

### Treatment

No treatment is known which influences the course of the disease.

### SUMMARY

This review of our experience with 14 cases of sub-acute inclusion encephalitis is presented in order to emphasize the fairly specific clinical pattern with which the disease usually presents. The combination of progressive personality and intellectual deterioration with focal neurological signs is highly suggestive and diagnostic confirmation is almost always obtained from the EEG and examination of the spinal fluid.

### REFERENCES

1. DAWSON, J. R., JR.: *Amer. J. Path.*, 9: 1, 1933.
2. *Idem*: *Arch. Neurol. Psychiat. (Chicago)*, 31: 685, 1934.
3. VAN BOGAERT, L.: *J. Neurol. Neurosurg. Psychiat.*, 8: 101, 1945.
4. FOLEY, J. AND WILLIAMS, D.: *Quart. J. Med.*, 22: 157, 1953.
5. VAN BOGAERT, L.: *Cereb. Palsy Bull.*, 3: 17, 1961.
6. VAN BUREN, J. M.: *J. Neuropath. Exp. Neurol.*, 13: 230, 1954.

7. GAGNON, S., COURTOIS, A. AND DUCHASTEL, Y.: *Un. Méd. Canada*, 88: 921, 1959.
8. MOSSAKOWSKI, M. J. AND MATHIESON, G.: *Neurology (Minneap.)*, 11: 461, 1961.
9. AKELAITIS, A. J. AND ZELDIS, L. J.: *Arch. Neurol. Psychiat. (Chicago)*, 47: 353, 1942.
10. MALAMUD, N., HAYMAKER, W. AND PINKERTON, H.: *Amer. J. Path.*, 26: 133, 1950.
11. SMITH, D. E. *et al.*: *Ibid.*, 27: 699, 1951 (abstract).
12. LANDAU, W. M. AND LUSE, S. A.: *Neurology (Minneap.)*, 8: 669, 1958.
13. LESSE, S., HOEFER, P. F. A. AND AUSTIN, J. H.: *A.M.A. Arch. Neurol. Psychiat.*, 79: 359, 1958.
14. CHAO, D.: *J. Pediat.*, 61: 501, 1962.
15. SIMPSON, J. A.: *Lancet*, 2: 685, 1961.
16. LAIRD, M. R.: *New Zeal. Med. J.*, 59: 577, 1960.
17. VAN WYMEERSCH, H. *et al.*: *Rev. Neurol. (Paris)*, 96: 157, 1957.
18. COBB, W., MARTIN, F. AND PAMPIGLIONE, G.: *Brain*, 75: 343, 1952.
19. JONES, D. P. AND NEVIN, S.: *J. Neurol. Neurosurg. Psychiat.*, 17: 148, 1954.
20. WATSON, C. W. AND DENNY BROWN, D.: *A.M.A. Arch. Neurol. Psychiat.*, 70: 151, 1953.
21. MILLAR, J. H. D. AND COEY, A.: *Electroenceph. Clin. Neurophysiol.*, 11: 582, 1959.
22. ZAPPOLI, R.: *Ibid.*, 11: 571, 1959.
23. WATSON, C. W., FLYNN, R. E. AND SULLIVAN, J. F.: *Ibid.*, 10: 780, 1953 (abstract).
24. LEBEAU, J. AND DONDEY, M.: *Ibid.*, 11: 43, 1959.
25. RADERMECKER, J. AND POSER, C. M.: *World Neurol.*, 1: 422, 1960.
26. COURTOIS, G. AND COURTOIS, A.: *Un. Méd. Canada*, 90: 801, 1961.
27. CARELS, G.: *World Neurol.*, 1: 524, 1960.
28. KILOH, L. G. AND OSSELTON, J. W.: *Clinical electroencephalography*, Butterworth & Co., Ltd., London, 1961, p. 90.

## Treatment of Squamous Cell Carcinoma of the Skin by Electrodesiccation and Curettage

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IN A previous paper<sup>1</sup> the authors reported on the treatment of basal cell carcinoma (rodent ulcer) by electrodesiccation and curettage. This method of treatment can also be used in certain selected cases of squamous cell carcinoma. Although this is not a new idea, reasonably comprehensive reports on this subject are rare in the medical literature.<sup>2</sup> It is the purpose of this paper to report our results in the treatment of squamous cell carcinoma by this technique.

In our experience the differentiation of some pseudoepitheliomatous conditions from squamous cell carcinoma by routine microscopic tissue examination is very difficult and sometimes impossible. A further problem is that of deciding when an active solar (senile) keratosis has turned the corner and become frankly carcinomatous. It is important, therefore, to state clearly the criteria used to make a diagnosis of squamous cell carcinoma of the skin.

### ABSTRACT

Results of treatment of 108 squamous cell carcinomas of the skin are analyzed. Fifty-one were successfully treated by the technique of electrodesiccation and curettage. There were two treatment failures by this method. Large squamous cell cancers showing histologically a marked degree of anaplasia and/or invasion are not suitable for this technique. Small squamous cell carcinomas, well differentiated, with minimal invasion, occurring on the exposed areas, in elderly and infirm patients can be treated successfully by electrodesiccation and curettage.

### DESCRIPTION OF SQUAMOUS CELL CARCINOMA

In this part we shall review briefly the highlights of squamous cell carcinomas (synonyms: keratinizing carcinoma, prickle cell carcinoma, epidermoid carcinoma, spinocellular carcinoma) with particular emphasis on the features that may influence their management. The clinical information refers to the Caucasian races living in and about Ottawa, Ontario.

From the Ottawa Clinic, Civic Hospital Division, Ontario Cancer Treatment and Research Foundation, Dr. T. G. Stoddart, Director.  
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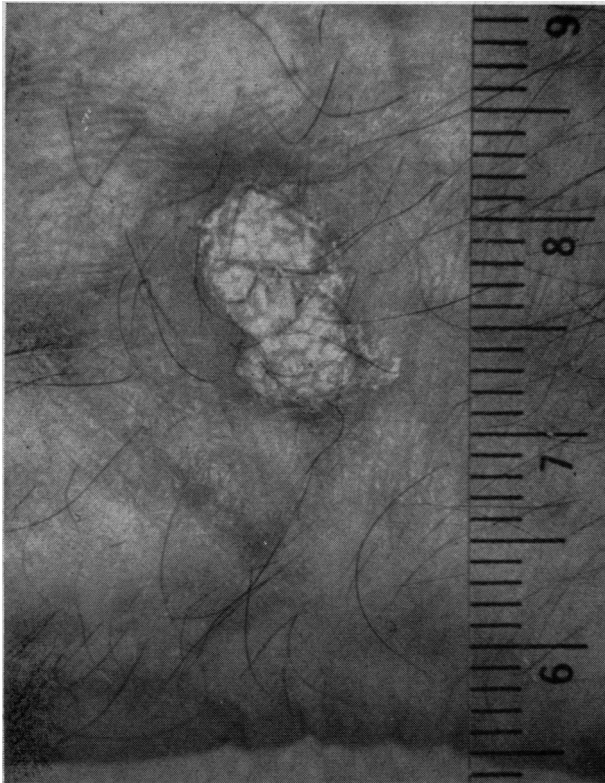


Fig. 1.—Small squamous cell carcinoma arising from solar keratosis on back of hand. Histological examination showed a well-differentiated tumour with minimal invasion. This lesion was treated by the technique of electrodesiccation and curettage.

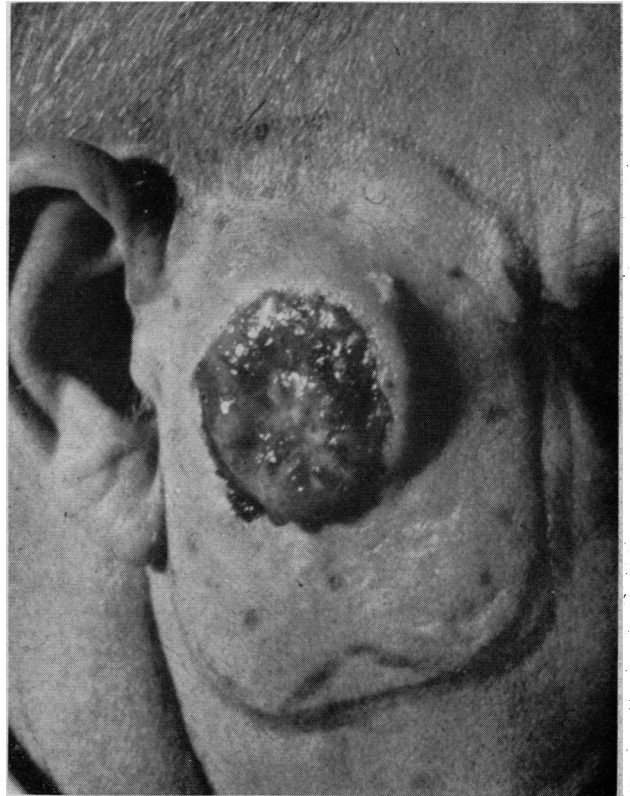


Fig. 2.—Large fungating squamous cell carcinoma on cheek. Histopathological examination revealed a poorly differentiated invasive tumour. This lesion was treated by cobalt-60 needle implants.

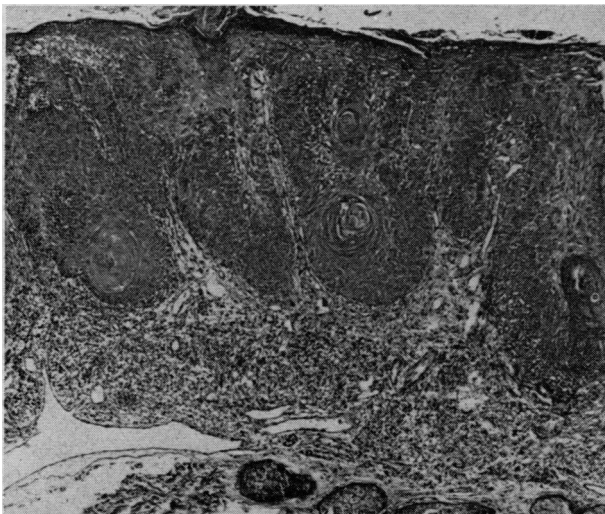


Fig. 3.—Photomicrograph of biopsy from small, well-differentiated squamous cell carcinoma with minimal invasion. Note that tumour has not extended down to the level of the sebaceous glands. All photomicrographs are of sections stained with hematoxylin and eosin. (Approximately 50 X.)

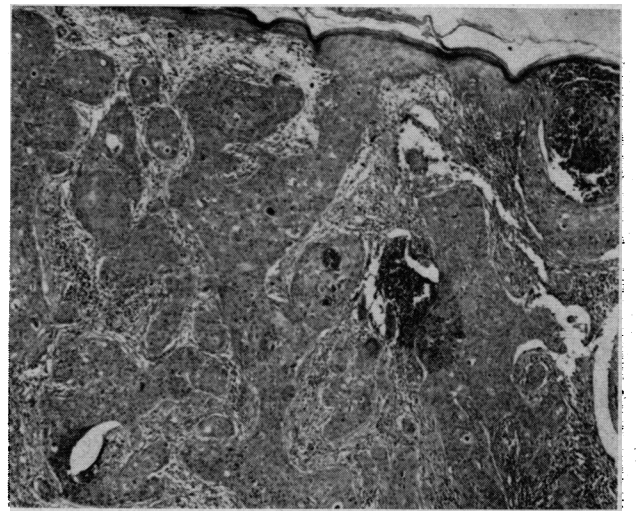


Fig. 4.—Squamous cell carcinoma showing extensive invasion and moderate neoplasia as shown by atypical nuclei, mitoses and loss of normal cell polarity. Compare with Fig. 3. (Approximately 50 X.)

#### A. Clinical (Figs. 1 and 2)

Squamous cell carcinomas<sup>3</sup> are uncommon\* skin cancers occurring most frequently on the sun-exposed surfaces of the head and neck and dorsum of the hands in patients over 60 years of age.

\*For the five-year period, 1957-61 inclusive, the following is a breakdown of the types of skin cancer seen at the Ottawa Clinic, Civic Hospital Division, Ontario Cancer Treatment and Research Foundation:

The basic lesion is a hard nodule, usually of a colour close to that of the adjacent skin. The nodule tends to be outward-growing as compared to the burrowing characteristic of the rodent ulcer (basal cell carcinoma). Squamous cell carcinomas grow fairly rapidly (e.g. a 6-month-old lesion may

Basal cell .....	369	66.5%
Squamous cell .....	111†	20.0
Malignant melanoma .....	31	5.4
Others .....	44	8.1
	555	100.0

†Three of these lesions were not included in this report.

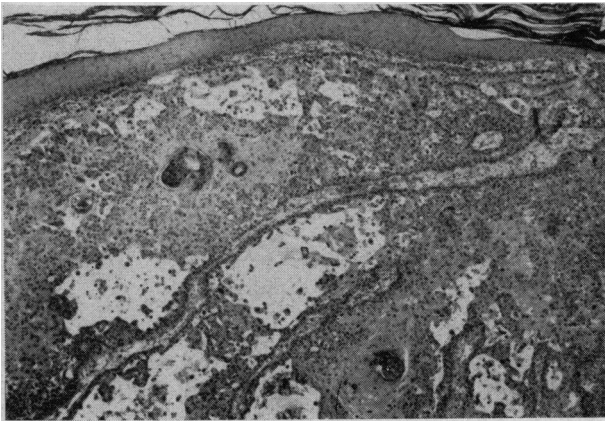


Fig. 5.—Squamous cell carcinoma showing extensive acantholysis—the so-called pseudoglandular or adenoacanthoma type of squamous cell carcinoma. (Approximately 50 X.)

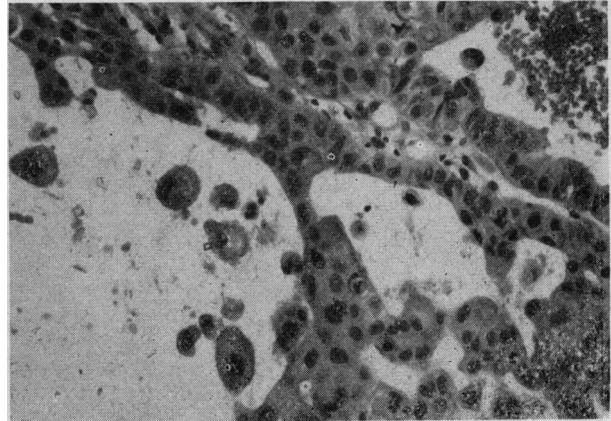


Fig. 6.—Higher magnification of Fig. 5 to show details of acantholytic cells. (Approximately 50 X.)

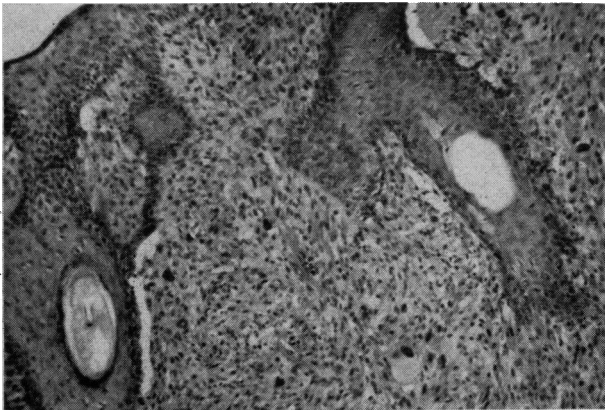


Fig. 7.—Spindle cell type of squamous cell carcinoma. (Approximately 100 X.)

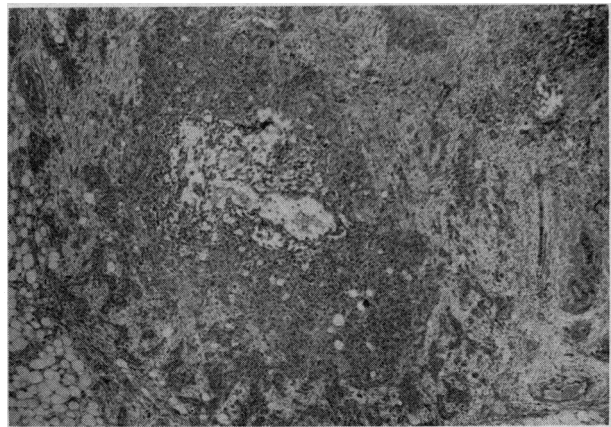


Fig. 8.—Metastatic squamous cell carcinoma in fibrofatty tissue about lymph nodes. Note acantholysis in centre of lesion. (Approximately 50 X.)

be 2 cm. in diameter). This is in contrast to keratoacanthomas which may reach the 2-cm. size in six weeks and to the basal cell carcinoma which may take three years to reach the same size. Central ulceration occurs in almost all squamous cell lesions over 2 cm. in diameter. These tumours are sharply demarcated, and the borders are wider and more indurated than those of basal cell carcinoma. Sometimes an appreciable amount of infiltration of tumour tissue may be felt at the base. Occasionally polypoid and verrucous lesions are seen. Very large lesions (over 4 cm. in diameter) may have sloughing areas owing to avascular tumour necrosis. Regional lymph nodes may be enlarged and hard at the time of initial examination of large tumours and of those of long duration (over two years). Metastases are rare with small lesions. Recurrences usually appear within six months after inadequate removal.

The overall clinical features of squamous cell carcinoma do not make possible as accurate a diagnosis as can be made clinically in the case of basal cell carcinoma. In our series we experienced considerable difficulty in distinguishing between a small (i.e. less than 1.0 cm.) basal cell carcinoma and a small squamous cell carcinoma. Of 108 squamous cell carcinomas, an incorrect clinical diagnosis of basal cell carcinoma was made in 12. It is well-

nigh impossible to make an accurate diagnosis of squamous cell carcinoma in lesions of 1.0 cm. or less solely on the clinical findings, especially when these lesions are located on the face. This means, in effect, that the *diagnosis of small squamous cell carcinoma is a histological one*. Reports based on clinical impressions alone should be viewed with a great deal of scepticism.

Many squamous cell cancers undoubtedly arise from preceding solar (senile) keratoses in fair-skinned outdoor workers. Radiation sequelae and burns may also precede these tumours. Other pre-existing diseases on which squamous cell carcinoma can develop are tar keratoses (Pott's chimney sweep cancers), chronic draining osteomyelitic sinuses, xeroderma pigmentosa, balanitis xerotica obliterans and arsenical keratoses.

The important problem of distinguishing squamous cell carcinomas from keratoacanthomas has been discussed previously.\*

#### B. Histopathological Features<sup>4, 5</sup> (Figs. 3 to 8)

Certain histological facts are of great value in deciding upon the type of management in any particular case.

\*See "Keratoacanthoma: Incidence and Problems in Diagnosis and Treatment", *Canad. Med. Ass. J.*, 89: 312, 1961.

Squamous cell carcinoma is a true invasive carcinoma of the surface epidermis. The tumour is composed of irregular masses of prickle cells which proliferate downward and invade the dermis. Neoplasia is manifested by the presence of cells of abnormal size and shape, numerous and atypical mitoses, loss of normal cell polarity, loss of intercellular bridges, individual cell keratinization (sometimes with horn or pearl formation) and giant cells. Acantholysis may be present throughout the tumour or in localized areas. This produces the so-called pseudoglandular or adenoacanthoma type of squamous cell carcinoma (Figs. 5 and 6). Very anaplastic lesions may show spindle-shaped squamous cells with almost no keratinization (Fig. 7). This so-called spindle cell type of squamous cell carcinoma may arise in skin damaged by previous ionizing radiation. Ulceration and inflammation may also be present. It may be very difficult to distinguish between true well-differentiated squamous cell carcinoma and the pseudoepitheliomatous changes seen in keratoacanthomas and bromodermas and in areas of radionecrosis and about chronic leg ulcers.

Broders introduced a system of grading squamous cell carcinoma from Grades 1 to 4, Grade 1 being the least malignant and Grade 4 being the most malignant. We prefer the designation "well differentiated" or "poorly differentiated", with the addition of a qualifying statement as to the extent of dermal invasion. The term "well differentiated" as we use it compares approximately with Grades 1 and 2 (Broders); the "poorly differentiated" type corresponds approximately to Grades 3 and 4 (Broders).

As a guide in determining treatment for a given lesion two things are sought on examination of the biopsy: the degree of anaplasia and the degree of invasiveness. We regard small, relatively well-differentiated tumours with minimal invasion (Fig. 3) as being suitable for electrodesiccation and curettage. Clinically it has been our experience that these lesions frequently arise in solar (or senile) keratoses, and in fact in some sections the transition from a solar keratosis to a true invasive squamous cell carcinoma can be seen. If a well-differentiated lesion shows extensive invasion, we usually recommend surgical excision or radiation. Poorly differentiated lesions with invasion (Fig. 4) are not suitable for electrodesiccation and curettage. There are, of course, borderline or intermediate cases. In some lesions it is difficult to classify exactly the nature of the lesion on the basis of size, the degree of anaplasia and the degree of invasion. Host factors are also important. An occasional, small, well-differentiated lesion with minimal invasion may act as if it were a highly malignant lesion; a large invading lesion occasionally behaves like a small non-invasive lesion. In such instances clinical activity is a better guide to treatment than the histopathological findings. Such lesions were encountered only rarely in this study.

To repeat, intelligent therapy cannot be planned until an adequate biopsy has been obtained and studied in the light of the factors mentioned.

RESULTS OF THERAPY BY ELECTRODESICCATION AND CURETTAGE COMPARED WITH OTHER METHODS

*Materials and Methods*

All new cases of biopsy-proved squamous cell carcinoma seen at the Ottawa Clinic, Civic Hospital Division of the Ontario Cancer Treatment and Research Foundation, from 1957 to 1961 inclusive were included in this survey, except for three lesions. In one, a fragile, sick 82-year-old woman with a huge tumour on the site of radiation sequelae involving almost the whole side of her face, no biopsy was done; the other two were diagnosed and treated elsewhere and were seen only for follow-up care at our clinic. The authors personally examined all biopsy specimens and reviewed all of the charts.

TABLE I.—SQUAMOUS CELL CARCINOMA: NEW LESIONS 1957 - 1961 INCLUSIVE—ALL BIOPSY-PROVED  
DETAILS OF SEX, AGE, SIZE AND LOCATION OF LESIONS

<i>By sex</i>		<i>By age</i>	
Male.....	75	Under 60.....	18
Female.....	26	60 - 75.....	48
		Over 75.....	35
Total.....	101	Total.....	101
<i>By size</i>		<i>By location</i>	
Under 1.0 cm.....	35	Head and neck.....	96
1 - 2 cm.....	52	Upper extremities.....	8
Over 2.0 cm.....	21	Other.....	4
Total.....	108	Total.....	108

A total of 108 lesions from 101 patients compose this series; seven patients had two lesions each. Table I shows the distribution of these tumours by sex, age, size and location. Three squamous cell carcinomas developed in areas of radiodermatitis.

Table II shows the method of initial treatment and size of the lesion. Note that electrodesiccation and curettage was commonly the initial treatment for lesions under 1.0 cm. in diameter; ionizing radiation, the treatment in lesions over 2.0 cm. in diameter. The one untreated lesion was in a patient who died of myocardial infarction on the same day as the initial diagnostic biopsy was performed.

TABLE II.—SQUAMOUS CELL CARCINOMA: NEW LESIONS 1957 - 1961 INCLUSIVE—ALL BIOPSY-PROVED  
TYPE OF INITIAL TREATMENT AND SIZE OF LESION

	<i>Electrodesiccation and curettage</i>	<i>Surgical excision</i>	<i>Ionizing* radiation</i>	<i>Untreated</i>
Total (108)....	53	23	31	1
<i>Size of lesion:</i>				
Under 1.0 cm...	21	10	4	
1 - 2 cm.....	29	7	16	
Over 2.0 cm....	3	6	11	1

\*Includes cobalt-60 beam, superficial x-ray, deep x-ray, radon seeds, radioactive gold grains, and cobalt needle implants.

### Results of Therapy

Patients with squamous cell carcinomas were routinely followed up for five years. Analysis showed no essential difference in the duration of the follow-up in each treatment group.

TABLE III.—SQUAMOUS CELL CARCINOMA  
FAILURE TO CONTROL DISEASE: 7 OUT OF 108 LESIONS

No.	Age	Location	Size (cm.)	Comments
<i>Electrodesiccation and curettage</i>				
1	58	Left ala nose	2 x 1.6	Histology showed possible basi-squamous. Recurred in 3 mo. Retreated by x-ray. No metastases. Four-year follow-up
2	88	Left ear	2 x 1.5	Histologically an anaplastic lesion. Recurred in 6 mo. Palliative cobalt-60 beam. Died 18 mos. later of carcinomatosis
<i>Surgery</i>				
3	75	Scrotum	6 x 4	Iliofemoral metastases in 1 yr. Palliative cobalt-60 beam. Died of disease in 3 years.
4	80	Right cheek	5 x 6	Died in 1 year of metastatic disease. Secondaries probably present when first seen
<i>Radiation</i>				
5	77	Right mastoid area	8 x 6	Clinically involved submental and submaxillary glands when first seen. Died 2 mo. later of bronchopneumonia. No autopsy
6	87	Right eyebrow	2 x 2.5	Nodes present when first seen. Died of carcinomatosis in 8 mo.
7	68	Back of neck	5 x 3	Tumour present in original lesion 2 mo. after initial treatment. Radical neck dissection performed. Died in 1-1/3 yrs. of carcinomatosis

Table III gives the breakdown in the seven unsuccessfully treated lesions. Three patients (Cases 4, 5 and 6) had metastases when first seen. It is unlikely that any form of therapy would have saved these patients from their disease. Two patients (Cases 3 and 7) had very large lesions. The cancer was not controlled by what is usually considered adequate therapy. Cases 1 and 2 should not have been treated by electrodesiccation and curettage. The biopsy in Case 1 showed some features of a so-called basal-squamous lesion, and we believed that we had eradicated the whole tumour. Successful re-treatment by superficial x-ray caused the remaining tumour to disappear. Case 2 was obviously a highly invasive tumour requiring either surgery or irradiation. It is only fair to point out that one case was treated in 1957 and the other in 1958. Since then we have not had a similar experience.

### INDICATIONS FOR AND CONTRAINDICATIONS TO THE USE OF ELECTRODESICCATION AND CURETTAGE

#### *Technique of Electrodesiccation and Curettage*

This was discussed and illustrated in detail in our previous paper<sup>1</sup> and will not be repeated here. Squamous cell carcinomas are firmer than rodent ulcers, but with supervised instruction and practice it is not difficult to remove all the tumour, using the curette and the hand lens or binocular loupe. If the lesion is obviously a deeply invasive one, after the biopsy has been taken the procedure is stopped, and further therapy may be undertaken based on the histological findings. With practice in choosing the cases for electrodesiccation and curettage this rarely happens. Considerable experience and training are necessary before attempting to perform this technique.

#### *Type of Squamous Cell Carcinoma*

The small well-differentiated cancer (Figs. 1 and 3) with minimal invasion is ideally suited for this method of treatment. These lesions are not particularly radiosensitive, as the lesion is very well differentiated. Ormsby and Montgomery<sup>6</sup> state that "Grades 1 and 2 (Broders) squamous cell cancers are relatively radioresistant, requiring the equivalent of cauterizing doses [of ionizing radiation], so that excision or electrosurgery is preferred." Quite obviously there must be close co-operation between the pathologist and the clinician. As indicated above, there are degrees of anaplasia of squamous cell carcinoma, and the pathologist's help is essential in classifying the lesion. Anyone treating these lesions should have some knowledge of the pathology of these tumours in order to select the best treatment. Many reports base their findings simply on "biopsy-proved" cases, a procedure which may be called "last-line pathology". From such reports it is generally impossible to tell just what type of lesion has been treated, and unless this is known the results are almost meaningless.

#### *Number of Squamous Cell Carcinomas*

The tumours may be multiple, especially the small well-differentiated type with minimal invasion which develops on or from solar keratoses in farmers. To irradiate properly all of these lesions is time-consuming and will produce a poor cosmetic result in addition to producing another precancerous condition, namely, radiodermatitis.

#### *Size of Squamous Cell Carcinoma*

As a general rule, lesions up to 1.5 cm. in diameter may be treated by electrodesiccation and curettage. Lesions under 1.0 cm. are very easily handled.

#### *Age and Infirmitly*

Most of our patients were over 60 years of age. Many were sick and had travelled long distances

for treatment. The one-step method for smaller lesions seemed to be the most considerate approach for them. The alternative of fractionated radiation was not practical in some cases. In a few instances large lesions were treated by electrodesiccation and curettage under local anesthesia, as this was the only feasible treatment. To have suggested hospitalization to some of these elderly and infirm persons would have been a shock to them, and this course of action would have taken them out of their usual surroundings, to say nothing of the expense to the community.

#### SUMMARY AND CONCLUSIONS

The results of treatment of 108 squamous cell carcinomas of the skin have been analyzed; 51 were successfully treated by electrodesiccation and curettage. There were two treatment failures by this method of treatment.

The clinical and histological criteria for selecting the treatment of choice (i.e. ionizing radiation, surgical excision or electrodesiccation and curettage) are discussed in detail. Large squamous cell cancers showing a marked degree of anaplasia and/or invasion histologically are not suitable for this technique. Small squamous cell carcinomas, well differentiated, with minimal invasion occurring on the exposed areas of elderly and infirm patients are best treated by electro-

desiccation and curettage. It is necessary to have a biopsy of every lesion before treatment is administered. This may seem a medical platitude, but it should be noted that the clinical diagnosis in 12 of the 108 lesions in this series was basal cell carcinoma. Physicians treating these skin cancers should have considerable knowledge of their histopathology and the advantages and disadvantages of the various available treatment methods. A team consisting of a radiotherapist, a dermatologist and a plastic surgeon, with the active co-operation of a pathologist, provides the ideal approach. For problem cases this team approach is essential to provide the best possible care to the patient.

We are deeply indebted to Dr. T. G. Stoddart and his co-workers for their co-operation in the preparation of this paper.

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#### REFERENCES

1. WILLIAMSON, G. S. AND JACKSON, R.: *Canad. Med. Ass. J.*, **86**: 855, 1962.
2. KNOX, J. M. *et al.*: *A.M.A. Arch. Derm.*, **82**: 197, 1960.
3. ELLER, J. J. AND ELLER, W. D.: *Tumors of the skin*, 2nd ed., Lea & Febiger, Philadelphia, 1951, p. 325.
4. LEVER, W. F.: *Histopathology of the skin*, 3rd ed., J. B. Lippincott Company, Philadelphia, 1961, p. 425.
5. LUND, H. Z.: *Tumors of the skin. Atlas of tumor pathology. Sec. 1, Fasc. 2*, United States Armed Forces Institute of Pathology, Washington, D.C., 1957, p. 235.
6. ORMSBY, O. S. AND MONTGOMERY, H.: *Diseases of the skin*, 7th ed., Lea & Febiger, Philadelphia, 1948, p. 839.

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