THE CLINICAL SIGNIFICANCE OF A LUMP IN THE BREAST

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The final diagnoses in 200 consecutive cases of diseases of the breast seen at the Cleveland Clinic between June, 1935, and June, 1937, are shown in Table I.

TABLE I

200 Consecutive Diagnoses of Diseases of the Breast

Cystic disease	86
Chronic cystic mastitis	59
Cyst	23
Involutional disease	4
Total cystic disease	86
Carcinoma (one case in male)	69
Adenofibroma	19
Intraductal papilloma	6
Hypertrophy	6
Lipoma	4
Abscess	3
Benign hypertrophy — male	2
Paget's Disease, early (?)	1
Fat necrosis	1
Adiposis	1
Hematoma	1
Mastalgia	1
Total	200

One hundred forty-three of these 200 patients complained that they had felt a lump in the breast and in 43 per cent of these 143 patients, the lump proved to be carcinoma. Thus, regardless of age, nearly one-half the patients who complained of a lump in the breast were found to have carcinoma. A history of a lump in the breast can never be disregarded without a thorough investigation.

AGE

The age of the patient (Table II) is one of the most important factors in formulating one's judgment of the nature of a breast lesion and the indications for its treatment. Only 12 per cent of the patients with benign disease of the breast were over 50 years of age, whereas 75 per cent of the patients with carcinoma of the breast were more than 50.

TABLE II

Incidence of Benign and Malignant Disease of the Breast According to Age

Age	*131 Patients with Benign Diseases of Breast*	*69 Patients with Carcinoma of Breast*
Over 50 years	12.21%	75.36%
Over 60 years	4.58%	37.68%
Over 70 years	0	13.04%

Benign lesions in patients beyond 60 years of age were:

Duct papilloma	2
Involutional disease of the breast	1
Calcified adenofibroma	1
Fat necrosis	1
Benign hypertrophy in the male	1

From this table, it is apparent that benign lesions of the breast occur relatively rarely after the age of 50 years. Carcinoma, however, is not an uncommon finding in women from 40 to 50 years of age, 20 per cent of the carcinomas in this series having occurred in women in the forties.

Benign tumors of the breast, especially cysts, are also common in this age group.

In a group of 34 women between the ages of 40 and 50 in whom a definite mass was found in the breast, this mass was proved to be malignant in 41 per cent of the cases. It is therefore clear that, from a diagnostic standpoint, tumors of the breast present the greatest difficulties in women between the ages of 40 and 50. Beyond the age of 50, the chances are greater than 3 to 1 that the tumor is malignant. Under the age of 40 the chances are nearly 20 to 1 that the tumor is benign. But in the forties there is an almost even chance that the tumor is malignant and the history and clinical signs must act as guides to our decision.

SYMPTOMS

Except in rare instances the history is not of great value in differentiating benign from malignant lesions of the breast (Table III). It is true that pain or tenderness, especially when it is bilateral, is most apt to be the result of benign cystic disease. However, since more than one-fourth of the patients with carcinoma complained of some degree of pain or tenderness, the presence of these symptoms does not in any sense rule out carcinoma.

In this series, discharge from the nipple was associated with benign lesions more frequently than with malignant (8 to 5), but the presence of this sign must always arouse the suspicion of carcinoma.

TABLE III

Comparison of Symptoms Experienced by 131 Patients with Benign Lesions of the Breast and Those of 69 Patients with Carcinoma of the Breast

Symptoms	*131 Benign Lesions of Breast Per Cent*	*69 Carcinomas of Breast Per Cent*
Lump	62	90
Pain or tenderness	46	26
Discharge	6	7
No symptoms (lump discovered in course of routine examination)	5	0
Symptoms referable to distant metastases	0	12
Symptoms referable to axillary metastases, no breast tumor having been noted by patient	0	6

PHYSICAL FINDINGS

The presence of dimpling of the skin overlying the tumor or of fixation of the tumor mass to the chest wall is almost pathognomonic of carcinoma. In no instance were these signs associated with a benign tumor.

TABLE IV

Physical Signs

Signs	*131 Benign Tumors of Breast Per Cent*	*69 Carcinomas of Breast Per Cent*
Dimpling of skin or fixation of tumor to skin or underlying tissues	0	72
Axillary glands enlarged	1	50
Retraction of nipple without other evidence of fixation	3	4
Mass located in upper outer quadrant of breast	50	50
Average size of mass (estimated from examination)	2.1 cm.	3.7 cm.

Although the average size of the carcinomas in this series was greater than that of the benign tumors, there were several cases in which axillary metastases called attention to the breast as the site of a carcinoma so small that it could not be palpated.

Similarly, the presence of enlarged axillary nodes is reliable evidence in favor of the presence of carcinoma. Retraction of the nipple, on the other hand, is not necessarily indicative of carcinoma unless other signs of malignancy, i.e., puckering of the skin or fixation to the underlying structures, are present. In this series, there were only three cases of carcinoma of the breast in which the nipple was retracted in the absence of other signs denoting malignancy and in this same series there were four cases of benign tumors of the breast in which the nipple was retracted. In two of these cases, the lesions were cysts located beneath the nipple, in one a duct papilloma, and in the other a benign hypertrophy of the male breast. Any expanding tumor located beneath the nipple is capable of displacing the lactiferous ducts and thereby retracting the nipple. The diagnosis of carcinoma should, therefore, be made with some reservations in cases in which retraction of the nipple is the only sign indicative of malignancy.

Diagnosis

It is clear from a study of the foregoing data that carcinoma is the most common cause of a lump in the breast (1) in patients beyond the age of 50; (2) in the presence of dimpling of the overlying skin; and (3) in the presence of palpably enlarged axillary nodes. All other data deduced from the history or physical examination are of minor importance as compared to these findings.

In this series, the accuracy of the preoperative differential diagnosis between benign and malignant conditions was 96.5 per cent. In 2 of the 69 cases of carcinoma, an initial diagnosis of benign tumor was made. In one case the patient was 32 years of age and in the other 48. In neither case were the axillary glands palpable and there was no fixation of the tumor, retraction of the nipple, or dimpling of the overlying skin. A radical operation was performed as soon as gross examination of the specimen revealed its true nature.

In five of the 131 cases of benign lesions of the breast, the initial diagnosis was carcinoma. Three of the five patients were over 60 years of age and one patient (a man) had definite retraction of the nipple associated with benign hypertrophy of the breast. In the fifth case a detailed description of the lesion is lacking, a diagnosis of carcinoma having been made in the case of a periductal adenofibroma which was later shown to be benign.

In 10 per cent of the 69 cases of carcinoma, the diagnosis of malig-

nancy could not be made with sufficient certainty to warrant a radical mastectomy without more definite information as to the true nature of the tumor. In these cases a local excision of the quadrant of the breast containing the tumor was performed and after confirmation of the diagnosis of malignancy, the operator proceeded at once to do a radical mastectomy.

Differential Diagnosis of Benign Lesions of the Breast

The differential diagnosis of benign lesions of the breast is not of as much importance as the differentiation of benign from malignant lesions. It is always, however, satisfactory to both physician and patient when the pathological report is in exact accord with the clinical diagnosis.

Cystic Disease of the Breast

The most common benign lesion of the breast is cystic disease. This may assume the form of diffuse "chronic cystic mastitis" involving the entire breast and making it of a lumpy consistency, or there may be one or more discrete cysts. If superficial, these cysts may feel fluctuant, but more often than not they are tense and covered with sufficient breast tissue to make the recognition of fluctuation impossible.

The ages of the 86 patients with cystic disease of the breast varied from 22 to 66, 79 per cent of the 86 patients being between the ages of 30 and 50. Therefore it is in the involutional period of women's active menstrual life that cystic disease of the breast is most commonly seen.

If breast tumors are multiple or if they give a considerable amount of pain, it is quite likely that they are cysts. Sixty-four per cent of the 86 patients with cystic disease of the breast complained of having felt a lump in the breast. Pain or tenderness was experienced by 53 per cent of these patients and in 5 per cent a discharge from the nipple had been noted.

Periductal Adenofibroma

Periductal adenofibroma is the second most common benign lesion of the breast, this diagnosis having been made in 19 (15 per cent) of the 131 cases of benign diseases of the breast. In 79 per cent of the cases of adenofibroma, the patient complained of a lump; in 26 per cent, pain or tenderness had been noticed; in one case* (Fig. 1), the enormous size of the breasts was the chief complaint; and in three cases details of the history are not available.

Sixty-three per cent of the 19 cases of adenofibromas were in women under 35 years of age, the youngest being 13 and the oldest 66 years. Thus it is evident that adenofibroma is most apt to occur in women under 35 years of age and is as a rule painless and single, whereas breast

*Case report pending publication.

cysts are most common in women from 35 to 50, are more apt to be multiple, and to cause pain.

Papilloma of the Duct

The average age of the six patients with papillomas of the duct was 55 years, the youngest being 28 and the oldest 73. Five of these six patients complained of a lump in the breast, 3 complained of discharge from the nipple (bloody in one case), and one complained of pain.

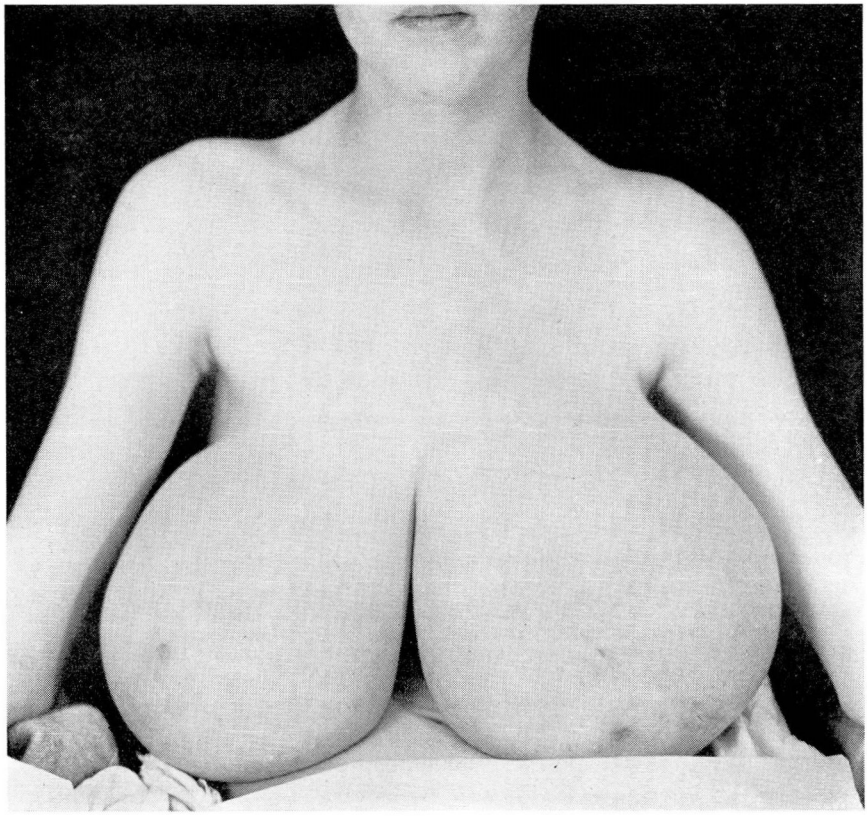

FIGURE 1: Enormous bilateral adenofibroma of breast in a girl 13 years of age.

Although 50 per cent of the patients with duct papillomas had noted discharge from the nipple, the relative infrequency of this condition makes it rank equally with carcinoma and cystic disease as the cause of discharging nipples.

Diagnosis and Treatment of Breast Tumors in Young Women

From the foregoing data, it is clear that the age of the patient is an important factor in the differential diagnosis of the various benign

lesions of the breast. The incidence of the various lesions in this series is indicated in the accompanying table (Table V).

TABLE V

Common Diseases of the Breast Tabulated by Decades

Diagnosis	*Number of Patients Under 30 Years of Age*	*Number of Patients 30 to 40 Years of Age*	*Number of Patients 40 to 50 Years of Age*	*Number of Patients Over 50 Years of Age*
Cystic disease	12	38	30	6
Adenofibroma	7	7	3	2
Papilloma of duct	1	0	0	5
Carcinoma	0	3	14	52

A definite lump was palpable in only eight of the 12 cases of cystic disease occurring in women under 30 years of age. In all seven cases of adenofibroma in this age group, a mass was palpable. Carcinoma is extremely rare at this age and duct papilloma is also uncommon. It can therefore be stated that a lump in the breast of a woman under 30 years of age has about an even chance of being an adenofibroma or a cyst. If nothing is found on examination to lead one to suspect malignancy, there is no contraindication to inserting a needle into the tumor and aspirating the contents. In about one-half the cases, according to Adair[1], this will result in the permanent disappearance of the cyst. If no fluid is obtained, however, the tumor should be excised and examined microscopically to ascertain that malignancy is not present. When a diagnosis of benign tumor of the breast is made in an older woman, carcinoma is always a possibility. The patient should therefore be prepared for a radical mastectomy and the tumor of the breast should be excised along with a generous surrounding margin of healthy breast tissue. If examination shows carcinoma to be present, the surgeon should proceed at once to remove the breast and the axillary contents.

HYPERTROPHY OF THE BREAST

One of the least serious but most troublesome lesions of the breast is the so-called benign hypertrophy. This condition usually occurs in young women, either married or single, and is characterized by the development of huge pendulous breasts that embarrass the patient because of their appearance and cause a great deal of discomfort because of their size and weight (Fig. 2). Although the etiology of this condition is not understood, it is possible that it is the result of an endocrine disturbance.

A number of plastic operations for the correction of pendulous breasts have been devised, but it is not recommended that surgery be applied

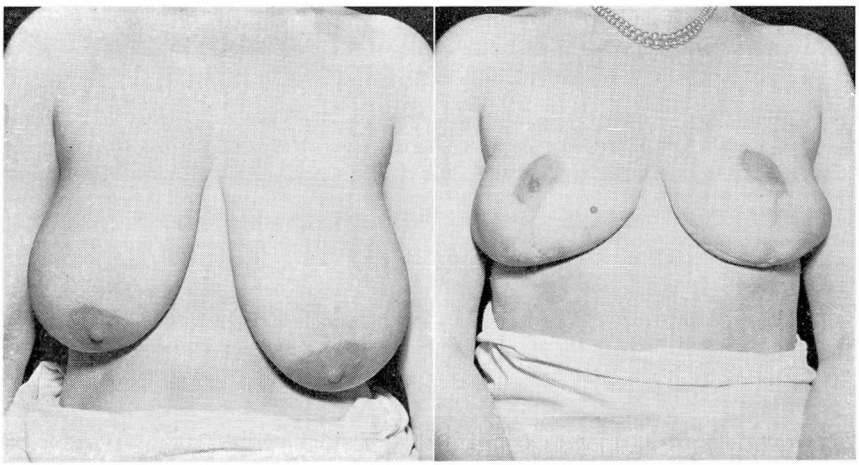

FIGURE 2A: Hypertrophy of breasts before operation.

FIGURE 2B: Same patient after plastic repair of hypertrophied breasts.

to the correction of the normal pendulous breast seen in women who have borne children. Surgery should be resorted to only in the correction of the deformity induced by a true benign hypertrophy of the breast. The type of patient who wishes a normal pendulous breast to be corrected by surgery will never be satisfied unless perfectly symmetrical virginal breasts are obtained whereas the patient with a true hypertrophy of the breast will be well satisfied to be relieved of the weight and encumbrance of the mass of superfluous tissue.

Successful results in the plastic repair of hypertrophied breasts have been consistently obtained by the technic of Fomon.[2] The operation consists of a hemimastectomy with removal of the lateral half of the breast, the nipple remaining attached to the medial half. The circulation to the medial half of the breast is not disturbed, the nipple is transplanted upward to a button hole in the skin made at the desired level, and the medial half of the breast is curled on itself in such a way as to reform the normal shape of the breast. The end result of such an operation is shown in figure 3.

RELATIONSHIP OF BREAST DISEASE TO THE ENDOCRINE SYSTEM

Much investigation of the endocrine relationships of benign lesions of the breast has been carried out by numerous workers. Geschickter, Lewis and Hartman[3] have gone so far as to state that a localized response of the breast to an endocrine disturbance produces fibro-adenomata; a generalized response of the breast to a similar disturbance results in virginal hypertrophy of the breast; and that an incomplete phase of epithelial development, again presumably dependent on an endocrine imbalance, causes chronic cystic mastitis.

In summarizing the relationship of the breast to the glands of internal secretion, all that can be said is that the growth and development of the normal breast is controlled by the endocrine system, and especially by the estrogenic hormones of the ovary. There has been much speculation as to the relationship of the painful breast, chronic cystic mastatitis, and adenofibromas to endocrine disturbances, but there is no convincing evidence that such a relationship actually exists. Endocrine therapy is often of value in treatment. The administration of estrogenic substances in doses of 5000 rat units once or twice a week will relieve the pain in many cases of cystic mastitis and mastalgia. The mechanism of this action is uncertain but it is probable that it lessens the congestion and edema, perhaps through inhibition of the pituitary. It is interesting to note that the administration of the male sex hormone, androsterone, has produced the same relief of pain.

It is not surprising that investigators have failed to demonstrate any consistent changes in the output of the various sex hormones in these cases. Our tests are still crude and depend upon assays made by injecting specimens of blood or urine into experimental animals. The response of the breast itself is certainly very sensitive to the hormones, and the breast is moreover constantly exposed to the action of the hormones of the body. It is more than likely that changes in endocrine activity too small to detect by laboratory means could result in changes in the breast leading to the production of pain, fibro-adenomas, or chronic cystic mastitis. The further investigation of this subject will depend on the development of more sensitive and more complete methods of endocrine assay.

Conclusions

1. A tumor of the breast in a woman from 40 to 50 years of age is almost equally apt to be either benign or malignant.

2. The history is not of much aid in the differential diagnosis of lesions of the breast. Pain or discharge from the nipple may be associated with either benign or malignant tumors.

3. Puckering of the skin is the most valuable early sign of carcinoma of the breast. Later, axillary metastases may aid in making the diagnosis.

4. Retraction of the nipple in the absence of other signs indicative of carcinoma cannot be relied upon as an index of malignancy.

5. Cystic disease of the breast is the most common disease producing a benign tumor of the breast. It is most frequently seen in women from 35 to 50 years of age, often tends to form multiple nodules, and commonly causes pain.

6. Adenofibromas most commonly occur in women under 35 years

of age, tend to be single, and to produce less pain than cysts of the breast.

7. Duct papillomas are usually seen in women beyond 50 years of age, and in 50 per cent of the cases cause a discharge from the nipple.

8. There is no contraindication to aspiration of cysts of the breasts in young women. In older patients, the tumor should be removed with a wide margin of breast tissue and radical mastectomy should be performed at once if carcinoma is found to be present.

9. Satisfactory cosmetic results can be obtained by plastic operations on hypertrophied breasts. It is urged that this operation be resorted to only in extreme cases.

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