SQUAMOUS-CELL CARCINOMA OF THE SKIN

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Squamous-cell carcinoma occurs anywhere on the skin or the mucocutaneous junctions—the lip, penis, serotum, vulva, clitoris, and anal ring. While our study included hornified squamous carcinoma occurring at all of these sites, it was thought desirable to confine this paper to a consideration of the 227 cases involving the skin which were treated at the State Institute for the Study of Malignant Disease prior to 1927. We have previously reported 295 cases of squamous-cell carcinoma, or epithelioma—173 of the lip (1), 29 of the clitoris and vulva (2), 60 of the penis (3), 15 of the anal ring (4), 18 of branchiogenic origin (5)—with the etiological factors, ages, treatment, and five-year end-results.

Ewing (6) states that adult hornified squamous carcinoma or acanthoma is characterized by "the presence of adult squamous cells, hornification, and pearl formation."

Epithelioma of the skin is remarkable for its diversity of origin and clinical course. In our series lesions were observed at the following sites: 28 on the nose, 24 on the eyelid, 76 elsewhere on the face excluding the lip, 29 on the ear, 30 on the hand, 2 on the arm, 6 on the foot, 7 on the leg, 7 on the scalp, 9 on the neck, 3 on the skin over the chest, 4 on the skin over the back and abdomen. These tumors may be single or multiple. They occur, as a rule, late in life but exceptions to this rule are not uncommon. The age incidence in our series was as follows: nineteen years, 1 case; twenty-five years, 1 case; thirty to thirty-nine years, 10 cases; forty to forty-nine years, 15 cases; fifty to fifty-nine years, 42 cases; sixty to sixty-nine years, 59 cases; seventy to seventy-nine years, 74 cases; eighty to eighty-nine years, 23 cases; ninety-five years, 2 cases.

The following description of the lesion is quoted from Ewing's Neoplastic Diseases:

"The early lesion of acanthoma of the skin appears in two main types which it is highly important to distinguish.

"(a) Many acanthomas pass through a preliminary papillomatous stage, in which they appear as definite, elevated, warty outgrowths, movable on the superficial fascia. Histologically these lesions are malignant, but they long remain localized and
tend to spread laterally. In this phase they offer a good prognosis, which is lost when the lesion becomes fixed, ulcerated, and depressed.

"(b) Other acanthomas are flat, depressed, indurated, and infiltrating from a very early period. They are less impressive externally, but early ulcerate and invade the deeper tissues and lymph-nodes, usually with a tendency to assume the structure of tubular carcinoma, in which squamous characters are lost.

"In the more advanced stages of both types there is erosion and ulceration, and the lesion gradually extends in the form of a broad ulcer with raised nodular indurated edges and granulating base. Acanthoma of the skin differs from rodent ulcer chiefly in its early papillary appearance, more rapid lateral extension, and more destructive course. Yet both types of carcinoma may occur in the same lesion. Occurring in tissues previously altered by syphilis, tuberculosis, etc., its progress is facilitated by this association. The local aggressive tendencies of acanthoma tend to produce deep ulceration with extensions along blood-vessels and nerves with pain and hemorrhage, and invasion of lymphatics with metastases in lymph-nodes and occasionally in internal organs. . . . Secondary infection by streptococcus is nearly constant with deep ulcers, may accompany the metastases, greatly influences the course and termination, or may even dominate the clinical picture."

Among our 227 cases of squamous-cell carcinoma were 14 in which the two types of epithelioma (pearl and basal-cell) were present in one lesion. I do not believe that basal-cell epithelioma of the skin ever metastasizes. When this condition apparently exists, I believe that we are dealing with a mixture of basal-cell and pearl-cell formation (7).

"Acanthoma of the skin is almost exclusively the result of chronic traumatism, but the forms of the irritation are extremely varied, and the relation to the tumor is indirect" (Ewing). Traumatism incident to the use of tobacco in smoking, especially of pipes and cigars, old scars and burns, x-ray dermatitis, chronic eczema, psoriasis, venereal diseases, bites of insects, and warts of various kinds, have all been observed as etiological factors. In our series, a history of injury was given in 39 cases, a cut, a bruise, a burn, or trauma to an existing wart or mole. History of heredity was noted in only 27 cases; a positive Wassermann reaction in 23 cases. One hundred and fifty-six of the lesions occurred in males, and 71 in females. In tabulating the occupations, a large percentage of farmers and others who are exposed to inclement weather conditions was found.

Duration of the lesion varied from three weeks to forty years. The symptoms were a warty growth, an old existing wart or mole
Figs. 1 and 2. Squamous-Cell Carcinoma of the Inner Canthus of the Left Eye and Across the Bridge of the Nose, Group I, Before and After Treatment by Low-Voltage Unfiltered X-rays; Five-Year Clinical Cure

Figs. 3 and 4. Squamous-Cell Carcinoma of Skin over Left Parotid Region, Group I, Before and After Treatment by Low-Voltage Filtered X-rays and Coagulation

Patient clinically well when death occurred from intercurrent disease.
which had been injured, a pimple, scaliness, a lump, a crack in the skin, or trauma which did not heal.

All cases in this study are divided into two groups; in Group I are placed all those which showed no regional lymph-node metastases and which had not invaded the bone, cartilage, or tendons, at time of admission. Group II includes all those which showed bone, cartilage, tendon, or lymphatic involvement.

The treatment of these cases consisted, primarily, of irradiation by x-rays, low-voltage and high-voltage; radium, filtered and unfiltered, surface applications and, at times, the 6 cm. pack. Electrocoagulation and surgery were sometimes employed as curative or palliative measures. Surgery was used in those lesions involving an extremity, with tendon or bone involvement; electrocoagulation was used on the face where cartilage or periosteum of the eyelids, nose, or ears was involved.

As the factors of irradiation treatment have been given in earlier papers, it may be summarized briefly here. Treatments with unfiltered x-rays were given once or repeated in six or eight weeks with from two to three times the erythema dose at a sitting. The high-voltage x-ray factors were: 200,000 volts; 0.5 mm. copper and 1.0 mm. aluminum filter; distance of 30 to 50 cm.; 30 ma.; time factor adjudged according to distance. When radium was used, a large amount filtered through 0.1 mm. brass was applied for from 12 to 16 mc. hrs. at one sitting. For the radium packs the factors were 6 cm. distance; filtration, 0.5 mm. silver, 2 mm. brass, 1 mm. aluminum, and 1 cm. rubber; 6,000 to 8,000 mc. hrs.
Figs. 7 and 8. Squamous-Cell Carcinoma of Tip of Nose, Group I, Before and After Treatment by Low-Voltage Unfiltered X-rays

Patient clinically well five years.

Figs. 9 and 10. Squamous-Cell Carcinoma of Dorsum of Right Hand, Group I, Before and After Treatment by High-Voltage X-rays, Followed by One Treatment with Low-Voltage Unfiltered X-rays

Patient clinically well, died from intercurrent disease.
Results of Treatment: One hundred and fifty-six cases were placed in Group I. Of these, 104 were found available for five-year statistics, of which 57, or 54.8 per cent, are well after the five-year interval. Seventy-one cases were placed in Group II. Sixty of these were available for five-year statistics; 4 patients or 6.6 per cent, are well after a five-year interval.

The following is a detailed report of the results of treatment:

Group I (156 cases)

57 patients clinically well five years or more (2 had recurrences after five years, but are now well after subsequent treatment for one and two years respectively)

28 patients died from intercurrent disease:
FIGS. 13 AND 14. SQUAMOUS-CELL CARCINOMA OF RIGHT FOOT, WITH METASTASES IN THE RIGHT GROIN, GROUP II, BEFORE AND AFTER TREATMENT BY HIGH-POWER X-RAYS TO THE FOOT AND GROIN, FOLLOWED BY AMPUTATION OF THE FOOT

Patient clinically well over five years.


Patient clinically well over five years.
22 clinically well from five months to four years
2 clinically well nine months and five months respectively, recurrences, lesion
not healed at time of death from intercurrent disease
2 improved, died between one and two years
2 unimproved, died two months from time of admission
44 deaths from progression of the disease:
17 in less than a year
14 in one to two years (1 with metastases to lungs and lymph nodes)
5 in two to three years (1 patient clinically well one year, recurrence, death
from progression of disease and metastases in axilla)
1 in three to four years (lesion clinically well at time of death for one year
eight months, death from metastases)
3 in four to five years (1 with thoracic metastases; 1 with metastases to
submaxillary region)
2 in five to six years (1 patient clinically well four years four months, re-
currence, death five years and three months from the time of admission,
unimproved from time of recurrence)
2 in six to seven years (1 patient had distinct palliation; the recurrences
healed three times for from five months to a year and a half)
17 living over five years, in whom lesions are not cured but have healed for periods
of a few months to two years at a time, and have recurred, each time
involving larger areas (in one case the lesion is healed at present, but
nodes are palpable in the left submaxillary region)
21 patients lost trace of
12 clinically well from one month to two years
4 did not return after treatment, undetermined
5 unimproved, lost from one to seven months
3 not treated

**Group II (71 cases)**

4 patients clinically well five years or more; one, with ear involvement, treated by
high-voltage x-ray; one, with epithelioma of the hand, treated by unfil-
tered x-rays to the lesion and then amputation of the hand; another with
epithelioma of the hand treated by amputation of the hand and high-
voltage x-rays to the metastases in the axilla; one with epithelioma of
the foot treated by amputation of the foot and high-voltage x-rays to
metastases in the groin

6 patients died from intercurrent disease:
1 clinically well from three to four years
2 clinically well from one to two years
1 clinically well less than a year
1 with lesion and metastases improved in from one to two years
1 with lesion unimproved in ten months

3 patients living five to six years, lesion progressing slowly
53 patients died from progression of the disease:
32 in less than a year (in 2 cases the original lesion was cured; death from
metastases)
13 in one to two years
6 in two to three years (in 2 cases the lesion was cured for two years; death
from metastases)
1 in three to four years
1 in six years and three months from the time of admission, from metas-
tases in the axilla (removal of tumor, clinically well two years, recur-
rence; removal of hand, clinically well two years three months; metas-
tases in axilla; stump remained cured at time of death)

4 patients lost trace of:
1 had palliation from three to four years
2 unimproved in four months
1 immediately after treatment, undetermined
1 not treated

**Conclusions**

I. Among 104 Group I cases of squamous-cell epithelioma avail-
able for five-year statistics, 54.8 per cent of the patients are
alive and well five years or longer. This percentage is
low, as thirty-four cases were lost which had healed out.

II. Among 60 Group II cases available for five-year statistics,
6.6 per cent of the patients are alive and well five years or
longer.

III. Irradiation was of great value in many of the cases which
were not completely healed. The palliative results in a
few instances were remarkable.

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