as palpable masses, which might cause some distress and not infrequently ended up with tissue diagnosis or breast mass removal. Most, however, would be reassured or would simply undergo breast imaging follow-up. A higher peak would occur later, in the 4th and 5th decades of life, when screening mammography, symptomatic breast problems, and a real and higher risk of breast cancer would mandate tissue biopsy or lesion removal. This later peak in women occurred earlier than the similar peak in men. Benign breast lesions in men were predominantly hypertrophy and hyperplasia, which are typical pathological findings of gynecomastia[7], along with benign breast changes such as FCC, inflammation or calcifications. There is probably no new information relevant to clinical practice here.

The age distribution of benign breast lesions in

women also has two peaks, which are similar in magnitude. The explanation for this has been previously presented. But with the malignant component removed, the later peak became much less prominent. The average age of the sample (38.4 years; SD, 12.6 years), although meaningless as a representation of the bimodal distribution, nonetheless showed that these women were relatively young when their breast tissue was removed for diagnosis.

Fibroadenoma is probably the most common benign lesion of the breast, and overwhelmingly dominated the pathological findings in younger patients in the 2nd and 3rd decades of life[4]. However, it remained a major contributor to benign findings well into the 6th decade of life. We can speculate that fibroadenomas are very common in all Thai women, and remained detectable or regressed very little during a woman's lifetime. This might be related to the generally high radiologic breast density of women in Asia, and thus more abundant epithelial and stromal elements well into the old age[8].

Fibrocytic change (FCC) seemed to be increasing with age, but this interpretation could be misleading. Another reasonable interpretation is that biopsies or excisions, when done in older patients, often removed areas which contained FCC elements. So FCCs might already be common in younger patients, perhaps even more so than fibroadenomas, but FCCs were often not removed or reported in the young. This could also be the explanation for the higher proportion of breast inflammation seen in older patients, but chronic inflammatory processes, e.g. periductal inflammation, duct ectasia, and lymphocytic lobulitis, were probably more common in the elderly[9], as should breast calcifications. Similarly, papillary lesions, especially single or central papilloma, should be more prevalent with increasing age[10], as seen here.

Benign phyllodes tumors, were, like fibroademas, more common in the younger age groups, but were seen most frequently in 4th and 5th decades of life, in agreement with other studies[4]. Since these tumors are often rapidly growing[11], most should be detectable and removed before patients become older, rendering this lesion less likely to be detectable at older age. Interestingly phyllodes tumors were found with a higher overall relative frequency (3.2%) than reported elsewhere[4,10]. This may warrant further investigation as to why this was the case.

Malignant lesions in men were seen in only 25 patients, constituting 11% (25/220) of all breast lesions in men and almost 1% (25/2708) of all breast cancers combined (men and women). Thus the "1% rule" is validated in the present study[7]. Otherwise, there is not much useful and reliable information. The average age of Thai men with breast cancer was 52.6 years (sd, 19.2 years) which was quite young, and close to the average age of breast cancer in Thai women. An interesting preliminary finding concerning breast cancers in men was that there were roughly similar numbers of ductal carcinomas as sarcomas. This is in contrast to previous studies in the Western population, which demonstrated rare occurrence of sarcomas in men, and seemed to be similar in magnitude to those seen in women[12]. It might be interesting to extend the study of male breast cancers further to substantiate or refute our finding, which could point towards a different clinical spectrum of breast cancers in men and mark another difference between Asian and Western breast cancer patients.

Malignant lesions (invasive and non-invasive) constituted 26% of all histologically-examined lesions in women (3,135/12,156), but as mentioned earlier this proportion is difficult to interpret since malignant lesions are overrepresented in studies such as this. Although DCIS constituted 14% of all malignant lesions (452/3135), we will confine our discussion to invasive cancers (n = 2683) only. The average age of female invasive cancer patients was 51.3 years (SD, 11.7 years), with 2% aged less than 30 years and 14% aged less than 40 years.

Leong et al. showed a difference in the age of peak incidence of breast cancer between Asian and Western women[13]. In Asian countries, that peak is between 40 and 50 years, while in Western countries, the peak is between 60 and 70 years. The present study seemed to support the finding that Asian cancer patients are relatively young, with a peak in the age distribution at 50 years (Figure 7). In a literature review, only 2% of Western breast cancer patients were under the age of 35[14].

Invasive breast lesions were overwhelmingly invasive ductal carcinoma, as expected, except in younger women, where non-epithelial cancers were also seen in significant numbers. Most of these non-epithelial cancers were rare examples of sarcomas, which were similar to those seen in the Western

experience. However, breast sarcoma was more common overall (3%) than usually reported in the West (< 1%)[15]. Since these lesions were diagnosed many years in the past, it was possible that some were misdiagnosed metaplastic ductal carcinomas. In particular, some rhabdomyosarcomas and spindle cell sarcomas might have been misdiagnosed[16]. Nonetheless, it seemed racial differences could be seen in the relative frequencies of breast sarcomas. A practical lesson might be that rare breast cancers are to be expected in the young, and it is important to obtain an accurate diagnosis of these cancers to determine their pathological and biological nature before treatment. Many findings of the present study could be due to selection bias and artifacts of how the outcomes were calculated. First note that the relative frequencies of breast lesions are not prevalence or incidences. There were no denominators representing the population at risk in the present study. Thus, for example, the proportion of breast cancer in each age group in the present study cannot be compared with the incidence or prevalence of breast cancer in the same age group as reported in various population cancer registries. Second, the relative frequencies also depended on the threshold for biopsy at a given institution. If the institution has a low threshold for biopsy, i.e., any lesion will be biopsied, then the proportion of benign lesions will be higher, and the proportion of malignant lesions lower. Third, patients seen at our institution, a referral center, would be expected to have a higher proportion of malignant diseases, regardless of whether common or rare[17].

Similarly, the bimodal nature of the age distributions in women, and perhaps to some extent in men, was an artifact of the prevailing beliefs and clinical practices in the community. The actual age distributions of most lesions are possibly not bimodal and likely to be unimodal, as, for example, the distribution associated with breast cancer, despite the well-known heterogeneity in cancer biology. But for men, the bimodal distribution was likely biological in nature, because the dominant lesion was gynecomastia which has a bimodal peak incidence in the adult[16].

Knowledge of the relative frequencies of benign versus malignant breast diseases for different age groups, based on tissue diagnosis, is nonetheless clinically useful. Young women in the 2nd and 3rd decades of life in the present study, despite the overrepresentation of malignant diseases, rarely had cancer. Biopsy is thus often unnecessary for symptomatic lesions in these patients, but appropriate follow-up might be sufficient. On the other hand, older women with newly detected or symptomatic lesions should usually undergo biopsy, even if a third or more of the biopsied lesions are benign[3].

Finally, a study such as the present one could be informative as to the effectiveness of clinical practice at a given institution. For example, if the proportion of benign lesions found on biopsy in older women is considered high, relative to some external standard, then this could be due to too much unjustified biopsy or over-investigation. However, such judgements must also take into account the possibility of missing clinically significant breast lesions as well, if the performance of biopsies is to be scaled down in the future.

CONCLUSION

We determined the relative frequencies and age distributions of various breast lesions in women and men who underwent tissue diagnosis. Although most findings confirmed those of previous reports, we found rather high proportions of fibroadenoma for almost all age groups, and a higher proportion of breast sarcoma in both men and women than previously reported. An appropriate level of awareness of breast sarcoma seems warranted, since these rare cancers require accurate and detailed histopathologic study for their diagnosis and planning of treatment.

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บทคัดย่อ **ความถี่สัมพัทธ์ และการแจกแจงตามอายุ ของรอยโรคที่เต้านม ณ โรงพยาบาลตติยภูมิในประเทศไทย**
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วัตถุประสงค์: เพื่อประมาณความถี่สัมพัทธ์ของรอยโรคต่างๆ ของเต้านม ทั้งที่เป็นรอยโรคธรรมดาและรอยโรคมะเร็ง และการแจกแจงของรอยโรคดังกล่าวตามอายุ ณ โรงพยาบาลตติยภูมิในประเทศไทย

วิธีศึกษา: รวบรวมข้อมูลของผู้ป่วยโรคเต้านม ที่ได้รับการเจาะชิ้นเนื้อหรือผ่าเอารอยโรคไปตรวจ ในช่วงเวลาระหว่างปี พ.ศ. 2543 ถึง พ.ศ. 2553 ณ โรงพยาบาลรามาธิบดี โดยสืบค้นจากฐานข้อมูลของภาควิชาพยาธิวิทยา โดยอาศัยรหัสตามระบบ SNOMed (Systematized NOmenclature in Medicine) แล้วนำข้อมูลมาคำนวณความถี่สัมพัทธ์และแสดงการแจกแจงตามอายุ

ผลการศึกษา: จากการศึกษา 12,376 รอยโรค พบว่า ผู้ป่วยส่วนมากมารับการตรวจใน 2 ช่วงอายุกล่าวคือ ระหว่าง 20 ถึง 30 ปี และระหว่าง 40 ถึง 60 ปี ทั้งในกรณีผู้ป่วยหญิงและชาย ทำให้เกิดการแจกแจงความถี่ของรอยโรคตามอายุแบบทวิฐานนิยม ในผู้ป่วยชายทุกช่วงอายุ จะพบโรคเต้านมที่ไม่ใช่มะเร็งบ่อยที่สุดได้แก่ ภาวะนมโตในผู้ชาย ในผู้ป่วยหญิงโรคที่ไม่ใช่มะเร็งที่พบบ่อยที่สุดได้แก่ ไฟโบรอะดีโนมา โดยพบได้บ่อยที่สุดในช่วงอายุ 20 ถึง 30 ปี แต่ก็พบได้บ่อยในทุกช่วงอายุจนถึง 60 ปี ในผู้ชายจะพบมะเร็งท่อน้ำนมแบบลุกลามมากพอๆ กับมะเร็งซาร์โคมา สำหรับผู้หญิงในทุกช่วงอายุ จะพบมะเร็งท่อน้ำนมแบบลุกลามมากที่สุด แต่ก็พบมะเร็งซาร์โคมาได้บ่อยในช่วงอายุ 20 ถึง 30 ปี ในผู้ป่วยสูงอายุ จะพบมะเร็งท่อน้ำนมได้มากถึงร้อยละ 90 ของมะเร็งทั้งหมด ในผู้หญิงนั้น มะเร็งซาร์โคมา ซึ่งหากรวมมะเร็งฟิโลดส์เข้าไว้ด้วย ก็อาจพบได้ถึงร้อยละ 3 ของมะเร็งทั้งหมด นอกจากนี้ผู้ป่วยหญิงไทยที่เป็นมะเร็งเต้านมจะมีอายุโดยเฉลี่ย น้อยกว่าผู้ป่วยโรคเดียวกันในกลุ่มประเทศตะวันตก

สรุป: แบบแผนการแจกแจงของรอยโรคเต้านมตามอายุ มีความคล้ายคลึงกันระหว่างผู้ป่วยหญิงไทยและชายไทย และในการศึกษานี้ พบมะเร็งแบบซาร์โคมาด้วยความถี่ที่มากกว่าในการศึกษาที่ผ่านมา โดยยังไม่มีคำอธิบาย สำหรับรอยโรคอื่นๆ ก็พบได้ด้วยความถี่และการแจกแจง คล้ายกับที่พบในการศึกษาอื่นๆ แต่หญิงไทยอาจป่วยเป็นโรคมะเร็งเต้านมด้วยอายุที่น้อยกว่าหญิงในประเทศตะวันตก