

Truman - Breast

Breast - Seminar

SEMINAR

ARTHUR PURDY STOUT SOCIETY
HENRY FORD HOSPITAL
DETROIT - MICHIGAN
SATURDAY, JUNE 9, 1962

INTRODUCTION

The seminar this year is devoted to the problems of a single organ, the mammary gland. The concept of the seminar is to discuss the diagnosis and treatment of this organ. My medical school days at Johns Hopkins Hospital brought a number of slides of benign breast lesions that had been misdiagnosed cancer and showed them to a group of pathologists in the old 6th St. medical school building on 39th Street. Incidentally this was the first seminar I ever attended. Since that time 51 years ago, breast problems have continued to bother me - they appear to increase and peak in complexity as the years go by. Next to the problems of sarcomatous tumors, I am more often consulted about those of the breast than of any other organ or tissue.

ARTHUR PURDY STOUT SOCIETY SEMINAR

Detroit, Michigan - June 9, 1962

In the present seminar we shall first present a group of slides of benign and unusual lesions. The second group is presented with the diagnosis and treatment of cystosarcoma phyllodes, various carcinoma and mixed tumors. The third group is of intraductal proliferations and the difficulties of separating benign from malignant growths in the ducts. The final group will deal with the problems concerned with lobular carcinoma-in-situ. We could not distribute slides of these lesions because it was impossible to cut 50 sections and all of them show the same picture. Therefore the presentation will be by Kodachrome photomicrographs which I believe we can make sufficiently revealing to enable all of us to recognize the various phases of the lesions and discuss their significance.

Discussions by:

Dr. Arthur Purdy Stout

Arthur Purdy Stout, M. D.

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DETROIT - MICHIGAN
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INTRODUCTION

The seminar this year is devoted to the problems of a single organ, the mammary gland. It was decided to try this innovation because of the constant problems that arise in regard to diagnosis and treatment of this organ. My own introduction to this state of affairs dates from my medical school days in 1911 when Dr. J. C. Bloodgood of Johns Hopkins Hospital brought a number of slides of benign breast lesions that had been misdiagnosed cancer and showed them to a group of pathologists in the old P. & S. medical school building on 59th Street. Incidentally this was the first seminar I ever attended. Since that time 51 years ago, breast problems have continued to haunt me - they appear to increase and grow in complexity as the years go by. Next to the problems of mesenchymal tumors, I am more often consulted about those of the breast than of any other organ or tissue.

In the present seminar we shall first present a small group of bizarre and unusual lesions. The second group includes problems concerned with the diagnosis and treatment of cystosarcoma phylloides and various sarcomas and mixed tumors. The third group will include problems of intraductal proliferations and the difficulties of separating benign from malignant growths in the ducts. The final group will deal with the problems concerned with lobular carcinoma-in-situ. We could not distribute slides of these lesions because it was impossible to cut 60 sections and have all of them show the same picture. Therefore the presentation will be by kodachrome photomicrographs which I believe we can make sufficiently revealing to enable all of us to recognize the various phases of the lesions and discuss their significance.

Arthur Purdy Stout, M. D.

Arthur Purdy Stout Society Seminar, Detroit, Michigan, June 9, 1962

DIAGNOSES

- Case 1 - (69363) Coccidioidomycosis ^{lactating} of female mammary gland.
- 2 - (69567) Mammary Gland in Starvation.
- 3 - (68695) Malignant fibrous xanthoma of female mammary gland. ^{with squamous epithelium}
- 4 - (68609) Lipogenous carcinoma of female mammary gland.
- 5 - (33773) Cystosarcoma phylloides (recurrent) of female mammary gland.
Papillary cystoadenoma, intraductal, of female mammary gland.
- 6 - (67695) Liposarcoma, undifferentiated, of female mammary gland.
- 7 - (A85213-Lt.) Cystosarcoma phylloides of female mammary gland
(A97429-Rt.) (bilateral).
- 8 - (A60200) Rhabdomyosarcoma of female mammary gland.
- 9 - (68652) Carcinosarcoma of female mammary gland.
- 10- (A97228) Cystosarcoma phylloides (?) of female mammary gland. ^{with squamous epithelium}
- 11- (68174) Carcinoma (intraductal) of female mammary gland (recurr.)
- 12- (68173) Intraductal papillary cystoadenoma of female mammary gland.
- 13- (67968) Carcinoma (intraductal) of female mammary gland.

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Case 1 - P&S 69363
Contributed by: Dr. Alvin O. Severance

The patient in 1951 was a 19 year old Latin-American female. The history indicates that the patient saw a family doctor the summer of 1949 for treatment of sinuses of the right breast, which were thought to be due to tuberculosis. It is said that acid fast organisms were found in the drainage material from this right breast. Treatment was instituted with Streptomycin but there was no improvement. (Patient changed to a faith healer with no improvement.) As a child the patient grew up in Monterrey, Mexico. There have been two full term pregnancies, the last one terminated three months before admission.

Patient is a pale, small, Latin-American female with draining sinuses in right upper axilla and the right breast. From these sinuses, a watery, purulent material is obtained.

X-ray examination revealed destructive processes in the first, second and third ribs on the right side anteriorly, and the third rib was the site of a pathological fracture. X-ray diagnosis was probably Tuberculous Osteomyelitis. On January 27, 1951, a simple mastectomy was performed.

The specimen consisted of the right breast, measuring 11.5 x 8.5 x 2.5 cm. At a point 1.8 cm. from the nipple, there was a pigmented, depressed area in the skin of the breast which measured 0.8 x 0.4 cm. in greatest diameter and appeared to be a small ulcer. Three centimeters away from this ulcer there was another similar ulcer 1.5 x 1.5 cm. Another smaller ulcerated area and the nipple showed yellow material in the collecting ducts and a small abscess in the breast beneath the nipple and beneath the ulcerated area. This abscess was 1 cm. in diameter. It was filled with yellow, purulent material. On multiple sections through the breast, other areas of abscess and sinus tract formation were encountered.

No follow-up available.

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Case 1
P&S 69363

Microscopic Observations:

It is obvious that the breast is in the late stages of lactation and that involution has not progressed to any extent. The lesions are quite obvious even in the H. & E. sections. In the granulomatous foci there are many giant cells that contain the rather large spheroidal double contoured organisms. With the Gomori stain they are sharply defined.

Comment:

We have only one other case of coccidioidosis of the female mammary gland in our files. That was also a 29-year-old white woman from San Antonio - the case was submitted for use in the 1950 San Antonio Seminar but it was not used. That young woman had a non-tender mass of two months duration. There was no discharge from the nipple and no sinuses had formed. The other areas recorded are the following: Lung-14, Pleura-1, Liver-1, Vertebra-1, Testis-1, Uterus-1, Orbit-1, Hand-1. I gather from our very limited experience that this disease can affect any part of the body but I presume it is rare in the breast. We used to believe that tuberculosis generally reached the breast from behind, coming from the pleura or ribs or else by retrograde extension from the axillary lymph nodes. Perhaps we should have added an extension from the internal mammary nodes. It is a long time since I have seen a case of breast tuberculosis.

Diagnosis: Coccidioidomycosis of female mammary gland.

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Case 2 - P&S 69567
Contributed by: Dr. Rudolf Garret
Dr. Raffaele Lattes

Patient is a 54-year-old, white woman who died because of extensive carcinoma of the pancreas with diffuse metastases. There were no metastases present in either breast. Both breasts were atrophic. In the left breast there was an ill-defined, whitish to yellowish firm mass, measuring approximately 2 cm. in diameter.

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Case 2
P&S 69567

Microscopic Observations:

In sections from this breast there are two striking features: The first is the complete absence of any normal fat. The second is the presence here and there of cords of sharply defined partly differentiated fat cells. Each cell is surrounded by extremely delicate reticulin fibers and many very fine capillaries course among these fat cells. The fat cell nuclei are all small and either rounded or slightly elongated but they are not flattened against the cell membrane as is the case with normal adult signet-ring fat cells.

Comment:

This woman must have literally starved to death for she has used up all the normal fat in her breast so that all that is left are the adenoma-like masses of embryonal fat. In starvation cases after all the normal fat is exhausted, the remaining cells apparently attempt to act as fat organs to produce new adipose tissue but lacking lipids to work with they remain in this embryonal form.

Diagnosis: Mammary Gland in Starvation.

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Case 3 - P&S 68695
Contributed by: Dr. Homer Kesten

This patient at age 49 was found to have a 12 mm. firm, greyish-white, slightly granular nodule in her breast. This was at that time diagnosed as cystic disease with focal fibrosis.

Ten months later she returned with a stony-hard, fixed lump in the inner angle of the scar almost overlying the margin of the sternum with puckering of the skin. At operation the tumor appeared to be attached to the underlying muscle and was removed, dissecting down to the thoracic cage. The surgical specimen included a 1 x 2 inch ellipse of skin with a depressed scar beneath which was a stony-hard nodule, 2 cm. across and up to 1.5 cm. thick which fused with the skin surface, extended down through the attached fat and just into, but not through, a thin strip of skeletal muscle at the base of the specimen.

The sections submitted for the Seminar include only this latter specimen. However, photomicrographs of the original specimen will be available for projection.

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Case 3
P&S 68695

Microscopic Observations:

It is unfortunate that we were unable to supply sections of the original tumor in this patient because it appears very different from the recurrence. It has the exact make-up of a benign fibrous xanthoma with a great deal of fibrous tissue and a storiform pattern in places. Mitoses were only 4 in 50 high power fields. From this histological picture I do not see how it would be possible to anticipate the astonishing change demonstrated by the seminar slides made from the recurrent nodule 10 months after the first operation. Now the tumor appears very cellular. It still maintains the storiform pattern in places but the cells are definitely anaplastic; there are giant forms and mitotic division is at the rate of 35 in 50 high power fields.

Comment:

This is of course a very unusual lesion for the breast. Excluding fibrous xanthomas in the skin and subcutaneous tissue covering the breast, I find that we have recorded eight cases of fibrous xanthoma of the mammary gland. Two were in the male gland. Of the others four were benign but the other two had the characteristics of malignancy seen in this case. These two were in women 50 and 57 years old respectively. Unfortunately I cannot tell you the follow-up in the two malignant cases in the mammary gland, but I can tell you that malignant fibrous xanthomas in the soft tissues that are known to metastasize are very rare. Since they have sometimes metastasized to lymph nodes, I suppose it would be wise to do a radical operation instead of just a simple mastectomy as for cystosarcoma phylloides.

Diagnosis: Malignant fibrous xanthoma of female mammary gland.

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CASES FOR DEMONSTRATION

BETWEEN CASES 3 AND 4

P&S 68187

This 44-year-old German-born woman had noted a lump in the right breast for two weeks. It was painless, about 2 cm. in diameter, and in the upper-outer quadrant 4 cm. from the nipple. The dark color led the surgeon to believe he was removing a blue-domed cyst. There was no cyst in the specimen. Instead it was fibrous. Microscopically the dense fibrous tissue among the ducts and acini contains a great many elongated and rounded cells filled with fine melanin granules. The Masson-Fontana stain blackens all of them and they are unaffected by Prussian blue. I assume therefore that this must be a blue naevus in the mammary gland. Five years after operation she was well. It is of interest to note that there are melanin-containing cells even among the groups of acini.

Diagnosis: Blue naevus of female mammary gland.

P&S 69711

This 73-year-old woman had a solitary discrete mass in the breast. It was dense, hard, circumscribed and measured 2 cm. in diameter. It was excised. The lesion appears to be a pure fibromatosis with no unusual features. At its periphery it infiltrates the surrounding fat and groups of mammary acini.

Diagnosis: Fibromatosis of female mammary gland.

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Case 4 - P&S 69385
Contributed by: Dr. Gerald Fine
Dr. Robert Horn

A 59-year-old, white woman was admitted to the Henry Ford Hospital for back and leg pain associated with difficulty in walking. Physical examination revealed a firm mass in the left breast, situated in the center of the breast without any fixation to the overlying skin or underlying fascia. Skeletal survey revealed osteolytic lesions in the second lumbar vertebra, left 7th rib, lower third of the right femur and sacrum, and pathologic fractures with callus formations in the 4th and 5th ribs. A simple mastectomy was performed, followed by 2000 roentgens to the thoracic and lumbo-sacral spine. She expired approximately two months later with clinical signs and symptoms of brain metastases. There was no autopsy.

The tumor grossly was represented by poorly demarcated area of induration, 8 cm. in diameter, occupying the central portions of the breast, and extending into the lower outer quadrant.

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Case 4
P&S 68609

Microscopic Observations:

Obviously this is an undifferentiated carcinoma consisting of small rounded cells arranged in slender cords, small groups or as isolated cells. The tumor has infiltrated the mammary gland very freely without destroying the mammary tissue. The unusual feature in this case is demonstrated when the cells are inspected with higher magnification. Then it is seen that the cytoplasm of every cell is honeycombed with small round vacuoles. A Flaming Red stain shows that these vacuoles are filled with lipid. Mucicarmine stain shows a slight pink spot in an occasional tumor cell but this does not seem to me to be significant.

Comment:

Obviously this is one of the extremely malignant carcinomas of the breast. The fact that it has infiltrated the breast leaving much of the normal atrophic breast tissue intact suggests this. Of course the striking and unusual feature is the presence of lipid in every cell. I cannot recall ever before having observed such a phenomenon in a breast tumor. Since the cells are all apparently healthy, it does not suggest a phenomenon of degeneration. It does not seem possible to me that it could be a secretional phenomenon induced by hormones because the normal breast structures are not affected. I confess I am completely baffled by it.

Diagnosis: Lipogenous carcinoma of female mammary gland.

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Case 5 - P&S 33773
Contributed by: Dr. Saul Kay

The patient was a 50-year-old, white woman in 1950. This woman, at that time, had already had three previous operations consisting of removal of a mass in the breast during the past one and a half years. Apparently, a diagnosis of intracanalicular fibroadenoma had been made. In 1950, a simple mastectomy of the same breast was done, and a cystic mass was found, 4 cm. in diameter. It is interesting that apparently the three previous excisions were done at Johns Hopkins Hospital. The first time, a diagnosis of intracanalicular fibroadenoma was made but a third recurrence was called fibrosarcoma. There is available a complete follow-up over these past twelve years which shows no evidence of persistent disease or of recurrence.

This case is of interest because of the long follow-up. The latter part of the specimen I would classify as benign because the cells do not look malignant and the architectural structures are organized in very delicate intracanalicular strands. The other part is the more questionable - it seems to be largely hyperplastic strands with perhaps some admixture of differentiated fibrosarcoma. From the description of the preceding sections I will guess that this part is a cystosarcoma phyllodes, and that this recurrence, at least, has the phyllodes characteristics leaving only the sarcomatous features.

I am not too surprised that this patient has remained well for 12 years. Malignant adenocarcinoma and sarcomatous features of the breast are usually very subtle even when they look as malignant as does this case. I am not surprised therefore that this patient is apparently cured. I have had no reason to change the opinion of Jane Lester and I reported in my paper on this subject.

Cystosarcoma phyllodes (recurrent, of female mammary gland)
Epithelial cystadenoma, intraductal, of female mammary gland

Arthur Purdy Stout, M.D.

Microscopic Observations:

There appear to be two different lesions in this breast which are of interest to us. There is first a tumor growth that has the appearance of an osteogenic sarcoma since it consists of extremely bizarre osteoid associated with many giant cells with bizarre nuclei and mitoses. In one area there is also a little cartilage. If this tumor started in a cystosarcoma phylloides, the three previous excisions have removed all traces of its existence. The history suggests that it did start in a cystosarcoma phylloides although it seems unlikely that that was recognized in the beginning. In addition to the osteoid there is a focus that might be interpreted as differentiated liposarcoma. The other lesion of interest is the intraductal papilloma which seems entirely separate from the other lesion. It occupies several ducts, fills them solidly with cells except for gland-like spaces and a delicate fibrous supporting framework. The cells do not look to me like cancer cells and if there are any mitoses I have not detected them.

Comment:

This case is of interest because of the long follow-up. The intraductal papilloma I would classify as benign because the cells do not look cancerous and the intraductal structures are supported on very delicate fibrovascular strands. The other tumor is the more spectacular - it seems to be largely osteogenic sarcoma with perhaps some admixture of differentiated liposarcoma. From the description of the preceding sections I will guess that this patient had a cystosarcoma phylloides, and that this recurrence has lost the phylloide characteristics leaving only the sarcomatous features.

I am not too surprised that this patient has remained well for 12 years. Malignant mesenchymomas and osteogenic sarcomas of the breast metastasize very seldom even when they look as malignant as does this case. I am not surprised therefore that this patient is apparently cured. I have had no reason to change the opinions Jane Lester and I expressed in our paper on this subject.

Diagnosis: Cystosarcoma phylloides (recurrent), of female mammary gland
Papillary cystoadenoma, intraductal, of female mammary gland

Arthur Purdy Stout, M.D.

REF: Lester, J., and Stout, A. P.: Cystosarcoma Phylloides. Cancer 7: 335-353, 1954.

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Case 6 - P&S 67695
Contributed by: Dr. C.F. Peiphrey

Patient is a 76-year-old woman, who was first seen in April 1960 because one week earlier she had noticed a nodule within her right breast, which was tender on palpation. A frozen section was reported as showing a malignant tumor and a right radical mastectomy was performed. In the upper outer quadrant, there was a 2.7 cm. spherical, friable tumor mass, 2 cm. deep to the skin and 1 cm. superficial to the deep fascia. There was no other evidence of tumor in the breast and the regional lymph nodes were negative for metastasis.

On May 2, 1961, the patient had a chest wall recurrence, 2 cm. in diameter, near the costo-sternal junction of the second rib. This was treated with a resection of the rib cage and a portion of the sternum. Tumor was found in the soft tissue adjacent to, but not infiltrating bone, and bulging into the pleura.

On July 30, 1961, the patient returned with a 5 cm. mass in the region of the previous operation. An attempted re-resection of the area was unsuccessful. Mediastinal lymph nodes seemed enlarged by X-ray. The patient expired on August 17, 1961. No autopsy was obtained.

Microscopic Observations:

Outside of the tumor the breast tissue shows microcystic disease and some adenosis. It does not seem to me that the tumor shows any evidence of cystosarcoma phylloides; it appears to be pure sarcoma. It seems to me that in most places it has the features of a liposarcoma. There are occasional giant cells with foamy cytoplasm and in general the tumor strongly suggests liposarcoma with giant cells and occasional myxoid foci. In the five blocks that Charles sent us I cannot recognize any other tumor type, so I suppose this must be called a pure poorly differentiated liposarcoma. The average mitotic rate in four of the slides is 18 in 50 high power fields. In the fifth slide, however, the rate goes up to 50 mitoses in 50 high power fields.

Comment:

Poorly differentiated liposarcomas in the breast not associated with cystosarcoma phylloides must be very rare. The malignancy in this case is assured from a general mitotic rate of 18/50 mitoses. It is reinforced by the focus that shows 50/50 mitoses. It would seem in this case that a proper procedure was carried out for this type of malignant tumor but it would seem to me that there must have been a faulty procedure somewhere along the line - either the instruments used for biopsy were not discarded before proceeding with the operation or the tissues overlying the nodule were not removed, or some similar slip occurred, because it is hard to understand how an adequate radical procedure could have resulted in a local recurrence and a fatal termination without proved metastases.

Diagnosis: Liposarcoma, undifferentiated, of female mammary gland.

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This 34-year-old woman had a fibroadenoma removed from the left breast fifteen years previously; in fact, her history shows that she had a "cyst" removed at age fifteen, another one removed from the left breast at age twenty-five, another one from the right breast at age thirty, and a "cystosarcoma" removed again from the left breast at age thirty-three. At the time of admission in March 1960, the left breast mass was seen to have recurred; it was now huge, filling the entire breast. A biopsy taken a month ago showed a cystosarcoma phylloides.

The patient has been married for twelve years and has had no children. She has been treated for sterility without help. Both sisters of the patient have cystic disease of the breast.

On March 3, 1960 a partial mastectomy of the left breast was performed. The specimen removed measured 11 x 5 x 3.5 cm. On sectioning, multiple, various sized, pearly lobules were found bulging from a white, firm stroma. In other areas, granular, friable, papillary, translucent masses could be seen. In one area, a gelatinous, pale tan, translucent mass bulged from the surface and measured 3.5 x 2.5 x 2.5 cm. This mass appeared to be contained into a small, smooth-walled cystic cavity. Sections from this specimen are labelled A-85213. Study of this specimen showed that the neoplastic growth had penetrated the pectoral fascia into the neighboring fibres of the pectoralis major muscle.

A few days later, a simple mastectomy on the left side was completed including the outer one-half of the pectoralis major muscle, along with the serratus fascia, and some of the serratus muscle. Histological examination of this specimen gave controversial results. The periductal and perilobular stroma showed myxoid changes but it was questionable whether there were remnants of the previously removed tumor. No sections of this specimen are included in the Seminar.

In May of 1961, the patient returned to Presbyterian Hospital because of a lump in the right breast of three months duration. On physical examination the entire right breast was rather nodular and showed a diffuse firmness in the upper and outer quadrants. In addition, in the lower portion of the breast, somewhat medial to the nipple, there was a 2 x 2.5 firm, irregular mass, not attached to skin or chest wall. The clinical impression was that this mass had appeared rather fast and grew fairly rapidly. Accordingly, on May 19, 1961, she was operated on and the above described mass in the lower inner sector was excised widely. During the removal, a 7 mm. translucent nodule was noted along the upper line of resection and accordingly, an additional portion of tissue in that region was removed. This specimen was described grossly as a roughly ovoid mass of breast parenchyma, measuring 3.7 x 3.1 x 1.9 cm. On cut surface, it showed bulging nodules suggestive of fibroadenoma. Definite encapsulation, however, was lacking. The sections from this specimen are labelled A-97429. Following this operation, the patient was last heard from in November 1961, at which time she apparently was found to have a fracture of the 10th right rib of unknown etiology but apparently unrelated.

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Case 7
A-85213-Left
A-97429-Right

Microscopic Observations:

The sections from the left breast appear to show the morphological arrangement of an adenofibroma which is intracanalicular only in a few places. There are several unusual features - the periductal tissue instead of being simply myxoid has decided cartilaginous tendencies. Moreover in one slide there is a rounded focus with giant cells that reminds me strongly of liposarcoma. Another peculiar feature is that it has pushed its way for a microscopic distance into the pectoral muscle. The tissue from the right breast shows a comparable picture except that I could find no area suggesting liposarcoma.

Comment:

This is the second time I can recall that I have encountered a case in which cystosarcoma phylloides has been bilateral although it has been reported 10 times. It is evident that this patient comes from a family, the female members of which have a tendency to grow benign lesions in their breasts. With such a history, I am somewhat surprised that the right breast was not also removed by simple mastectomy for it would seem to me there will be a good chance she will grow more of these peculiar tumors in the remaining breast tissue. I would be inclined to do this because I know of no sure way to separate the non-metastasizing from the metastasizing phylloide tumors - all that one can say is that metastases occur in less than 5% of these tumors.

Diagnosis: Cystosarcoma phylloides of female mammary gland (bilateral).

Arthur Purdy Stout, M.D.

REF: Reich, T., and Solomon, C.: Bilateral Cystosarcoma Phylloides, Malignant Variant, with 14-year follow-up. Ann. Surg., 147: 39-43, 1958.

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Case 8 - A 60200
Contributed by: Dr. Raffaele Lattes
Dr. Arthur Purdy Stout

Patient is an 84-year-old woman who was admitted in March 1957 because of a mass in her left breast. At that time, she also complained that she had had a dry cough since December 1956, with progressive weight loss. On physical examination, a 3 x 4 cm., stony-hard mass was found in the left lower inner quadrant of the left breast. The mass was firmly attached to the skin and the overlying skin suggested imminent ulceration. There was no tenderness, and there was some enlargement of the left axillary nodes. At that time, it was found that she had a right pleural effusion on the right side and a left pulmonary parenchymal infiltrate. Following evaluation of the case, it was decided to treat the breast mass with radiation therapy and needle biopsy only was performed. However, when it was discovered that the tumor was not a carcinoma but probably mesenchymal in origin, it was decided to perform a local excision. This was done on March 28, 1957 and it was more limited than a simple mastectomy.

The gross specimen showed a spheroidal tumor mass, 3.5 cm. in diameter, with well-defined gross margins and extending to less than a millimeter of some of the lines of excision. The cut surface was variegated, being soft in some areas and firm and gritty in others with areas of mucinous appearance.

Following operation, the patient never recovered completely, with symptoms suggestive of pleurisy and pneumonia. She was treated with several antibiotics. Two and a half days prior to death in May 1957, a thoracentesis on the right side was productive of 1000 cc. of slightly turbid, straw-colored fluid. A new chest x-ray showed a definite density in the left upper lung field. An autopsy was performed which showed metastases to right lung and diaphragm.

Microscopic Observations:

This tumor appears to be composed of very large irregularly rounded cells with hyperchromatic nuclei that show frequent mitoses. The tumor does not appear to form a tissue but simply a loose-textured mass of these cells. The cytoplasm is sometimes granular and the granules slightly acidophile. There are many spaces within the cytoplasm. Occasionally these are peripherally disposed producing so-called spider-web cells. A fat stain shows that some of the intracellular spaces contain lipid but whether this is secretional or the result of degeneration, I cannot tell. A mucicarmine stain fails to stain any of the material in the vacuoles but it does lend a faint pinkish tinge to the granular cytoplasm. The trichrome stain also tints the granules a rather faint pink. The Laidlaw stain shows the supporting framework but hardly any fibers among the tumor cells.

Comment:

There is no question about the malignancy of this tumor since it metastasized and killed. It seems to me to fit one of the appearances assumed by rhabdomyosarcomas in adults. It also appears to me to be primary in the mammary gland and there is no evidence to suggest that it developed in a case of cystosarcoma phylloides. I have never been able to accept the proposal that all breast sarcomas probably originate in cystosarcoma phylloides. I gather now that some members of the Memorial Hospital believe the same thing.

Diagnosis: Rhabdomyosarcoma of female mammary gland.

Arthur Purdy Stout, M.D.

REF: Berg, J. W., DeCrosse, J.J., Fracchia, A.A., and Farrow, J.: Stromal Sarcomas of the Breast. A Unified Approach to Connective Tissue Sarcomas other than Cystosarcoma Phylloides. Cancer 15: 418-424, 1962.

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Case 9 - P&S 68652
Contributed by: Dr. John T. Ellis

Patient is a 59-year-old, white woman who entered the New York Hospital because of a lump in the right breast of 3 months duration. The breast was enlarged, erythematous, indurated, with increased warmth and an area of fluctuation above and lateral to the nipple. The nipple was inverted and there was an orange peel appearance of the skin in the upper outer quadrant of the breast. An excision and drainage was done and a biopsy was taken in a necrotic area which was thought to be an abscess. After several days, a radical mastectomy was performed. A 7 cm. necrotic, grey tumor mass was identified just above and lateral to the nipple and immediately below the skin ulceration. On cut surface, this tumor showed many chalky, yellow-orange areas, areas of hemorrhage and necrosis. Thirteen out of seventeen axillary lymph nodes examined histologically showed metastatic tumor, similar to that of the breast. Post-operatively the patient was treated with x-ray therapy and nine months following surgery there was no evidence of disease.

The tumor mass of axillary glands which are presumed to be due to carcinoma of the breast. The ducts of the axillary glands are the only ducts of the breast which are not surrounded by a capsule. The tumor mass is situated primarily in the lower pole of the gland and may extend to the upper pole. The tumor is composed of nests and cords of cells which are arranged in a disorganized fashion and may show some evidence of glandular formation. The tumor is situated in the axilla and may extend to the chest wall. The tumor is composed of nests and cords of cells which are arranged in a disorganized fashion and may show some evidence of glandular formation. The tumor is situated in the axilla and may extend to the chest wall.

The structure of female mammary gland.

Arthur Purdy Stout, M.D.

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MU 2-1918, MU 2-1919, MU 2-1920, MU 2-1921, MU 2-1922, MU 2-1923, MU 2-1924, MU 2-1925, MU 2-1926, MU 2-1927, MU 2-1928, MU 2-1929, MU 2-1930, MU 2-1931, MU 2-1932, MU 2-1933, MU 2-1934, MU 2-1935, MU 2-1936, MU 2-1937, MU 2-1938, MU 2-1939, MU 2-1940, MU 2-1941, MU 2-1942, MU 2-1943, MU 2-1944, MU 2-1945, MU 2-1946, MU 2-1947, MU 2-1948, MU 2-1949, MU 2-1950, MU 2-1951, MU 2-1952, MU 2-1953, MU 2-1954, MU 2-1955, MU 2-1956, MU 2-1957, MU 2-1958, MU 2-1959, MU 2-1960, MU 2-1961, MU 2-1962, MU 2-1963, MU 2-1964, MU 2-1965, MU 2-1966, MU 2-1967, MU 2-1968, MU 2-1969, MU 2-1970, MU 2-1971, MU 2-1972, MU 2-1973, MU 2-1974, MU 2-1975, MU 2-1976, MU 2-1977, MU 2-1978, MU 2-1979, MU 2-1980, MU 2-1981, MU 2-1982, MU 2-1983, MU 2-1984, MU 2-1985, MU 2-1986, MU 2-1987, MU 2-1988, MU 2-1989, MU 2-1990, MU 2-1991, MU 2-1992, MU 2-1993, MU 2-1994, MU 2-1995, MU 2-1996, MU 2-1997, MU 2-1998, MU 2-1999, MU 2-2000, MU 2-2001, MU 2-2002, MU 2-2003, MU 2-2004, MU 2-2005, MU 2-2006, MU 2-2007, MU 2-2008, 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MU 2-2191, MU 2-2192, MU 2-2193, MU 2-2194, MU 2-2195, MU 2-2196, MU 2-2197, MU 2-2198, MU 2-2199, MU 2-2200, MU 2-2201, MU 2-2202, MU 2-2203, MU 2-2204, MU 2-2205, MU 2-2206, MU 2-2207, MU 2-2208, MU 2-2209, MU 2-2210, MU 2-2211, MU 2-2212, MU 2-2213, MU 2-2214, MU 2-2215, MU 2-2216, MU 2-2217, MU 2-2218, MU 2-2219, MU 2-2220, MU 2-2221, MU 2-2222, MU 2-2223, MU 2-2224, MU 2-2225, MU 2-2226, MU 2-2227, MU 2-2228, MU 2-2229, MU 2-2230, MU 2-2231, MU 2-2232, MU 2-2233, MU 2-2234, MU 2-2235, MU 2-2236, MU 2-2237, MU 2-2238, MU 2-2239, MU 2-2240, MU 2-2241, MU 2-2242, MU 2-2243, MU 2-2244, MU 2-2245, MU 2-2246, MU 2-2247, MU 2-2248, MU 2-2249, MU 2-2250, MU 2-2251, MU 2-2252, MU 2-2253, MU 2-2254, MU 2-2255, MU 2-2256, MU 2-2257, MU 2-2258, MU 2-2259, MU 2-2260, MU 2-2261, MU 2-2262, MU 2-2263, MU 2-2264, MU 2-2265, MU 2-2266, MU 2-2267, MU 2-2268, MU 2-2269, MU 2-2270, MU 2-2271, MU 2-2272, MU 2-2273, MU 2-2274, MU 2-2275, MU 2-2276, MU 2-2277, MU 2-2278, MU 2-2279, MU 2-2280, MU 2-2281, MU 2-2282, MU 2-2283, MU 2-2284, MU 2-2285, MU 2-2286, MU 2-2287, MU 2-2288, MU 2-2289, MU 2-2290, MU 2-2291, MU 2-2292, MU 2-2293, MU 2-2294, MU 2-2295, MU 2-2296, MU 2-2297, MU 2-2298, MU 2-2299, MU 2-2300, MU 2-2301, MU 2-2302, MU 2-2303, MU 2-2304, MU 2-2305, MU 2-2306, MU 2-2307, MU 2-2308, MU 2-2309, MU 2-2310, MU 2-2311, MU 2-2312, MU 2-2313, MU 2-2314, MU 2-2315, MU 2-2316, MU 2-2317, MU 2-2318, MU 2-2319, MU 2-2320, MU 2-2321, MU 2-2322, MU 2-2323, MU 2-2324, MU 2-2325, MU 2-2326, MU 2-2327, MU 2-2328, MU 2-2329, MU 2-2330, MU 2-2331, MU 2-2332, MU 2-2333, MU 2-2334, MU 2-2335, MU 2-2336, MU 2-2337, MU 2-2338, MU 2-2339, MU 2-2340, MU 2-2341, MU 2-2342, MU 2-2343, MU 2-2344, MU 2-2345, MU 2-2346, MU 2-2347, MU 2-2348, MU 2-2349, MU 2-2350, MU 2-2351, MU 2-2352, MU 2-2353, MU 2-2354, MU 2-2355, MU 2-2356, MU 2-2357, MU 2-2358, MU 2-2359, MU 2-2360, MU 2-2361, MU 2-2362, MU 2-2363, MU 2-2364, MU 2-2365, MU 2-2366, MU 2-2367, MU 2-2368, MU 2-2369, MU 2-2370, MU 2-2371, MU 2-2372, 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Microscopic Observations:

This tumor appears to be composed of two elements: a squamous cell carcinoma with epidermoid characteristics which is obvious, and a sarcomatous portion which is entirely different. The cells of the second element are smaller and are accompanied by many reticulin fibers that tend to wrap about them as well as parallel their long axes. Some of these cells are slightly bizarre and mitoses are not infrequent. This dual composition is observed in all of the many sections made from this tumor.

Comment:

The decision in this case must first be made whether this is a one cell type of tumor with metaplasia or a carcinosarcoma. Personally, it would be extremely hard for me to believe that either of the two elements could be formed from the other. We would have to believe that this squamous carcinoma could form sarcomatous elements with reticulin fibers or that it is a sarcoma showing a metaplastic ability to turn itself into a squamous carcinoma. The only excuse for entertaining either possibility comes from the mixed tumors of salivary glands which are presumed to be able to turn epithelium into cartilage. No doubt there is an embryonal tissue in the body that can produce both ectodermal and mesodermal derivatives - that is the mesectoderm that is formed regularly in lower animals and can produce whole limbs from a tissue derived from neuroepithelium. But in humans the mesectoderm is a vestigial tissue and has only been accused of producing Wilms tumor in the kidney and some of the complex teratomatous tumors in peripheral nerves. My belief is that carcinosarcomas can exist and can produce mixed tumors of this sort capable of metastases. Why this occurs I do not know but I would call this tumor a carcinosarcoma.

Diagnosis: Carcinosarcoma of female mammary gland.

Arthur Purdy Stout, M.D.

REF: Robb, P. M., and MacFarlane, A.: Two Rare Breast Tumors. J. Path. & Bact. 75: 293-298, 1958.

This 64-year-old Negro woman came to Presbyterian Hospital in May, 1961, with a chief complaint of a lump in her right breast of one month duration. Her past history is quite interesting. This patient has never menstruated and has never been pregnant. She has a hypoplastic vagina and apparently an absent uterus. Her mother's sister was short of stature and never menstruated. One of the patient's seven sisters also never menstruated. Of the other six sisters, two died in infancy; four are living at present, and all have had children. Neither of her two brothers has had children. The patient, however, developed regularly and has normal breast development. Since 1933, it was noted that she had a fatty growth in the right axilla that presumably was an extramammary breast, and this was excised. In 1950, she had an excision of an intraductal papilloma of the right breast. The slides were reviewed here and the diagnosis was confirmed. A month ago she noticed a lump in her right breast, near the old biopsy incision. This lump is 8 x 6 cm., irregularly shaped, firm, freely movable, at approximately 11:00 o'clock radius. There are no retraction signs, and there are no axillary or supra-clavicular lymph nodes to be felt. Gynecological examination shows a vagina about 2 cm. long, no cervix, no clitoris.

Following a biopsy examined on frozen section, a right radical mastectomy was done on the 15th of May, 1961. Examination of the gross specimen shows that deep to the old, well healed scar, there is a tumor about 4.5 cm. in diameter. This appears to be fairly well circumscribed but not encapsulated. The cut surface shows a central soft, glistening, mucinous area of greyish-white color and small cystic areas within it. At the periphery the tumor appears firmer and fibrous. The remainder of the breast tissue was markedly fat. Forty-seven axillary lymph nodes examined histologically showed no involvement by tumor.

Following consultation with the endocrinology experts, it was felt that the patient is a male pseudo-hermaphrodite. Her buccal smear showed a male type chromatin pattern. The patient was followed in our Surgical Follow-up Clinic. In October, 1961, it was noted that there was a lump developing in the mid-manubrium sternal area. This mass felt like adipose tissue and the patient was told to return. In January, 1962, it was felt that this steadily growing mass was a recurrence of the tumor. This was biopsied elsewhere and following that the patient received radiotherapy, also in another institution. The last information received on this patient was dated February 5, 1962, at which time the radiotherapy course had been completed.

Additional Note: The urine 17-ketosteroids determined in May, 1961 were 15.0 mg. per day. The ketogenic steroids were 52.8 mg. per day. However, a similar determination made a few days later resulted respectively in figures of 10.7 for the 17-ketosteroids and 26.0 for the ketogenic steroids.

Microscopic Observations:

This is a very difficult tumor to describe. It seems to be a more or less solid tumor with a few slits in it. These are lined with a differentiated stratified squamous epithelium. Extending from this into the surrounding tissue are many slender cords of squamous cells. Sometimes these seem to line potential microscopic slits - but elsewhere they are independent of slits. The tissue into which the epithelium has grown seems most variable. In one area are granular cell masses somewhat suggestive of granular cell myoblastoma. Elsewhere it has a kind of granulomatous appearance and, since it lacks mitoses, I suspect it is not malignant tissue. A stain for fat shows a good deal of intracellular lipid in areas of degeneration but not elsewhere. In one section the stromal area shows some extremely dense quite thick collagen bands which twist about and occasionally imitate osteoid but there are so few lacunae with cells in them that it would be an error to think of this as osseous metaplasia or a bony tumor.

Comment:

Just how to interpret this peculiar lesion is a puzzle. Can it be cystosarcoma phylloides with squamous metaplasia of the epithelium and marked proliferation of this lining membrane and invasion of the stroma? It is very difficult for me to accept the squamous epithelial proliferation as cancerous - further, the peculiar stromal changes do not suggest to me malignant mesenchymoma. I wonder very much what the mid-manubrial lesion showed. I shall be astonished if it is malignant tumor derived from the present one. I cannot believe the epithelial elements are really malignant, therefore I cannot interpret this as a carcinosarcoma.

I shall call it hesitatingly a cystosarcoma phylloides, but this is guess-work.

Diagnosis: Cystosarcoma phylloides (?) of female mammary gland.

Arthur Purdy Stout, M.D.

REF: Salm, R.: Epidermoid metaplasia in mammary fibro-adenoma with formation of Keratin Cysts. J. Path. & Bact. 74: 221-222, 1957.

Arthur Purdy Stout Society Seminar
Detroit, Michigan - June 9, 1962

Case 11 - P&S 68174
Contributed by: Dr. Robert S. Totten

This 31-year-old, white woman noted a lump in the upper outer quadrant of the left breast, approximately two and one-half years ago, which gradually enlarged and was described by the patient as "feeling like a bunch of grapes." Biopsy in February, 1956 showed cystic disease and intraductal papillomatosis. Three months later there was present a similar mass with some brownish discharge from the nipple.

Physical examination at that time (July, 1956) revealed a firm, non-tender, freely movable mass, 2 cm. in diameter at the lower end of the healed scar. A second biopsy was performed (P&S 68174 A). She was well until December, 1957, when she noted recurrence of a lump under the scar. A 2 cm. firm, movable mass was present in the upper quadrant of the left breast near the scar of the second operative procedure. A third biopsy was performed (P&S 68174 B). Radical mastectomy was performed with 22 negative axillary lymph nodes. As of March, 1962, the patient is living and well.

Diagnosis: Carcinoma (intraductal) of female mammary gland (recurrent).

Arthur Purdy Stout, M.D.

577. Galle, S.A., Roberts, M.B., and Elliott, D.T.: Postoperative intraductal carcinoma of the breast. *Surg. Gyn. & Obstet.* 114: 581-582, 1960.

Galle, S.A. The behavior of recurrent carcinoma in intraductal carcinoma of the breast. *Am. J. Path.* 31: 887-897, 1958.

Microscopic Observations:

"A" section is the second biopsy, made in July 1956, five months after a previous biopsy is said to have shown cystic disease with papillomatosis. This present section shows a group of ducts in which the epithelium has proliferated forming acini (i.e., a cribriform pattern). In some there appears to be no accompanying fibrous framework; in others this is present. In examining the appearance of the cells lining the lumens in the cribriform pattern, some of these show nipples or snouts and are apparently benign. Others lack these but have either a kind of hairy fringe or even a suggestion of burst bubbles. If there are any mitoses they must be rare for I have not detected them. A striking feature is the presence of many of these cribriform structures in a localized area - many more than can be accounted for by simple involvement of pre-existing ducts.

"B" section: The picture has now changed profoundly. There is marked intraductal proliferation of papillary formations supported on fibrous stalks. The duct is widely dilated and also solidly filled with these proliferations. Most important, the cells now are largely cylindrical, anaplastic and show frequent mitoses.

Comment:

The questions of greatest interest in this case are, first, whether or not the recurrent tumor removed in 1956 is a carcinoma, and second, what is the relationship of the "A" tumor to the "B" tumor. The "A" tumor has somewhat equivocal aspects except for two things: It is a recurrent lesion even though the original section showed no recognized tumor, and second, the marked proliferation of the ducts full of cribriform structures is probably sufficient in itself to have warranted a diagnosis of carcinoma. At any rate, I think this is a splendid case to force one to come to grips with his criteria for judging intraductal carcinoma when it is in a stage difficult to recognize. I hope that in the future when I am faced with a difficult decision such as is posed by this "A" section, I will take my courage in my hands and decide to call it carcinoma.

Diagnosis: Carcinoma (intraductal) of female mammary gland (recurrent).

Arthur Purdy Stout, M.D.

REF: Gillis, D.A., Dockerty, M.B., and Clagett, O.T.: Preinvasive intraductal carcinoma of the breast. Surg., Gyn. & Obstet. 110: 555-562, 1960.

Ozzello, L.: The behavior of basement membranes in intraductal carcinoma of the breast. Am. J. Path. 35: 887-899, 1959.

Microscopic Observations:

This is obviously an intracystic glandular tumor. It is quite complex and has many variations. The cells form either a single row of cylindrical cells or else are 2-4 cells thick with the cylindrical cells on the surface and a deeper layer of rounded cells one or two rows in thickness. A search through 50 high power fields did not permit me to recognize any mitoses. The surface cells frequently had nipples or snouts on the luminal surface. Sometimes the snouts were fragmented or distorted but I could not recognize any burst bubbles. In many areas it was possible to demonstrate with the trichrome stain myoepithelial tails issuing slantingly from the basal poles of the epithelial cells into the fibrous supporting stroma. None of the cells looked anaplastic to me.

Comment:

The all-important decision in this case concerns the question of malignancy. It is very interesting to compare this section with the final appearance of the tumor in Case 11. To me that final picture in Case 11 furnished us with the characteristics of a papillary intraductal carcinoma. In this present case, although there is a superficial resemblance to Case 11, all the findings outlined in the microscopic description indicate to me that this is a benign tumor; snouts, myoepithelial tails, no evidence of anaplasia and absence of mitoses all favor a benign interpretation. I know that some individuals have suggested that the proliferation of the basal layer of cuboidal cells should be regarded either as an evidence of carcinoma or of a precancerous state somewhat similar to carcinoma in situ. I cannot agree there is any proof this is true. I think Cases 11 and 12 deserve careful study and analysis for they are truly illuminating.

Diagnosis: Intraductal papillary cystadenoma of female mammary gland.

Arthur Purdy Stout, M.D.

Arthur Purdy Stout Society Seminar
Detroit, Michigan - June 9, 1962

Case 13 - P&S 67968
Contributed by: Dr. Saul Kay

In 1951, this 58-year-old woman had a biopsy of the left breast, because of a lesion including intraductal papillary proliferations. At that time her symptoms were bleeding from the nipple. No sections of this biopsy are submitted in this Seminar. In 1957, the patient began complaining of bleeding from the nipple again. A small mass was found in the areola, which was excised. Sections of this biopsy are represented in the slide which contains multiple small, irregular fragments. Following evaluation of this biopsy, a radical procedure was done and the sections included in the other slide with this number, are representative of the lesion found in the radical mastectomy specimen. The specimen of radical mastectomy showed no axillary lymph node involvement. At the time of discussion of the Seminar slides of the original biopsy in 1951 will be shown.

The patient was last seen in September, 1960, at which time there was no evidence of recurrence or metastatic disease.

Arthur Purdy Stout, M.D.

Microscopic Observations:

In 1951, this woman had an intraductal papillary tumor. This looked like the usual benign intraductal papilloma with two exceptions. The surface cylindrical cells lacked luminal snouts and sometimes showed burst bubbles. The second feature was a very marked proliferation of the deeper cuboidal cells which form quite dense masses - quite a different picture from the usual one or two layers. In 50 high power fields only one mitotic figure was recognized by me. In 1957 the picture does not seem to me to change essentially; there are still ducts with the same type of papillary proliferation seen in 1951 but with a cribriform pattern suggested in some ducts and a rather poor suggestion of lobular carcinoma-in-situ.

Comment:

In this case the presence of the masses of cuboidal cells and the burst bubble effect seen in 1951 and the occasional cribriform pattern seen in 1957 are sufficient evidence of possible carcinoma to justify the radical mastectomy carried out in 1957. It is of course no surprise that the woman has been cured because there is no evidence of invasive growth. But the change which occurred in Case 11 could leave no doubt that in that case the radical mastectomy was for an unmistakable carcinoma. The process had not advanced so far in this case but certainly it appeared to be on the way. Cases 11, 12 and 13 are excellent demonstrations of some of the difficulties of diagnosis in some intraductal tumors of the breast.

Diagnosis: Carcinoma (intraductal) of female mammary gland.

Arthur Purdy Stout, M.D.