Male Mammary Cancer:
An Analysis of 32 Cases

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CARCINOMA of the breast accounts for less than 1.5% of all cancer in men,[15] and the proportion of men among patients with mammary cancer is close to 1% in all reported series. The rarity of this tumor makes its assessment difficult, but differences in mammary cancer between the sexes are apparent in several clinical and prognostic features. This report analyzes our experience with mammary cancer in men, and compares our findings with those in women.

Materials and Methods

In the 25-year period from 1940 through 1964, 3,015 patients with carcinoma of the breast were admitted to the Hospital of the University of Pennsylvania. Twenty-seven (0.9%) of these patients were men. An additional five men with the diagnosis of carcinoma of the male breast were culled from 83,829 admissions to the Veteran's Administration Hospital of Philadelphia from 1955 through 1964. The records of these 32 patients were analyzed critically, and all patients were followed either until death, or for at least 5 years following their original treatment.

Clinical Features

General. Of the 32 patients, five were Negro and the remainder were Caucasian. Their ages ranged from 36 to 82 years with a mean age of 60 years. Sixteen tumors were found in the right breast, 15 in the left, and one was synchronously bilateral. Of the 32 patients, three gave a history of prior treatment of another malignant disease, namely carcinoma of the colon, fibrosarcoma of the abdominal wall, and sarcoma of the leg, respectively. None of these prior malignancies contributed to the success or failure of the treatment of their mammary carcinoma. One man with Paget's carcinoma of the breast was found to have chronic lymphocytic leukemia at the time of initial examination. Only two of our 32 patients could recall a history of malignant disease among blood relatives, and in only one other instance was there a mammary carcinoma in a female relative. Two were married to women who had or subsequently developed mammary cancer. Three patients gave a history of mild trauma related to the discovery of the mass in the breast. None exhibited the features of Klinefelter's syndrome, although chromosome examinations were performed in only two. None gave a history of or demonstrated gynecomastia, and none had received antecedent hormonal therapy.

Symptoms. A breast mass was the sole complaint in 19 and a significant part of the symptom complex in another ten of these 32 individuals. The mammary tumor was a chance finding during physical examination for an unrelated condition in only two of our patients and was occult in one. Discharge from the nipple was reported to

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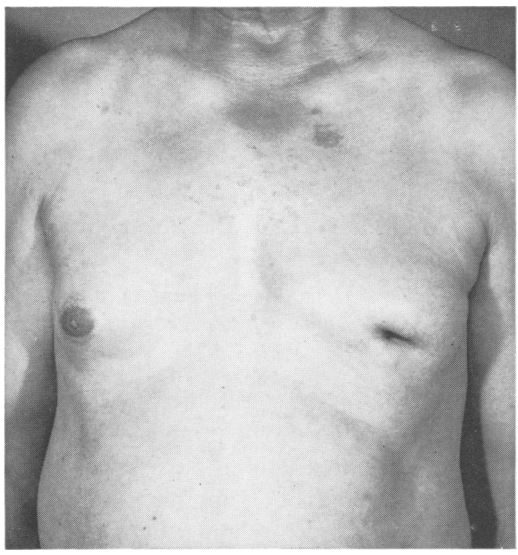

FIG. 1. Nipple inversion from a carcinoma of the left breast which was not fixed to the pectoral fascia, but had metastasized to an axillary node, and resulted in death 4½ years later.

be serous by two men and sanguineous or serosanguineous by four. Pain was generally a late symptom, and when localized to the breast was associated with nipple ulceration. Pain from ulcerating axillary metastases was reported by one of our patients, and pain from bone metastases by an additional two. The duration of symptoms before treatment varied from 6 days to 8 years, with an average of 6 months.

FIG. 2. Nipple ulceration and adjacent infiltration resulted from an underlying carcinoma of the male breast.

Physical Findings. All but one of the 32 patients presented a palpable mass on initial examination by a physician. Three were admitted for treatment following excision of the mass, and another had bilateral mammary masses with multiple skin, axillary and osseous metastases. An additional patient had an occult carcinoma of the breast with regional node metastases, a phenomenon reported only once previously in the male.[12] The masses varied from 1 to 8 cm. in diameter, were hard, and were located beneath or very near the areola. Fixation of the tumor mass to the underlying chest wall was evident in two individuals. Twelve men demonstrated retraction or inversion of the nipple or areola (Fig. 1), three showed encrustation of the nipple, and an additional three had frank ulceration (Fig. 2). Palpable lymph nodes thought by the examiners to indicate metastases were present in the axillae of 11 of our patients (37%), and in the supraclavicular area as well in three patients. In the 24 men subsequently subjected to radical mastectomy, three of six individuals thought to have involved lymph nodes actually did not, and five of 18 thought to have no lymph node involvement were in fact found to have axillary lymph node metastases.

Pathology

The microscopic appearance of 28 tumors was of invasive ductal carcinoma. The degree of anaplasia not only varied from tumor to tumor, but also within different sections of the same tumor, and a meaningful classification on this basis could not be made. One tumor met the classical description of medullary carcinoma, but had little of the frequently associated lymphocytic infiltration. One tumor was an intraductal papillary carcinoma in which there were

adjacent minute areas of lymphatic invasion. There were two instances of classical Paget's carcinoma of the breast reported in detail elsewhere.[4] Of the 24 men subjected to radical mastectomy, eight (33%) had axillary lymph node metastases.

Treatment

After evaluation of operative risk and extent of disease, the 32 patients were classified for treatment. Twenty-four (75%) were found suitable for radical mastectomy. Two other patients with disease clinically localized to the breast were treated by simple mastectomy because of severe cardiovascular disease. The six remaining patients had evidence of extension beyond the breast and axillary nodes: two with ulcerative lesions had simple mastectomies, and four underwent biopsy followed by other palliative therapy.

Postoperative radiation therapy to the ipsilateral axillary, supraclavicular and internal mammary node areas was given to four of the eight patients who were proved to have axillary metastases. No other specific therapy was employed as an adjunct to radical mastectomy.

Results

As of April 1, 1969, all 32 patients had been at risk for at least 5 years, and 21 for 10 years. Those still living were examined to determine the presence or absence of breast cancer as of April, 1969. Crude survival rates for the entire group regardless of stage or treatment were 47% (15/32) at 5 years and 38% (8/21) at 10 years. At the 5-year point, two of the 15 survivors had detectable recurrence of cancer and died prior to the 6-year point. Sixteen of 24 patients subjected to radical mastectomy had axillary lymph nodes histologically free of tumor, and only one subsequently died of carcinoma of the breast (at 63 months). All eight patients who had proven axillary lymph node metastases died of cancer within 1 to 6 years (average 38 months) of mastectomy, and only one reached the 5-year point. There was no discernible difference in survival between the four patients who received postoperative

TABLE 1. *Comparison of Clinical Features of Mammary Cancer in Men and Women at the Hospital of the University of Pennsylvania*

		HUP/VA Males	HUP Females[5]
Mean age		60.0 yr.	53.7 yr.
Nipple discharge		19%	6.9%[16]
Nipple/areolar abnormality		59%	—
Cumulative duration of symptoms:	less than 3 mos.	56% (18)	50% (368)
	6 mos.	66% (21)	67% (501)
	1 yr.	75% (24)	81% (605)
	2 yr.	90% (29)	89% (661)
	3 yr.	94% (30)	94% (696)

TABLE 2. *Comparison of Mastectomy and Five-Year Survival Statistics among Groups of Men and Women*

		HUP Female[5]	HUP/VA Male	Collected Male*
Frequency of radical mastectomy		83% (665/800)	75% (24/32)	63% (181/286)
Incidence axillary lymph node metastases (Histologic)		52% (345/665)	33% (8/24)	58% (85/146)
5-year survival after radical mastectomy				
Axillary lymph node metastases (Histologic)	Present	43% (148/345)	13% (1/8)	30% (23/77)
	Absent	79% (252/320)	88% (14/16)	76% (32/42)
Overall		60% (400/665)	63% (15/24)	46% (55/119)

* References 2, 3, 7, 8, 14, 17.

radiation therapy and the four who did not. Two patients thought to have tumor confined to the breast and who underwent simple mastectomy died of cardiovascular disease 2 and 3 years postoperatively without clinically evident recurrence of their breast cancer. All six patients with tumor evident beyond breast and axillary lymph nodes at the time of initial treatment died within a year.

We were unable to find clinical parameters correlating with survival other than presence or absence of metastases in our series of 32 cases. Duration of symptoms, size of tumor, and ulceration were found equally distributed among survivors and non-survivors.

Discussion

A comparison of some clinical features of mammary cancer in men and women treated concurrently in our hospital is given in Tables 1 and 2. Men on the average were 6.3 years older, a finding in accord with the 6 to 8 year lag in peak incidence others have reported in men.[9, 10] Although both sexes presented most often because of the discovery of a mammary mass, our men had an incidence of nipple discharge more than twice that of women, only slightly exceeding the 16% incidence in men reported elsewhere.[7] Furthermore, men show a unique tendency for nipple and areolar involvement. The spectrum from retraction and fixation through encrustation to frank ulceration was seen in over one half of our men, and in two thirds of the 110 primary operable cases of male mammary cancer reported by Holleb.[7]

Treatment of the primary mammary tumor did not differ between the sexes. Our preference was a standard radical mastectomy if evaluation of the patient disclosed no evidence of tumor beyond the breast and axillary nodes, and if the patient was a reasonable surgical risk. Many authors have stressed the wisdom of planning in advance to employ split-thickness skin grafts to close mastectomy wounds in men to avoid any subconscious temptation to resect with inadequate skin margins. We detected no difference in local recurrence or survival rates between our 13 grafted and 11 non-grafted patients.

Comparison between the sexes of prognosis in mammary cancer is hindered by the scarcity of data for men. For example, only six reports during the past 25 years provide 5-year survival data for men following radical mastectomy according to presence or absence of lymph node metastases proven histologically (Table 2). Even fewer 10-year survival data are available (Table 3). Unfortunately, these reports summarize experience reaching back into the early 1920's, and do not provide concurrent populations of women for comparison.

The available survival data do suggest a poorer prognosis for men overall, apparently due to the relatively poor salvage in the group with axillary metastases. Holleb's [7] statement that mammary cancer is not more lethal in men when compared to similar groups of women is open to question. For example, the 27% (12/45) 5-year survival he reports among men at Memorial Hospital following mastectomy for carcinoma with axillary metastases is approximately half that reported from the same hospital for comparable women in the 1940 to 1957 period.[1]

Other factors which might influence the prognosis of mammary carcinoma in men relative to women can be identified but their importance is more difficult to assess. Those thought to be of significance include patient age, delay in treatment, stage at time of treatment, volume of tissue interposed between tumor and other structures and tumor location.

There is dispute about the significance of the greater age of the man with mam-

mary cancer and the resulting increase in his age-related mortality. For example, a study of 72 men and 830 women by the Philadelphia Breast Cancer Registry [9] showed that apparent differences in survival between the sexes disappeared when the data were corrected for the higher age and age-related mortality in men with mammary cancer. However, in Finland crude 5-year survival rates for mammary cancer of 26% for men and 52% for women remained dissimilar (34% and 54%, respectively) despite adjustment for age.[13]

Although we could detect no greater delay in treatment for men compared to women with mammary cancer in our hospitals (Table 1), the experience in Philadelphia hospitals as a whole has indicated significant delay in diagnosis in 77% of men compared to 60% of women, with delays of a year or more occurring in almost one third of men compared to only one fifth of women.[9] Others have found a worsening prognosis to be associated with such increases in delay and attendant increased tumor size and occurrence of ulceration.[11]

Variation between the sexes in stage of mammary cancer at the time of treatment is a critical factor which proves nearly impossible to evaluate. As judged by the frequency of radical mastectomy, and by the subsequently discovered incidence of axillary lymph node metastases, men may present for treatment at a slightly more advanced stage. Although we found little difference in the number of men suitable for radical mastectomy at the time of their initial examination, others report a considerably lower rate (Table 2). A source of error in these data impossible to assess is exclusion from radical mastectomy for reasons other than the extent of tumor. The incidence of axillary metastases culled from prior reports of men undergoing radical mastectomy is considerably greater than our own (Table 2), but little above that commonly reported for women over the past 30 years.

TABLE 3. *Ten-Year Survival Following Radical Mastectomy in Men*

	Axillary Lymph Node Metastases (Histologic)		
	Present	Absent	Overall
Liechty[8] (1967)	0/9	1/3	1/12
Haagensen[6] (1971)	1/9	7/12	8/21
HUP/VA	0/5	8/11	8/16
Total	1/23 (4.3%)	16/26 (62%)	17/49 (35%)

A tumor arising in the male breast finds itself very soon in contact with a number of surrounding structures. We have already noted the strikingly high incidence of overlying skin involvement and it is equally true that extension to underlying structures may occur frequently and perhaps earlier in the natural history of the tumor as well. Women may in a sense be protected for a time by the greater mass of tissue intervening between primary tumor and regional node or adjacent non-mammary structures. In addition, male mammary tumors are necessarily central in location, and it has been frequently observed that central or medial lesions carry a poorer prognosis in the woman than do the more common lateral lesions, perhaps because of a higher incidence of internal mammary node involvement. The effect of these factors in this small series of cases or in published reports is impossible to evaluate, but they may well bear on the marked relative worsening of prognosis for men once axillary metastases have occurred.

Summary

Experience accumulated over a 25-year period with 32 men with mammary cancer was analyzed. Their overall survival was

47% (15/32) at 5 years and 38% (8/21) at 10 years. Of those subjected to radical mastectomy, 63% (15/24) survived 5 years, and 50% (8/16) 10 years. None with axillary lymph node metastases lived past the sixth year, and only one reached the 5-year point. Comparison to women concurrently treated demonstrated that men were older and had a higher incidence of nipple discharge and nipple or areolar abnormalities. Fewer men were found suitable for radical mastectomy for both tumor and non-tumor related reasons. Available data show a poorer prognosis for men than women following radical mastectomy due principally to lower salvage among those with axillary lymph node metastases. Additional factors adversely affecting overall prognosis include treatment at a relatively more advanced stage and the greater age and age-related mortality characteristic of men with mammary cancer.

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