REFRESHER COURSE FOR GENERAL PRACTITIONERS

CANCER OF THE SKIN

BY

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Cancer generally is certainly not decreasing, and there is no reason to suppose that cancer of the skin is any exception to the general trend. Whilst undue prominence given to the subject of cancer in the lay press may lead to carcinophobia, it is probably in the interest of the patient that an accurate knowledge about skin cancer be made more widespread. On the whole, skin cancer is readily accessible to diagnosis and treatment. Furthermore, with one serious exception, it is relatively benign.

As the subject is a large one, only primary cancer of the skin is considered here, omitting secondary deposits from other organs.

Aetiology and Pre-cancerous Conditions

The final factor which determines that epithelial cells should take on abnormal proliferation and invade subjacent structures is uncertain or unknown. There are, however, a number of predisposing factors which recur in case histories and which antecede the appearance of skin cancer. These are trauma, naevi and other benign neoplasms, and certain skin conditions in which there has already been an epithelial change but as yet no invasion.

Trauma

Simple trauma is a common feature stressed by patients. "A blow on the face by a rhubarb stalk," "a nip on the nose by a crayfish," and "continuous squeezing of an exceptionally large blackhead" are actual examples. It is possible that patients are apt to over-stress a remembered injury, as often enough there is a long period of quiescence. It is, however, undoubted that the long-continued traumatic effects of certain physical and chemical agents are predisposing in the production of skin cancer. These are sunlight, x rays, and tar.

Sunlight.—In the fair-haired (blond or red) with blue eyes and a tendency to freckle over-exposure to sunlight is undoubtedly an important factor. The most extreme instance is in the condition known as xeroderma pigmentosum, in which there is complete intolerance to sunlight. From earliest infancy even the slightest exposure is followed by intense freckling and the appearance of keratoses which are immediately followed by the appearance of carcinomata, generally of squamous type. When basal-cell or squamous-cell carcinomata are found in young adults, which is by no means uncommon, although the usual age is from 45 onwards, it is noteworthy that these patients are always blond with blue eyes and have been considerably exposed to the sun. It is well known that in Australia the incidence of skin cancer is considerably higher than in England, and again it occurs mostly in the fair-haired. In later life this type of subject gets numerous hypertrophic and pigmented areas on the face and the back of the hands; these finally form crusts—the so-called solar keratoses. Ulceration slowly occurs under these crusts and the ulcers become malignant,

usually squamous-cell carcinomata. The condition is often known as "sailor's skin" (Fig. 1).

X Rays.—Chronic x-ray dermatitis or x-ray burn is practically always followed in due course by keratoses and subsequent carcinoma, usually squamous-celled in type. Examples occur after epilation by x rays—long since considered an unwise procedure—and after irradiation of secondary glands or other prophylactic procedures. It is a curious fact that usually the malignant

FIG. 1.—"Sailor's skin." Solar keratoses in a farmer. Early squamous-cell carcinoma on left cheek.

change does not occur for many years after the exposure. Three to five years is the usual time lag, but periods up to twenty years have been noted.

Tar.—Exposure to pitch or tar is a well-known carcinogenic factor. All workers in gasworks are examined regularly at least twice a year. The earliest clinical appearance is a small wart, which may or may not change to a carcinoma, usually squamous-celled in type, within a matter of weeks. It is probable that an undue sensitivity to sunlight also plays a part in the production of these carcinomata, as many workers in the gasworks suffer regularly from what is known as "the smarts." This is an intense erythema of the face following quite ordinary exposure to sunlight.

Naevi and Other Benign New Growths

Naevi cells quite often take on malignant characteristics. It has been suggested that epithelial nests, though not producing a definite naevus, may precede the appearance of both basal-cell and squamous-cell carcinomata. This would be a satisfactory explanation for the cases of multiple rodent ulcers—up to fifty occurring in one person during the course of ten to fifteen years, and occasionally in several members of one family. It is possible to observe an ordinary non-pigmented naevus change insensibly, or after an infection, into a basal-cell carcinoma. Melanocarcinoma, which usually occurs on a pigmented naevus, is discussed below.

Virus warts are most exceptionally, if ever, followed by malignant change. This also applies in a lesser degree to the so-called seborrhoeic or senile warts—the greasy flat-topped warts so common on the temples and backs of the aged.

Senile keratosis is identical to solar keratosis, but occurs in the aged without any exposure to sun. It is pre-cancerous to the same degree.

Skin Conditions with Epithelial Change but no Invasion

Lupus vulgaris and psoriasis are quoted as preceding skin cancer. In both cases irradiation is often an important factor, particularly in lupus vulgaris, in which fairly large doses of x rays have often, but not necessarily always, been given. It is doubtful if unirradiated psoriasis ever produces a malignant change.

There is a group of definite pre-cancerous skin conditions, comprising Bowen's disease, Paget's disease of the nipple, and Queyrat's erythroplasia of the penis, in which the cancerous changes are entirely intra-epidermal. The history of these cases is lengthy, varying from five to fifteen years, before they develop into true squamous-cell carcinomata.

Leucoplakia of the mouth, tongue, and vulva is also a true pre-cancerous condition, although here the history is much shorter before the advent of malignant change.

Basal-cell Carcinoma and Squamous-cell Carcinoma

These comprise the vast majority of skin cancers. A rough estimate would be that basal-cell carcinomata are ten times more frequent. They have a striking predilection for the face, particularly in the area bounded by lines drawn from the angle of the eye to the tip of the ear and from the corner of the mouth to the angle of the jaw.

The scalp is a not uncommon site, whilst the body is relatively untouched except by the multiple superficial variety.

Squamous-cell carcinomata are also often found on the face, but, as they more frequently follow trauma of all

sorts, they are more common than basal-cell carcinomata on the hands, arms, legs, and scrotum.

Clinical Description.—The chief characteristic of a basal-cell carcinoma is a hard rolled edge of cartilaginous consistence and pearly colour (Fig. 2). This is always present to some degree, but is sometimes obscured by other features. It is very commonly crossed by telangiectases. Central ulceration varies from a dimple to a deep excavated ulcer. The rate of growth is slow, many lesions remaining unchanged over years, and the average history given by the patient varies from one to ten years. In a squamous-cell carcinoma the original formation is papular. There is no specific hard edge, but a surrounding induration and slight inflammation are present. A central embedded keratosis is a feature which slowly gives way to a ragged central ulceration.

Malignancy.—Basal-cell carcinomata are only locally malignant, destroying adjacent tissue by geographical spread. This can destroy bone and cartilage, and large areas are often involved, particularly when the lesion has penetrated at the angles of the nose or ear or on the surface of the scalp. Metastases, on the other hand, do not occur. Squamous-cell carcinomata produce metastases but relatively slowly, the favourite sites being the ear and scrotum. Metastases occur very much earlier and more frequently when the growth involves the mucous membrane, such as the lip or vulva.

Differential Diagnosis.—This is set out in the table. For purposes of description basal-cell carcinoma is considered under five headings. It must be emphasized, however, that these overlap to some extent, and that their strict differentiation is rather didactic.

Type of Basal-cell Carcinoma	Common Site	Clinical Features	Differential Diagnosis
1. Ulcerating	Angles of nose, eye, and ear	Edge obscured by scab and ulcerating; depth of ulcer greater than width of lesion	Squamous-cell carcinoma
2. Button	Cheeks	All hard edge; central depression; average width 1.5 cm.	Naevus; squamous-cell carcinoma
3. Cystic	Nose	Cartilaginous edge slight; body cystic; scabs and ulceration rare; average width 1.5 cm.	Sebaceous and other cysts; pyogenic granuloma
4. Scarring	Temples, scalp, and neck	Peripheral spread greatest; cartilaginous edge slight; centre covered with crust which covers superficial erosion and healed scarring; average width 5 cm.	Lupus vulgaris; tertiary syphilide
5. Multiple Superficial	Body	Same characteristics as scarring, only all features diminished; scarring invisible; cartilaginous edge only apparent with lens as slightly raised border; scabbing very slight; average width 1-3 cm.	Psoriasis; eczema

Melanocarcinoma

Basal-cell and squamous-cell carcinomata are both relatively benign, and, although tragic cases occur in which bones are affected in the case of basal-cell carcinomata or secondaries are allowed to develop in the case of squamous-cell carcinomata, these are usually due to neglect or a late diagnosis. Occasionally, however, even in the most expert hands a basal-cell carcinoma will recur and give rise to serious mutilation and a doubtful outcome. In squamous-cell carcinoma the possibility of metastases must always be considered, and follow-up is essential at three-month intervals for the

FIG. 2.—Typical basal-cell carcinoma with well-marked pearly edge.

first year. If, however, metastases do occur they can usually be dealt with successfully by surgery or radiotherapy if diagnosed early.

The picture is totally different with melanocarcinoma. It is black in every sense of the word. This extremely malignant condition arises from a naevus. Any naevus is a candidate for malignant change, either pigmented or unpigmented. In over 90% of the cases, however, the primary lesion is a blue-black or black, smooth, non-hairy naevus. Probably one person in ten has such a naevus somewhere on his skin, and in view of the comparative rarity of the disease the chance of any one naevus becoming malignant is therefore a very long one.

Clinical Picture.—The average story is as follows: The patient has been aware of the presence of a black

FIG. 3.—Melanocarcinoma of arm. Increase in size noted for three months.

naevus for a number of years, or possibly for life. During, however, the last two to six months it has gradually increased in size or deepened in colour. More recently it has become a little lumpy and the surface has tended to break or to bleed, with the appearance of superficial scabs. The next feature is generally definite induration of the base and possibly some inflammation or the appearance of a small black satellite naevus in the immediate vicinity. At this stage it may be highly malignant. Metastatic melanocarcinoma cells will be found in the surrounding lymphatics and in the draining lymphatic glands. Spread is also blood-borne (Fig. 3).

Differential Diagnosis.—There are several conditions in which pigmented papular lesions give rise to alarm in the circumspect doctor. The two most important are:

Seborrhoeic Wart.—Patients are constantly being referred on account of a blackish lesion on the skin which is increasing in size. If the lesion happens, as is usual, to be a single one the alarm is understandable. Frequently, however, quite a number of similar lesions are found scattered over the trunk, but one particular lesion has increased in size and is predominant. Even so, the slightly greasy corrugated scale is typical. There is no induration, and the pigment is not true melanin and does not impregnate the skin.

Pigmented Basal-cell Carcinoma.—All moles, pigmented and otherwise, occasionally swell and discharge. This is due to an ordinary staphylococcal infection of the underlying sebaceous gland or hair follicle. Again, a pigmented mole, not necessarily blue-black or black, may change clearly in appearance and become indurated. Within the course of months or years it becomes

obvious that it is a basal-cell carcinoma arising on a mole. If such a lesion is treated by radiotherapy the basal-cell carcinoma disappears completely and leaves a pigmented mole.

Treatment of Skin Cancers

With rodent ulcers biopsy is always desirable because it clinches the diagnosis, although in many cases the clinical picture is so definite that, given reasonable experience, a biopsy may not be necessary for this purpose. Occasionally, however, a mixed basal-cell and squamous-cell lesion is found when not expected. This does not materially alter the method of treatment to be selected, but on account of possible metastases it does alter the importance of the follow-up.

In suspected squamous-cell carcinomata the diagnosis is seldom so obvious and a biopsy is essential.

In suspected melanocarcinomata a biopsy is strictly contraindicated, as any traumatic procedure, short of wide and deep excision, increases the risk of dissemination.

When carrying out a biopsy in small lesions the practicability of surgical removal obviously needs consideration in order to avoid having two bites at the cherry.

General Considerations

The primary aim of treatment is always the same—that is, the complete extirpation of all pre-malignant or malignant cells in the primary lesion and of the draining glands if they are involved. It is of great importance that this should be performed in one and the first procedure, as recurrences in the primary lesion tend to get progressively and rapidly more recalcitrant to treatment.

There are secondary considerations in treatment which concern the patient more directly. These are: (1) expense, which includes the time involved in treatment; (2) discomfort and reaction during treatment; (3) the cosmetic appearance of the cured lesion; and (4) the achievement of a sound scar which will not break down later.

The standard methods of treatment are surgery and radiotherapy. They are not necessarily alternatives, but

FIG. 4.—Squamous-cell carcinoma of right ear of two months' duration. *a*, Before treatment. *b*, After radiotherapy.

should be complementary. Unfortunately, perhaps, each expert involved is apt to expatiate on the advantages of the method in which he is primarily interested and with which he is familiar. When skin cancers are considered by a team it will be found that the method of choice largely depends on the site, size, and other factors in the lesion under review. Success depends more on the skill with which surgery or radiotherapy is employed than on the exclusive choice of one of the two methods.

Surgery

To be effective this necessitates a wide and deep excision, for depth recurrence is nearly as frequent as edge recurrence. The great advantage of surgery in small lesions is that only one sitting is required, with a subsequent reattendance for the removal of stitches. Its disadvantage is that so many rodent ulcers occur at awkward sites, such as the angles of the nose and eyes, and that a sufficiently wide excision necessitates quite extensive grafting. In lesions of the ear and lip particularly, the cosmetic result of excision and grafting does not compare with that of radiotherapy (Fig. 4).

Surgery is without question the method of choice when cartilage and bone are involved, and in melanocarcinoma, which are practically always radio-resistant. The surgical procedure in melanocarcinoma must be drastic. R. W. Raven recommends an incision at least 5 cm. from the primary lesion and removal of the fascia 10 cm. away from the edge of the tumour, which must not be touched by scalpel or forceps during the operation. Radical excision of the regional lymph nodes must be performed in every case of melanocarcinoma.

Radiotherapy

This includes a wide range of methods, including x rays of short to long wavelengths and radium used as a plaque (beta rays) or as applicators and implants (gamma rays). The details of radiotherapeutic treatment are outside the scope of this article. Many variants of available techniques give equally good results in expert hands. The chief advantage of radiotherapy is that it does not necessitate loss of tissue, owing to the selective action of irradiation on cancer cells. Consequently scarring is minimal. It has the disadvantage of requiring a necessary period of reaction, which starts about ten days after completion of treatment and may last up to a month. During this time the lesion discharges and forms repeated scabs which may become secondarily infected. The normal irradiated skin surrounding the lesion proceeds to an erythematous reaction which may for a few days be moist.

Suitable applications during the reaction are:

Calamine B.P.C.	..	..	..	1 dr. (4 g.)
Zinc oxide	..	..	..	$\frac{1}{2}$ dr. (2 g.)
Glycerin	..	..	..	$\frac{1}{2}$ fl. dr. (1.75 ml.)
Spirits of camphor	..	..	..	$\frac{1}{2}$ fl. dr. (1.75 ml.)
Distilled water	..	..	..	1 fl. oz. (28.4 ml.)

or

Zinc peroxide	..	..	..	1 dr. (4 g.)
Zinc oxide	..	..	..	4 dr. (16 g.)
Lanolin	..	..	..	2 dr. (8 g.)
Lime water	..	..	..	1 fl. dr. (3.5 ml.)
Olive oil	..	..	..	1 fl. oz. (28.4 ml.)
Colouring matter	..	..	..	q.s.

The treated lesion heals more quickly if not covered with a dressing except for the shortest periods, which

may be necessary for cosmetic reasons. It must be remembered that treated lesions should be regarded with more respect than normal skin, and should not be subjected to trauma or extreme exposure to sunlight.

Research still continues in order to find the optimum dosage and method of treatment.

Correction.—Dr. Gilbert Forbes writes: "In my article 'Blood Groups and Disputed Paternity' (July 28, p. 227) the first sentence of the section *Source of Antisera* should read, 'As group A blood serum naturally has the antibody β (anti-B), and group B blood serum naturally contains the antibody α (anti-A) . . .'"

CONFERENCE ON INFECTIOUS DISEASES

The first British-Danish Conference on Infectious Diseases was held in Copenhagen during the week July 2 to 6. Although the meetings were of an informal character, arranged mutually by Professor H. C. A. LASSEN, of Copenhagen, and Dr. T. ANDERSON, of Glasgow, much original work was reported and a valuable exchange of views took place on problems common to the infectious diseases in both countries.

Anterior Poliomyelitis

At the first session, with Dr. T. ANDERSON in the chair, Dr. IAN B. L. WEIR (Glasgow) gave an account of the epidemiology of this infection in the City of Glasgow. On three occasions in the last 25 years the attack rate had exceeded 100 per million—in 1928 (101), 1947 (297), and in 1950 (255). The last two epidemics had many contrasting features, which are shown below:

	1947	1950
Case rate per million	297	255
Main period of epidemic	July-Sept.	April-Oct.
Peak notifications per week	70	30
Proportion in 0-4 age group	53%	73%
Respirator cases	24	12
Mortality rate	12%	4%

A curious feature which required further study was that, in both epidemics, an excess of bulbar cases had been observed among persons whose tonsils had been removed at some time in their lives. A follow-up study in 1951 of the 1947 cases had shown that, of 72 in which the paralysis had been severe, 20 had made an excellent recovery; of 88 in which paralysis had been moderate, 62 had recovered completely; and all of those in which the paralysis had been originally minimal (48) were now free from any disabling effect. Thirty children required to attend special schools and four were still in the orthopaedic hospital.

Prognosis of the Paralytic Case

Professor H. C. A. LASSEN (Copenhagen) had studied the early and late prognosis of the cases seen at Blegdams Hospital during the 1944 epidemic. Particular attention had been paid to the early progression of the paralysis. It was found that in 83% of the paralysed cases the paresis had started within five days of the onset of illness. In about half of the patients further progress of the paralysis ceased within 24 hours of its inception, and in only 14% did paralysis continue to progress for more than 72 hours. Although prolongation of fever was usually an excellent guide to the possible extension of paralysis, in 5% of the paralysed patients there was further involvement after fever had ceased; and a similar proportion which showed no paralysis while febrile went on to develop paralysis after the temperature had become normal. Muscle recovery had