ORIGINAL PAPER 6

Psoriasis and cancer

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SUMMARY. A possible association between psoriasis and cancer was investigated by a study of general practice records in 25 practices.

No difference was found in the prevalence of malignant disease between a group of 738 psoriasis cases and a group of matched controls.

This result accords with the recent finding that tissue from psoriasis patients does not differ from normal in its response to potentially carcinogenic substances.

Introduction

THE possibility that psoriasis might incorporate a cancer-protective mechanism was proposed in 1964 by Shuster, on the basis of the observed lack of excessive skin cancer in patients whose psoriasis had been treated with known carcinogens such as tar and ultraviolet B radiation.

The idea was developed into a general hypothesis after observations by Chapman and colleagues (Chapman *et al.*, 1980) that the enzyme aryl hydrocarbon hydroxylase, responsible for converting various hydrocarbons into carcinogenic compounds, was less active in skin and other organs from patients with psoriasis than in control subjects (Shuster *et al.*, 1979). They proposed that the incidence of cancers associated with environmental carcinogens might be reduced in patients with psoriasis.

Since both psoriasis and cancer are fairly easily defined diagnoses, likely to be known to patients' general practitioners, a study to test this hypothesis by means of general practice records was proposed, and launched by means of an article entitled 'Why not explore a possible link between psoriasis and cancer?' (Knox and Kuenssberg, 1981). Because the role of environmental carcinogens is not known for the majority of forms of cancer (carcinoma of bronchus being the obvious exception), the hypothesis was broadened empirically to include all forms of cancer.

Aims

The study aimed to show whether there was a reduction in the prevalence of malignant neoplasms in a group of patients with psoriasis, compared with an age and sex matched group of non-psoriatic patients drawn from the same population.

Method

All general practitioners who responded to the original article and to the reminder published in the *Journal* three months later, were sent a detailed protocol and recording forms. They were asked to compile a list of all known patients with psoriasis in their practice, either from a disease register or by a combination of memory, repeat prescription requests, and consultations. We did not expect to track down all cases; the significance of this is discussed later.

Secondly, for each case of psoriasis, a control patient was to be selected, either by taking the next card in the age-sex register or by using the practice records file and taking the next patient of the same sex born in the same year as the case. Each control record was checked to see if the patient was related to the case (for example, a twin), and to be sure that there was no recorded history of psoriasis.

Cases and their matched controls were then allocated serial numbers, by which they were identified on the data forms sent to the recorder. These forms were then completed by reference to the patients' records, and gave the following information: serial number, date of birth, sex, years on practice list, year of earliest record, and—for the psoriasis cases—year psoriasis was first recorded. Smoking habits were also requested, and many respondents conducted their own enquiries to obtain this information, which was defined as 'the average number of cigarettes smoked per day for the majority of the person's smoking life', ignoring pipe and cigars. Finally, the presence of any recorded cancer was noted, with full details of type, site, and dates. A checklist of neoplastic conditions which were to be included was supplied.

Results

Thirty-two enquiries were received after the 'Why not . . .?' paper, and a further four following the reminder. Twenty-five completed data sheets were returned from general practices with list sizes varying from 1,300 to 19,000 patients. A total of 738 cases of psoriasis was obtained, together with the same number of matched controls.

Table 1. Summary of data supplied by individual practices.

List size from which cases drawn	Number of cases of psoriasis	Rate per 1,000	Disease index	Incidence of cancer	
				Psoriasis group	Control group
19,000	133	7.0	Yes	5	5
16,880	49	2.9	Yes	5	1
11,750	18	1.5	Yes	0	1
10,440	32	3.1	Yes	2	3
8,000	30	3.8	Yes	1	0
8,000	12	1.5	No	0	2
7,800	35	4.5	No	0	0
7,760	20	2.6	No	2	2
5,400	54	10.0	Yes	2	3
5,250	47	9.0	Yes	3	0
4,600	24	5.2	Yes	0	2
4,600	18	3.9	Yes	2	0
4,600	18	3.9	No	2	0
4,200	24	5.7	No	0	0
4,100	6	1.5	No	0	0
4,000	12	3.0	No	0	0
3,700	14	3.8	No	0	0
3,500	65	18.6	No	0	0
3,000	8	2.7	Yes	0	1
2,850	16	5.6	Yes	2	1
2,650	25	9.4	Yes	0	1
2,520	22	8.7	Yes	1	2
2,500	22	8.8	Yes	1	0
1,900	10	5.3	No	0	1
1,300	24	18.5	Yes	0	3
Total 150,300	738	4.9	—	28	28

Table 1 summarizes the returns from each participating practice. Practices varied widely in the rates of detection of psoriasis, from 18.6 per 1,000 patients, which approaches the expected prevalence of the condition (Baker, 1966) to 1.5 per 1,000, where less than one tenth of expected cases were detected.

The weighted average detection of psoriasis in practices with a disease index was 5.2 per 1,000, while in practices without such a facility it was 4.4 per 1,000. This is significant at the 5 per cent level ($\chi^2 = 4.44$, $P = 0.03$) (Armitage, 1971, p. 131) and is in the expected direction.

No significant differences occurred between the two groups in terms of duration on list, time covered by records or smoking habits. Data on the latter was only available for 55 per cent of cases and controls.

Table 2 summarizes the cancer findings. No significance can be attached to the differences in individual types of cancer because of the small numbers.

The overall prevalence ratio of cancer in psoriasis and non-psoriasis patients is 1.0, with 95 per cent confidence limits of 0.59 and 1.71 (Armitage, 1971, p. 429).

Discussion

The general hypothesis that psoriasis is associated with a lower than normal incidence of cancer is not supported by this study. However, the validity of this finding must be tempered by the limitations of the study.

The failure to detect more than one quarter of the expected number of psoriasis cases (assuming a prevalence of 2 per cent) is not surprising in view of the remitting nature of the disease. Those cases detected are likely to be patients in whom the disease was active at the time of the study or had been recorded previously in a disease register. As a group they are likely to include the more severe cases of the disease, but there is no way of comparing them with the remainder which were not detected. An unknown bias may be caused by a possible difference in consulting rates between patients who have cancer and patients who do not have cancer, affecting the detection of psoriasis. Thus mild psoriasis might be undiagnosed (and not recorded) unless the patient also presented with symptoms of a cancer. This would bias the prevalence ratio of cancer towards the psoriasis group, and could conceal a true trend in the other direction (Castle, 1979).

Those forms of cancer which tend to be rapidly fatal (for example, bronchus, stomach) will be under-represented by this method (one case of each was recorded) because only surviving cases of cancer are detected. However, this bias applies equally to both groups, and should not influence any difference between the groups in the incidence of cancer in general.

Table 2. Summary of malignant neoplasms.

Type of cancer and site	Psoriasis group	Control group
Squamous carcinoma of cervix including carcinoma *in situ*	4	6
Carcinoma of breast (all types)	3	4
Basal cell carcinoma of skin	5	4
Adenocarcinoma, colon and rectum	6	2
Transitional cell carcinoma, bladder	4	0
Malignant melanoma, skin	1	2
Squamous carcinoma, skin	1	2
Adenocarcinoma, uterus	1	2
All others (six types)	3	6
Total	28	28

There was a small but significantly better detection rate of psoriasis in practices which used a disease register or index. However, the wide scatter of rates, in both groups of practices, indicates the problem of identifying patients with a given disease in general practice. Even information about patients' smoking habits was hard to obtain, but about 900 general practice records are now enhanced by this item, as a result of specific enquiries made by their doctors in the course of this project.

On 31 July 1982 Rawlins and Shuster published letters in the *British Medical Journal* and the *Lancet* retracting their previous reports on aryl hydrocarbon hydroxylase activity in psoriasis, based on their failure to reproduce their results by both the original and new methods and on a re-examination of their original data. Thus the biochemical basis of our hypothesis must be discounted, and our results further reduce the likelihood that there is any link between psoriasis and cancer.

This method could be applied to test any hypothesis relating two or more diseases, provided the diagnostic criteria are clear and unambiguous, the conditions are not rapidly fatal, and they are of such importance as to be reasonably well-recorded in general practice records.

References

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Golden advice

Although a large majority of medical students go into General Practice, no attempt is made during their curriculum to train them for their special work. . . It is much to be regretted that experience of General Practice is not an indispensable qualification for election to a hospital staff.

Having got his qualification, the intending Practitioner should spend about a year in postgraduate work in the special departments—eye, throat, ear, skin, venereal, children, and so on. . . Meantime he should read, and he should select those books which are likely to help him in General Practice. It is a waste of time to read large and exhaustive treatises on anything . . . Some knowledge of modern medical Psychology should be acquired . . . Knowledge of human nature is all-important to a family doctor . . . After he has finished his postgraduate course, the beginner should spend a year or so as assistant or, better, as Locum Tenens in different practices. This is the most important part of his training, and he will find it at first the most harassing . . . The man who is suited to General Practice soon changes his point of view. If he cannot do this, he will be well advised to try some other branch of medicine.

Source: Campbell Stark, A. (1923). An index to general practice. Pp vii, 165-167. London: Baillière, Tindall and Cox.