

Symptoms and Signs in Benign and Malignant Tumours of the Breast

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ABSTRACT

The diagnostic distribution and the relation between diagnosis and symptoms, symptom duration, tumour site, tumour size and breast size were studied in 1244 women with breast symptoms examined at a special breast tumour clinic. 9% of the women had cancer, 62% fibroadenosis and 6% fibroadenoma. In 18% no breast disease was found. A painful tumour was experienced by 19% of all women with breast cancer, but by 54% of breast cancer patients below 50 years of age. 50% of the patients with fibroadenosis had a painful tumour. This symptom was thus not a discriminating feature between cancer and fibroadenosis in younger women. The reason that most breast tumours, both benign and malignant, are located in the upper outer quadrant is not known. It has been proposed that this might be due to the larger volume of this quadrant as compared with the others. The present results contradict this view.

INTRODUCTION

The symptoms and clinical findings in different types of breast tumour are often characteristic. The differential diagnosis between malignant and benign breast tumours is, however, a frequent clinical problem, and differentiation between benign tumours may also give rise to difficulties. The frequencies and duration of different symptoms, as well as the location, size and other characteristics of breast cancer have been described in detail by Haagensen, in his monograph (4) among other authors. Corresponding data for benign tumours are more sparsely reported.

During a 15-month period, in the county of Uppsala (just over 200 000 inhabitants) patients with breast symptoms were concentrated to a special breast tumour clinic. As a result a large number of patient data were collected, and these were used as the basis of the present study.

The aim was to examine the frequency of different breast diseases in a homogeneous, unselected

material of women with breast symptoms and to relate the symptoms and some clinical findings to the diagnosis.

PATIENTS AND METHODS

Recording method

1244 women were examined. They first gave a detailed written case history by filling in a questionnaire. Any additional information was given verbally. The case history and the findings at palpatory, cytological and histological examinations were entered in a special record which allowed computer analysis, discussed in a previous paper (8).

Diagnosis

In 286 patients the diagnosis was made on the basis of palpation alone. Mammography was carried out on 303 patients. In 70 of these, mammography was the only examination apart from palpation. Aspiration biopsy and cytological examination were performed on 984 breasts in 882 women. 396 patients underwent surgical biopsy and/or mastectomy, 15 of them bilaterally. In all patients undergoing surgery, the diagnosis was based on the results of the histopathological examination. In the others the diagnosis was a result of the combined evaluation of the other diagnostic methods, and a follow-up period of 6 months to 2 years.

Clinical examination

The breast size was estimated subjectively and noted as large, medium or small. The tumour was measured at the palpatory examination. The tumour site was noted as central or in one of the four quadrants. If the greater part of the tumour lay within an area of 1 cm from the perimeter of the areola it was counted as being wholly central. If a tumour lay partly within the perimeter of the areola but was mostly located outside the central region it was assigned both to a quadrant and to the central region.

Composition of the series

The distribution of the 1244 women of the series by diagnosis is presented in Table I, where the mean age and percentage number of postmenopausal women in the different groups are also given. The diagnosis "fibroadeno-

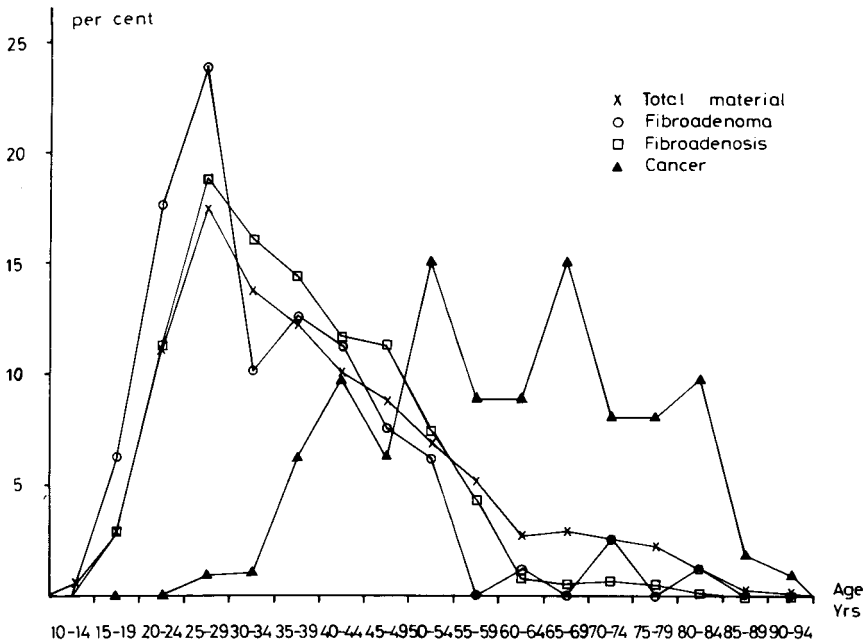


Fig. 1. Percentage age distribution in the total series and in patients with fibroadenoma, fibroadenosis and cancer respectively.

sis" included the group with "mammary dysplasia" according to the WHO classification (22) and also the type of mastopathy which often goes under the name mastodynia (cf. Robbins' textbook (21)). "Other benign lesion" included fat necrosis, unspecific reactive process, duct ectasia, skin tumour, Mondor's disease (4 cases) and cystosarcoma phyllodes (1 case). This heterogeneous group as well as the minor diagnostic groups of papilloma

and lipoma are not included in the subsequent tables. One patient had bilateral cancer simultaneously. For patients with more than one diagnosis, such as fibroadenoma+fibroadenosis, fibroadenosis+cyst or fibroadenosis+mastitis, both diagnosis were included. For this reason more than one diagnosis was recorded for 265 patients.

In Fig. 1 the age distribution in per cent is given for the whole series and for women with fibroadenoma, fibroadenosis and cancer, respectively. The largest age group (17% of the total series) consisted of women between 25 and 29 years old. The number of women in the different age groups then decreased slowly towards higher ages; thus women between 55 and 59 years constituted 5% of

Table I. Total and percentage frequency of diagnoses in 1244 women with breast symptoms

The mean age and the frequency of postmenopausal women are indicated

Diagnosis	No. of patients	Per cent	Mean age	Per cent postmenopausal
Normal	223	18	40	24
Fibroadenoma	80	6	34	15
Fibroadenosis	769	62	36	16
Solitary cyst	64	5	41	17
Mastitis	52	4	41	25
Papilloma	8	0.6	46	63
Lipoma	18	1.4	48	44
Other benign lesion	177	14	46	37
Cancer	114	9	61	69
Other malignant tumour	1	0.1		
Total	1244		40	23

Table II. Reasons for consultation at the breast tumour clinic; total series of 1244 women

Reason for consultation	No. of patients	Per cent of total
Symptoms from		
Right breast only	469	38
Left breast only	542	44
Both breasts	91	7
Axillary tumour	24	2
"Cancerophobia"	16	1
Routine examination	59	5
Other reason	43	3
Total	1244	100

Table III. *Percentage distribution of symptoms in relation to diagnosis*

Diagnosis	No. of breast diagnoses	Symptom						
		Painless tumour	Painful tumour	Local symptoms without manifest mass	Nipple secretion	Nipple retraction	No symptoms	Other symptoms
Normal	257	2	6	56	2	1	19	25
Fibroadenoma	85	75	24	0	1	1	0	0
Fibroadenosis	980	35	50	6	5	1	0	3
Solitary cyst	98	59	33	2	10	1	0	2
Mastitis	52	19	65	8	15	15	0	10
Cancer	115	74	19	1	2	6	0	9
Total	1 572	32	37	15	6	2	4	10

the whole series, in the age group 85–89 years there were 2 women, and one woman was over 90 years old. The age group 25–29 years predominated both for fibroadenoma and fibroadenosis. In the cancer group there were two peaks at ages 50–54 years and 65–69 years.

As is evident from Table II, almost 90% of the women consulted a doctor for symptoms directly referable to the breast, such as a lump, pain or tenderness, a retracted nipple or nipple secretion. Five per cent had no actual symptoms.

RESULTS

The percentage distribution of symptoms presenting at the time of initial consultation in each diagnostic group is given in Table III. A "painless tumour" was most common in the fibroadenoma and cancer groups, with frequencies of 75 and 74% respectively. This symptom was also noted for over half of the patients with a solitary cyst, and in 35% of those with fibroadenosis. A "painful or tender tumour" was reported by half of the patients with fibroadenosis, 65% of those with mastitis and 19% of those with cancer. Secretion in some form was

most commonly associated with mastitis, and occurred in 15% of this group. In the groups with a solitary cyst and fibroadenosis the corresponding figures were 10% and 5%, respectively, and secretion was noted for only 2% of the cancer patients.

In Table IV the tumour site is given in relation to the diagnosis. Fibroadenosis, cyst and cancer occurred most commonly in the upper outer quadrant, and fibroadenoma was most frequent in the two upper quadrants, where 74% of these tumours were located. Mastitis was relatively evenly distributed between the different breast regions.

The relation between tumour size and diagnosis is shown in Table V. In the fibroadenoma and cyst groups, just under half of the tumours measured 1 cm or less. 10% of the solitary cysts and 3.5% of the fibroadenomas were 4–6 cm in diameter. One fibroadenoma in an 18-year-old girl was larger than 6 cm. The tumours in the fibroadenosis, mastitis and cancer groups showed similar size distributions and 80% of these measured less than 4 cm.

The relation between breast size and diagnosis

Table IV. *Percentage distribution of tumour site in various diagnoses*

Diagnosis	No. of breast diagnoses	Tumour site				
		Upper outer	Upper inner	Lower inner	Lower outer	Central
Fibroadenoma	85	43	31	9	17	8
Fibroadenosis	980	60	16	6	10	6
Solitary cyst	98	43	25	11	19	19
Mastitis	52	27	19	10	25	30
Cancer	115	49	21	6	21	13

Table V. Percentage distribution of tumour size in various breast lesions

Diagnosis	No. of breast diagnoses	Size of tumour			
		≤1 cm	2-3 cm	4-6 cm	>6 cm
Fibroadenoma	85	43	54	4	1
Fibroadenosis	980	20	44	19	4
Solitary cyst	98	46	43	10	0
Mastitis	52	22	56	16	0
Cancer	115	16	62	18	2

can be seen in Table VI. Mastitis was almost three times as common in large breasts as in small, but otherwise the different diagnoses were evenly distributed between large and small breasts.

The relation between duration of symptoms, as reported by the patient at the first consultation, and diagnosis, was also evaluated. Two-thirds of the patients with mastitis consulted a doctor within 1 month, and most of them in fact saw a doctor only a few days after the manifestation of symptoms. Half of the patients with a solitary cyst, and $\frac{1}{3}$ of the patients with cancer, sought advice within 1 month of the appearance of symptoms. Three-quarters of the patients with a cyst or mastitis sought advice within 3 months of the manifestation of symptoms, and in the other diagnostic groups about half of the patients sought advice within this time. A symptom duration of more than 2 years was recorded for 22% of the patients with fibroadenoma, 18% with fibroadenosis and 17% with cancer.

DISCUSSION

The distribution of diagnoses in different breast tumour series reflects both the way in which the material has been collected and the diagnostic

criteria, especially for the condition in the group classified as "breast dysplasia". The great difficulty in attaining uniform terminology for "breast dysplasia" is reflected by the great number of terms applied to that lesion. Leis (13) stated that 38 different terms had been suggested to designate conditions with breast dysplasia, and MacDonald (15) mentions over 40.

In the WHO classification (22), 7 histopathologically different conditions are listed under the name "benign mammary dysplasia". As no histological diagnosis is available in many cases, the clinician is dependent on a concise name for these conditions, and for quite a long time in our hospital we have used the term "fibroadenosis", embracing the cystic variant as well as mastodynia. A term which definitely ought to be removed from the vocabulary is fibroadenomatosis, which seems to be used in Scandinavian literature only. It easily gives rise to misunderstanding, as there is a risk of confusion with the benign breast tumour with the same word-stem.

Haagensen (4) reported that in a series of women who consulted him for breast symptoms 5.5% had cancer. About 1/4 had some form of pathologic

Table VI. Size of breast in relation to various diagnoses

Diagnosis	Size of breast					
	Large		Medium		Small	
	n	%	n	%	n	%
Normal	261	22	594	51	317	27
Fibroadenoma	15	18	53	62	17	20
Fibroadenosis	214	22	520	53	248	25
Solitary cyst	23	24	54	55	21	21
Mastitis	16	31	30	58	6	12
Cancer	24	21	66	58	24	21
Total	559	23	1 277	52	635	26

alteration, while 3/4 were considered to be free from breast disease. In the present series 9% had cancer, 62% had fibroadenosis and only 18% were judged to be free from breast diseases. In various biopsy materials about 20% of the cases have been reported to have cancer (7, 12, 16 and 23). Among our patients for whom a histologic diagnosis was made the cancer frequency was 28% and fibroadenosis was diagnosed in 43%: this may be compared with the figure of 49% in Leis' series (fibrocystic disease) (12) and 62% in the series of Shallow et al. (cystic hyperplasia) (23).

These comparisons reflect the composition of the present series of patients and the use of the term fibroadenosis, which seems to correspond fairly well with Leis' criteria for fibrocystic disease.

Symptoms

The most common reason that women with breast symptoms consult a doctor is a lump in the breast. 69% of the women in our series had a palpable mass in the breast, and among women with a diagnosis for cancer this figure was 93%. Haagensen (4) reported that in 78% of 938 patients with breast cancer the first symptom was a lump, and Donegan (1) stated that 66% of 774 breast cancer patients had a painless breast mass as the initial symptom and 11% a painful breast mass. River et al. (20) noted a painful lump as the chief complaint in 20% of 105 women with breast cancer. In our series 74% of the women with cancer had a painless tumour and 19% a painful or tender tumour.

The relation between painless and painful or tender tumour was approximately the same for patients with fibroadenoma as for patients with cancer in our series, viz. 75% and 24%, respectively. Similar figures—73% and 26% for painless and painful lump—were presented by River et al. (20).

Only half of the patients with fibroadenosis in our series had a painful or tender tumour, which contrasts with the information usually found in the textbooks, and which seems to be generally accepted, that these masses are usually tender and/or painful.

River et al. (20) reported that the relation between painful and painless tumour was unchanged at different ages, and that this applied to both malignant and benign tumours. This was not our experience for malignant tumours. We found that among cancer patients under 50 years of age 54% had a painful or tender tumour, but among those over 50 years, only 11%. The age group under 50

years presents the greatest difficulties in differential diagnosis, and we concluded that the occurrence of pain and/or tenderness in breast tumours is of no relevance in the differential diagnosis between benign and malignant tumours.

Nipple secretion was noted in 2% of the cancer cases in our series, which corresponds to the findings of Haagensen (4) and of Harnett (6). The secretion contributed to the diagnosis in one of our cases.

Tumour site

In breast cancer the site of the tumour influences the dissemination of cancer to lymph nodes. Whether it has any other prognostic significance is unclear but has been extensively studied (2, 4, 17 and 24). In order to study the importance of the tumour site for different factors, a standardized division of the breast into different regions is necessary. Unfortunately this is difficult to achieve. It is usual to divide the breast into four quadrants and one central region. Here the greatest problem lies in demarcating the central tumour; only in certain borderline cases is there any problem in deciding to which quadrant a tumour shall be assigned. Several suggestions have been made for a more complicated division of the breast into several regions, and Haagensen (4) divided it into 7 regions, Fisher et al. (2) into 9 and Urban & Marjani (25) into 6.

We used the former, simpler division, namely that into four quadrants and a central region, both in cancer cases and in cases of benign change. Cancer and fibroadenosis, as well as cysts (9, 13 and 15) are most commonly found in the upper outer quadrant. Cancer is least common in the lower medial quadrant, where about 5% of all malignant tumours are located. This is the most constant figure in all investigations dealing with that question (2, 4 and 15). The frequency of cancer located in the upper outer quadrant has varied in different series from just under 40% in Haagensen's series (4) to just over 50% according to Lewison (14) among others. In our series 49% were located in the upper outer quadrant. Reports of centrally situated cancers vary greatly between different series, from 6% in the series of Fisher et al. (2) to 35% in that of Nohrman (17), thus reflecting the varying criteria for the term central tumour site. In the present series 13% of the cancers were located centrally.

The interesting question why such a large proportion of both malignant and benign breast changes are located in the upper outer quadrant has not yet

been answered. Lambird & Shelley (11) reported that about 50% of non-invasive lobular cancers also occurred at that site. This was not verified by Haagensen, Lane & Lattes (5), who could think of no other reason why most tumours are located in the upper outer quadrant than that this quadrant has the greatest volume. In some large breasts the upper outer quadrant is certainly larger than the other quadrants, but in smaller breasts the volume differences between the quadrants is less marked, and the same applies to pendular breasts (18). In accordance with the findings of Wynder et al. (26) and Katariya (10), the present investigation showed an even distribution of cancer between large and small breasts. The same also applied in the present series, to all benign conditions except mastitis, the frequency of which was almost three times as great in large breasts as in small. Furthermore, in this series, mastitis was evenly distributed between the different quadrants. All these findings would seem to contradict the view that volume is an important factor for the predominance of both malignant and most benign conditions in the upper outer quadrant.

Tumour size

As with the problem of tumour location, studies of the size of breast tumours have mostly concerned the malignant variety. This is discussed in a previous article (19). In fibroadenoma, as in cancer, the tumour size is related to some extent to the age of the tumour and the duration of symptoms. 43% of the fibroadenomas in our series measured 1 cm or less, and only 5% were 4 cm or larger. Geschickter (3) reported that 13% of 381 fibroadenomas in his series were 2 cm in diameter or smaller and 25% 5 cm or greater. This might have been due to a longer duration of symptoms than in our series. The symptom duration was less than one year in 64% of our patients, vs. 44% in Geschickter's series. This difference is small in view of the large difference in tumour size. The high frequency of very large fibroadenomas in Geschickter's series also seems remarkable in the light of Haagensen's experience that many fibroadenomas stop growing when they have reached a size of 2 or 3 cm.

In patients with cystic tumours and fibroadenosis the size of the tumour is hardly related to the duration of symptoms, as cysts can grow very rapidly, and solid fibroadenotic tumours not seldom alter in size characteristically during different stages of the menstrual cycle.

Symptom duration

The duration of symptoms is to some extent related to the degree of severity of the symptoms and to the rapidity with which the symptoms develop. It was thus not surprising in this series that patients with mastitis had a short symptom duration. Even in the group with a solitary cyst, half of the patients consulted a doctor within one month of the manifestation of symptoms, and 3/4 within 3 months, probably due to the usually rapid growth of the cysts and the often alarming finding on palpation. The latter was also evident by the fact that on palpation no fewer than 7 solitary cysts were assigned to the group of "strong suspicion of cancer" in this series.

Symptom duration is a factor of great complexity and is worth a study in itself. Yet it is striking that the more painful or tender tumours will be accompanied by a shorter symptom duration. Not unexpectedly, it is diseases with the less troublesome symptoms, which constitute the great problem. To shorten the symptom duration and the diagnostic delay in these cases a special organization for women with breast symptoms may be effective. In combination with very good diagnostic resources, short waiting time and continuity in diagnosis and care must be essential in such a clinic.

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