

ANALYSIS OF ETIOLOGICAL FACTORS OF SQUAMOUS CELL SKIN CANCER OF DIFFERENT LOCATIONS

2. *The Trunk and the Head*

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Abstract. This investigation was undertaken to evaluate the importance of different etiological factors of squamous cell cancer of the skin, particularly concerning possible relations to different skin diseases or the skin treatment given to the patients. The medical records of all cases with squamous cell cancer on the trunk reported to the Swedish Cancer Registry from 1958-1966 have been analysed. We have not found any overrepresentation of skin diseases or patients with local dermatological treatment in the material. Fourteen out of the 100 patients investigated had metastases only to lymphnodes and 5 had metastases also to other organs. The metastases were more common among the exophytic cancers than in the ulcerated tumors. Certain data from 3724 patients with squamous cell cancer on the head reported to the Swedish Cancer Registry 1958-1967 have also been analysed. About 80% of all skin cancers are localized to this area. It was found that about 90% of the squamous cell cancers on the external ear occurred in men; only about 10% in women. This may be explained partly by the fact that men receive more sunlight on their ears than women. It was also found that squamous cell skin cancer in Sweden is more common in the southern part than in the northern part relative to the number of people living in these regions.

This paper is part two of our study of etiological factors of squamous cell skin cancer (s.c.s.c.). The first part was published in 1969 (*Acta dermatovener* 49: 427-435). The aim of our study is to analyse various possible etiological factors of skin cancer, especially with respect to skin diseases and dermatological therapy. A possible association between s.c.s.c., certain skin diseases, and dermatological therapy has earlier been discussed (1-14). The present study is based upon data from medical records of patients reported to the Cancer Registry of the Swedish National Board of Health. For practical reasons it has been neces-

sary to divide the material into different locations of the tumours. This particular study deals with skin cancer on the trunk and on the head.

MATERIAL AND METHODS

Since the 1st January, 1958, all cases of diagnosed cancer in Sweden have been reported to the Cancer Registry of the Swedish National Board of Health. When this investigation started, the Cancer Registry (C.R.) was complete up to and including 1963, but a certain number of reports from the years 1964-1965 also were included. A complete list of all recorded cases of s.c.s.c. was obtained from the C.R. In the beginning, patients with s.c.s.c. on the head were not included, as we believed this localization of the tumor is to a large extent influenced by extensive sun radiation, and to a lesser degree by other factors that were more interesting to us. Later it seemed desirable to include the head-cancer cases in the study. As this part of the study started later, all patients from 1958-1967 and a certain number of patients reported 1968 were included. In all, the "head-material" consists of 3819 patients; 2399 men and 1420 women. The data obtained from the C.R. concerning these patients included sex, age, place of abode, reporting clinic and localization of the tumor. We have not examined any medical records in this group.

The "trunk-material" consists of 100 patients; 59 men and 41 women. They are included in our original material of 475 patients with s.c.s.c. during the period 1958-1965 obtained from the C.R. In these cases copies of the patients' medical records have been available.

Initially the "trunk-material" consisted of 116 patients, but 16 had to be excluded as they had been incorrectly reported as s.c.s.c. cases to the C.R.

RESULTS

Trunk

The medical records of the 100 patients with s.c.s.c. on the trunk have been investigated. The

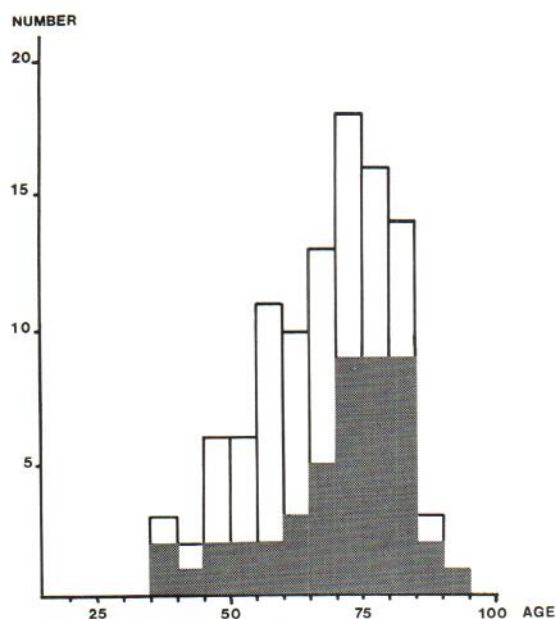


Fig. 1. Age and sex distribution of the patients with squamous cell skin cancer on the trunk. Dark area represent women, white area men.

age distribution of the patients is given in Fig. 1. As was suspected, most patients were elderly. In 45 cases the cancer had developed in an ulceration or the cancer was primarily of the ulcerating type. In 51 cases the cancer was not ulcerated, but of the exophytic type. In 4 cases the appearance of the tumor was poorly described.

Table I gives the distribution of the 100 cases with respect to location, sex, ulceration or exophytic growth. The cancers on the hip, buttocks and scrotum were predominantly of the ulcerating

Table I. Distribution of the squamous cell cancers on the trunk by localization, sex and type of tumor

| Localization | Sex | | Type of tumour | | |
|-----------------------|------|--------|----------------|--------|---------|
| | Male | Female | Ulc. | Exoph. | Unspec. |
| <i>The upper part</i> | | | | | |
| Neck | 2 | 1 | 2 | 1 | — |
| Back | 15 | 12 | 8 | 15 | 4 |
| Chest | 4 | 2 | 1 | 5 | — |
| Axilla | 1 | 1 | — | 2 | — |
| Abdomen | 4 | 4 | 4 | 4 | — |
| Total | 26 | 20 | 15 | 27 | 4 |
| <i>Lower part</i> | | | | | |
| Hip | 5 | 1 | 5 | 1 | — |
| Abdomen | 3 | 3 | 3 | 3 | — |
| Buttock | 6 | 4 | 9 | 1 | — |
| Groin | 4 | 4 | 2 | 6 | — |
| Scrotum | 6 | — | 4 | 2 | — |
| Crena anii | 2 | — | 1 | 1 | — |
| Anus | 3 | 2 | 2 | 3 | — |
| Perineum | 4 | 7 | 4 | 7 | — |
| Total | 33 | 21 | 30 | 24 | — |

type, while the cancers on the back and chest were mainly exophytic. The most common locations were the back, the abdomen and the perineum, in the order mentioned. About 50% of the tumors were localized to these three areas. Men and women are rather equally affected by the different locations of the cancer.

Table II shows the distribution of the s.c.s.c. on the trunk with respect to location and possible etiological or associated factors. In many of the cases no specific etiological or predisposing factors were found. Three patients had an earlier history of psoriasis, 3 patients had had a me-

Table II. Distribution of the squamous cell cancers on the trunk by localization and etiological or associated factors

| | Buttock | Groin | Perineum | Anus | Scrotum | Hip | Ab- domen | Neck | Chest | Back | Crena anii | Axilla | Total |
|------------------------|---------|-------|----------|------|---------|-----|--------------|------|-------|------|---------------|--------|-------|
| Burn scar | 1 | — | — | — | — | — | — | — | — | 1 | — | 1 | 3 |
| Mech. trauma | — | — | — | — | — | 1 | — | — | — | 2 | — | — | 3 |
| Psoriasis | 1 | — | — | 1 | 1 | — | — | — | — | — | — | — | 3 |
| Eczema | 1 | 1 | — | — | — | — | — | — | — | 1 | — | — | 3 |
| Other skin diseases | 2 | — | 1 | — | — | — | — | — | — | — | — | — | 3 |
| Fistulas | — | — | 1 | — | — | — | 2 | — | — | 1 | — | — | 4 |
| X-ray treat- ment | — | 1 | — | — | — | — | — | 1 | 1 | — | — | — | 3 |
| Unspecified | 5 | 6 | 9 | 4 | 5 | 5 | 12 | 2 | 5 | 22 | 2 | 1 | 78 |
| Total | 10 | 8 | 11 | 5 | 6 | 6 | 14 | 3 | 6 | 27 | 2 | 2 | 100 |

chanical trauma on the place were the cancer later appeared (two of these in scars after operations), in 3 cases the cancer developed in burn scars, 4 developed cancer in proximity of fistulas, 6 cases had had eczema or other skin diseases, 3 had been treated with X-rays earlier in the area affected. According to the medical records only one patient had been treated with arsenic and one with tar. The patient treated with arsenic had psoriasis.

The frequency of metastases is low in our material. Fourteen out of the 100 patients had metastases only to regional lymphodes and 5 metastases also in other organs. The metastases were more common among the exophytic cancers than in the ulcerated tumors.

As in part one of this study, we have divided Sweden into northern and southern parts and made a comparison between the populations in the two areas and the frequency of s.c.s.c. It is seen from Fig. 4 that 16.0% of the cases with

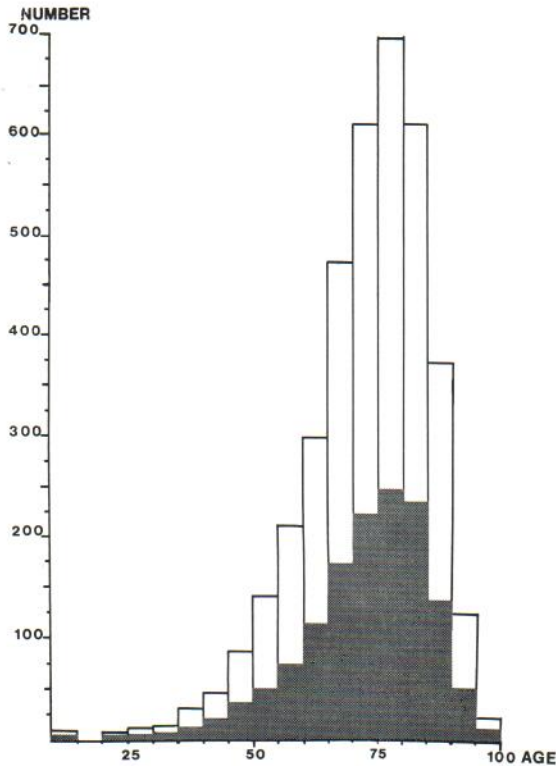


Fig. 2. Age and sex distribution of the patients with squamous cell skin cancer on the head. Dark area represent women, white area men.

Table III. Distribution of the squamous cell cancers on the head by localization and sex

| Localization | Male | Female | Total |
|----------------|------|--------|-------|
| Eye-lids | 104 | 74 | 178 |
| External ear | 842 | 96 | 938 |
| Face | 1258 | 1140 | 2398 |
| Scalp and neck | 195 | 110 | 305 |
| Total | 2399 | 1420 | 3819 |

s.c.s.c. on the trunk came from the northern part of Sweden while 19.8% of the population lived in this part of the country.

Head

S.c.s.c. on the head also affects people mainly of older age. Fig. 2 gives the age distribution of the 3724 patients with s.c.s.c. on the head. Table III gives the distribution of the cases with respect to location and sex. Most cancers occur on the face and with about the same frequency for both sexes. There is a strikingly high rate of cancer on the ears for males compared to females. The scalp and the neck are also more frequently affected in men.

On the basis of the 1963 population statistics for Sweden and data given in Fig. 2, the number of s.c.s.c. on the head per 100,000 individuals

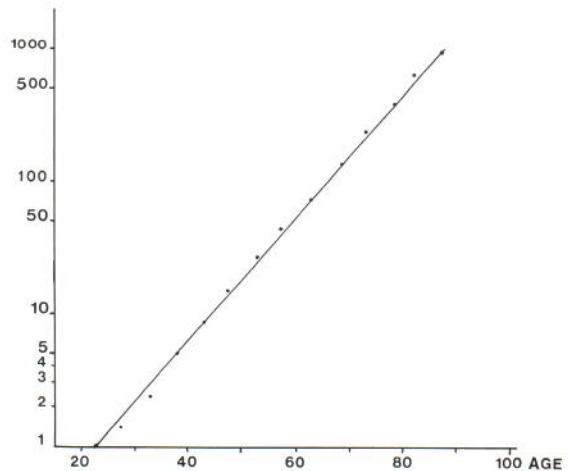


Fig. 3. Number of squamous cell cancer cases with tumors on the head per 100,000 people in different age groups. Logarithmic scale on the ordinate. To get the approximate incidence rate per year per 100,000 people the figures on the ordinate should be divided by twenty-five.

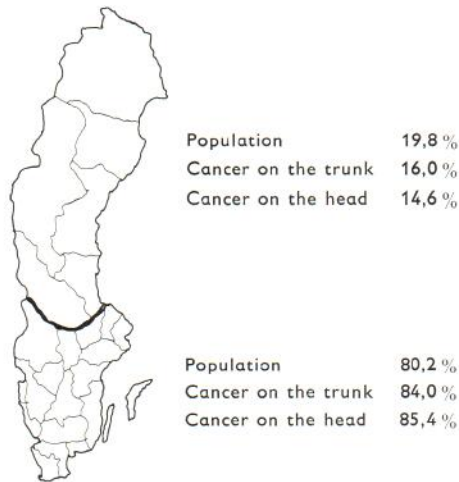


Fig. 4. Map showing the counties of Sweden. The thick line indicates the northern and the southern parts of Sweden according to our division.

of different age groups has been estimated. The data are plotted on a logarithmic scale on the ordinate in Fig. 3 and show that the incidence of this type of cancer increases exponentially with age. The incidence is doubled in approximately 7 years.

Of the cases with s.c.s.c. on the head, 14.6% came from the northern part of Sweden compared to 19.8% of the population.

DISCUSSION

In the present paper, s.c.s.c. on the head and trunk have been studied with a similar approach as in our earlier paper on s.c.s.c. of the lower limbs (14).

The area of the skin most commonly affected by s.c.s.c. is the head and particularly the face. About 80% of all s.c.s.c. occur on the head. This is most certainly due to sun exposure of the skin on the head.

Our main interest has been to study carcinogenic factors other than sun-radiation, and we feel that the dominating importance of sun-radiation as an etiological factor for s.c.s.c. of the head makes fruitless further investigation of associations between skin diseases and s.c.s.c. of the head. We have therefore only investigated geographical and age distribution of this group. The results from the study of the trunk-material indicates that there is no significant overrepresent-

tation of patients with psoriasis in this material. Nor do the number of eczema cases and cases with other skin diseases seem to be higher in our material than in a normal population. In the case of s.c.s.c. on the leg, the ulcerating type was far more common than the exophytic (13). In the material with s.c.s.c. on the trunk, the difference in frequency of these two forms of cancer seems to be less accentuated. The exophytic type of s.c.s.c. is slightly more common on the upper half of the trunk (counted from the umbilicus); in the lower part the ulcerating type is dominant (Table I). The significance of this finding is uncertain. The cancers on the trunk also seem to be more evenly distributed on the skin than those on the leg.

In Table III it is seen that the frequency of s.c.s.c. on the face is about the same in males and females. It is also seen that s.c.s.c. on the external ear is much more common in males than in females (males nearly 90%, females about 10%). This fact indicates that the longer hair in women protects them from the effects of extensive sun radiation upon the external ear. The tendency in frequency is similar in the cases with cancer in the capillitium and on the neck. As shown in Fig. 4 the frequency of s.c.s.c. on the head is lower in the northern part of Sweden. In the southern part of the country the condition is the opposite. The reason for that might be—among other factors—the more intensive sun radiation in the southern part of Sweden.

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Addendum. According to the arrangement of the Swedish Cancer Registry, some squamous cell skin cancers localized to the genitals are reported under other headings. Our material is therefore incomplete with regard to s.c.s.c. on the genitals.