

# Sweat Gland Carcinoma:

## A Clinico-Pathologic Study of 83 Patients

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SWEAT gland carcinoma, a rare malignant tumor was first described by Cornil in 1865.<sup>7</sup> Numerous reports of single or small numbers of cases have since been recorded.<sup>2, 3, 5, 6, 8, 9</sup> In many instances the sweat gland origin or its malignancy were doubtful. Distant metastases were considered to be infrequent; in a review of the literature in 1960 there were 24 metastasizing sweat gland carcinomas.<sup>4</sup> The first comprehensive pathologic study of a large number of cases was reported from this center by Berg and McDivitt in 1968.<sup>1</sup> This report updates their study to 1969, and also reviews the clinical aspects and results of treatment among the patients seen at Memorial and James Ewing Hospitals from 1934 onwards.

### Material

Over the 35 years 1934 to 1969 inclusive, 83 patients with the confirmed diagnosis of sweat gland carcinoma in different areas of the body were seen at Memorial Cancer Center. Only lesions of the breast were excluded because of special problems concerning origin and treatment.

There were 44 females and 39 males, the youngest was seven years of age and the oldest 86 years. The highest incidence was in the sixth and seventh decades (Fig. 1). The anatomical distribution is shown in Figure 2. In 28 patients (33.6%) the lesions were in the head and neck region.

### Clinical Features

The majority of the lesions started as painless red or violet papules slowly growing and progressing to form solid nodules infiltrating subcutaneous tissue. Two patients had cystic growths. Ulceration of skin was uncommon, occurring mainly in recurrent or large lesions. It was hard to differentiate clinically, sweat gland carcinoma from a variety of skin lesions such as keloid, hemangioma, dermatofibrosarcoma, protuberans, lymphoma or metastatic carcinoma. Histologic examination was the only means of diagnosis.

The neoplasms rarely exceeded 5 cm. in diameter. Larger lesions were found on the back or gluteal region and the largest tumor measured 15 cm. in diameter. The growth was present for several months or years but was ignored because of its small size and the absence of symptoms. The tumors were present for at least one year in 45 patients or 54% and for more than 5

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years in 19 patients or 23%. Increase in size, ulceration, bleeding following minor trauma and occasionally the development of metastases prompted the patients to seek medical advice.

**Pathology**

Histologic material was classified according to the criteria outlined by Berg and McDivitt.<sup>1</sup> Histological grading and the number of patients in each grade is shown in Table 1.

Twenty-nine of 68 patients who were followed for 5 years or more developed metastases to regional lymph nodes. Ten presented with lymph node metastases while 19 developed metastases from 3 months to 9 years after diagnosis or initial therapy. In this latter group of 19 patients, 14 had one or more local recurrences before involvement of regional lymph nodes was evident. Also spread to regional lymph nodes was more frequent in undifferentiated and anaplastic tumors (Table 2).

Twenty-six patients developed distant metastases, only four of whom did not have prior lymph node involvement. Eight

SITE DISTRIBUTION IN 83 PATIENTS

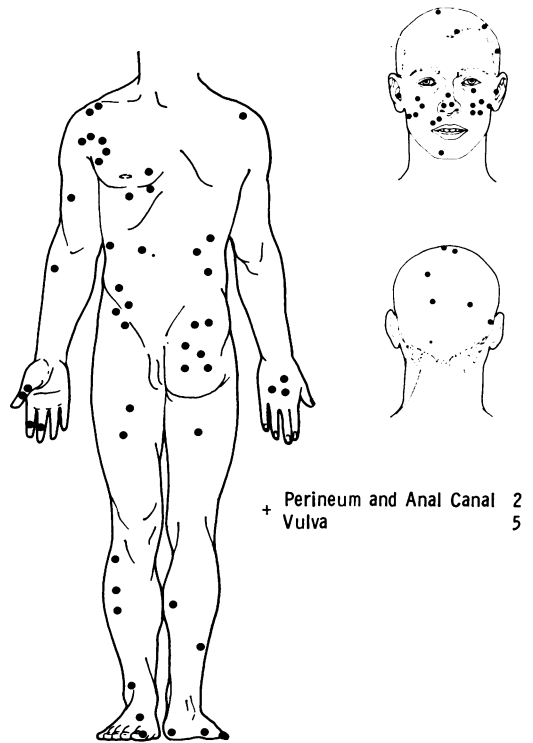


FIG. 2. Anatomical distribution.

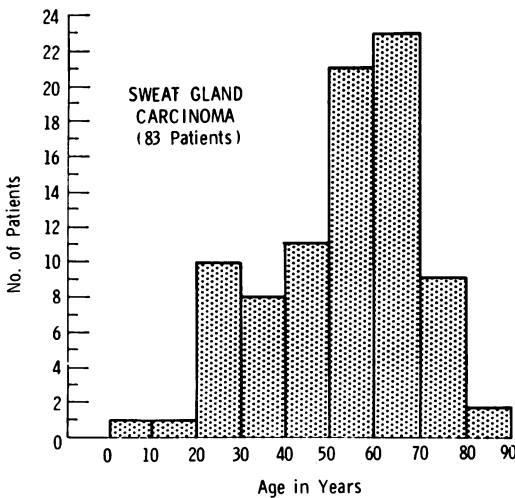
patients who died had post-mortem examinations.

**Previous Irradiation to Tumor Site**

Eight patients had previous irradiation. The period between irradiation and detection of the tumor ranged from 6 years to 40 years. In six the radiation was given to the head and neck area and in two to the hand. Four patients developed multiple skin cancers in the irradiated field. A sweat gland carcinoma of the face was diagnosed in one patient who had not had previous irradiation but developed multiple facial basal cell carcinomas treated by repeated surgical excisions.

**Previous Therapy**

Fifty-five patients received some form of therapy to primary lesions before they were



Youngest - 7  
Oldest - 85  
Male 39  
Female 44

FIG. 1. Age distribution.

TABLE 1. *Histological Classification (83 Cases)*

Type		No. of Pts.	Dead with Disease
Low grade differentiated	I	22 (26.5%)	2
Low grade undifferentiated	II	7 (8.5%)	2
High grade differentiated	III	30 (36%)	10
High grade undifferentiated	IV	17 (20.5%)	14
Anaplastic small cell	V	7 (8.5%)	6

TABLE 2. *Incidence of Lymph Node Metastasis in Relation to Histological Pattern*

Type		%
Low grade differentiated	I	9
Low grade undifferentiated	II	14
High grade differentiated	III	37
High grade undifferentiated	IV	71
Anaplastic small cell	V	86

referred to this center. In 28 the tumors were treated by local excision and seven of these did not require further therapy. Pre- or postoperative radiation therapy was given to 14 patients in addition to local excision: 13 patients had multiple excisions for recurrent tumors.

### Definitive Treatment and Results

Forty-two patients were treated by wide local excision. Thirty other patients in addition had simultaneous or subsequent dissections of the regional lymph nodes. Four patients were treated by exarticulation of the extremities for advanced recurrent lesions. In the remaining seven patients who had extensive or widespread disease, five were treated by radiation therapy and two by chemotherapeutic agents.

Three of 71 patients who received treatment to primary lesions at least 5 years ago were lost to follow-up. In the remaining 68 patients 26 were living free of disease at the end of 5 years (Table 3). Analysis of long term survivals revealed that both lymph node metastases and the degree of cellular anaplasia adversely influenced the

cure rate (Tables 4, 5, 6). In this group of 68 patients the tumors were treated by wide local excision in 35. In 14 who did not have previous therapy, 11 were living free of disease at the end of 5 years. In the remaining 21 patients who had some form of initial therapy and then developed recurrences, ten survived more than 5 years free of disease.

Of the 83 patients constituting the material for this study, 37 are dead, four are lost to follow-up and 42 are still living. Out of 37 patients who expired 31 died of the tumors. One patient with a tumor of the vulva, recurrent after local excision, has been living with disease over 5 years. Thiotepea was injected in the tumor twice over a period of 2 years and the patient was given Cytoxan during that time.

### Discussion

Adenocarcinoma of sweat gland origin is uncommon. Accumulation of a relatively large number of histologically-documented and followed patients at the Memorial

TABLE 3. *Survival in 26 Patients Free of Disease*

Definitive Treatment	No. of Patients		
	5 Years	10 Years	Still Living
Wide local excision	20	13	16
Wide excision + node dissection	6*	2**	4

\* 2 had negative nodes.

\*\* 1 had negative nodes.

TABLE 4. *Histological Pattern and Survival*

Type	Survival N.E.D. >5 yrs.
Low grade differentiated	I 14/20 (70%)
Low grade undifferentiated	II 4/6 (67%)
High grade differentiated	III 7/19 (37%)
High grade undifferentiated	IV 0/15 (0%)
Anaplastic small cell	V 1/6 (17%)

TABLE 5. Results in 68 Patients (5-yr. follow-up)

Survival		Total No.		Nodes Neg.		Nodes Pos.	
		(68)		(44)		(24)	
		No.	%	No.	%	No.	%
5 Years	Total*	34	50	27	67	7	29
	NED	26	38	22	50	4	17

\* Included patients surviving with disease.

Cancer Center, provided an opportunity to analyze the clinical behavior and response to treatment of this rare neoplasm.

The tumor was found frequently in the elderly, and the incidence was slightly higher in females, 54% of the patients studied. The neoplasm has a long period of latency which exceeded 1 year in over half of the patients, the longest interval being 36 years. This long course did not entail a better prognosis. Two patients died with widespread metastases in less than 3 years following excision of tumors which had been present for 15 and 20 years, respectively.

The predominant tumor spread was by lymphatics to regional lymph nodes. High incidence of lymph node involvement accompanied anaplastic and recurrent lesions. The results of treatment were uniformly poor in anaplastic tumors and in the presence of lymph node metastases. It is evident from this study that wide surgical excision is adequate only in primary low grade or well differentiated neoplasms. If limited excision is performed and the unsuspected diagnosis of malignant sweat

gland tumor established, then the operative area should be widely excised and reconstructed.

Highly undifferentiated and anaplastic carcinomas should be treated by radical surgical excision and elective dissection of the regional lymph nodes, as should tumors recurrent after previous wide excision. Clinically palpable lymph nodes regardless of stage of disease, in the absence of distant metastases are an indication for lymph node dissection.

The tumor is generally radioresistant and radiation therapy did not effect any cures in this series. There is also no evidence to support the contention that pre- or post-operative radiation therapy is of value. Chemotherapeutic agents, on the other hand, may play a role in controlling locally advanced disease as shown in one patient with recurrent tumor of the vulva.

### Conclusion

Sweat gland carcinoma has a chronic and protracted course. It is possible to separate these tumors histologically into low and high grade variants. This separation corre-

TABLE 6. Results in 54 Patients (10-yr. follow-up)

Survival		Total No.		Nodes Neg.		Nodes Pos.	
		(54)		(32)		(22)	
		No.	%	No.	%	No.	%
10 Years	Total*	20	37	18	56	2	9
	NED	17	31	16	50	1	4.5

\* Included patients surviving with disease.

lates with the frequency of metastases and local recurrence.

Wide surgical excision is the treatment of choice in low grade primary neoplasms. Regional lymph node dissection is indicated in the presence of clinically involved nodes, in lesions recurrent after previous wide excision and in highly undifferentiated and anaplastic tumors.

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### ERRATUM

In Moore, W. S. and Hall, A. D.: Late Suture Failure in the Pathogenesis of Anastomotic False Aneurysms, Ann. Surg., 172:1068, 1970, the last sentence in the first paragraph, left column, should read:

In our experience with aorto-femoral bypass using Dacron sutures, false aneurysms *do not* occur in the absence of infection.