

## Raised blood pressure and psoriasis

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**SUMMARY.** Male patients with psoriasis in one general practice have a significantly higher blood pressure than males in the general population. Such patients have been compared with the values recorded by Hamilton and colleagues (1954) and with matched pair controls from the same general practice. Statistical analysis using four separate methods has shown a highly significant association between psoriasis and hypertension in males, with close agreement between the tests.

### Introduction

**P**SORIASIS occurs in about two per cent of the general population at some time in their lives (Rook *et al.*, 1968; Psoriasis Association, 1973; Wintrobe, 1974; Harper, 1975). The exact cause of the disease is unknown. It is known that in 59 per cent of cases a relative who suffers from the disease can be traced (Nyfors and Lemholt, 1975). The scaly presence of psoriasis has been considered to relate in evolutionary terms to a point in time at which protomammals diverged from protoreptiles (Jarrett and Spearman, 1964; Harper, 1975). The distribution of lesions is associated with skin innervation and usually avoids limbs which have been smitten by poliomyelitis. Abrasion of the skin may precipitate the appearance of a lesion (Koebner effect).

The complications of psoriasis are listed in standard sources as arthritis, superadded infection, eczematization or malignancy, and the psychiatric changes which may attend any disfiguring skin complaint (Sagher *et al.*, 1967; Rook *et al.*, 1968; Baverman, 1970; Bodley Scott, 1973; McLeod and Davidson, 1974; Passmore and Robson, 1974; Beeson and McDermott, 1975). Myopathy is quoted in an article by Holzmann and colleagues (1967).

Some biochemical changes both locally and systemically are known to take place in psoriasis (Braun-Falco, 1958; Jarrett, 1958; Tickner, 1961; Holzmann *et al.*, 1964; Scott, 1966; Holzmann *et al.*, 1967; Holzmann and Morsches, 1968; Holzman *et al.*, 1968; Markevitch, 1968; Meffert and Reich, 1968), some of which are still being investigated. Psoriasis is not generally considered to affect longevity except in the rare cases of generalized pustular psoriasis. I found no reference to cardiovascular complications in any of the standard sources I consulted.

While compiling my disease register in the practice, I noted that a disproportionate number of psoriatics were also suffering from hypertension. In consequence I searched the records of all known psoriatics, and these patients were visited at home to compare their blood pressures under standard conditions with those of matched pairs.

### Method

#### *The practice*

The study was carried out in a single-handed general practice of 3,500 patients in Exeter, Devon. The socio-economic groups and sexes are proportionately represented in the practice, but only 9.9 per cent of the patients are over 65 years of age, which is below the average for the area. The stock is European.

#### *Data recording*

Psoriatic patients had been noted during the years 1970 to 1977 at consultations when the disease had been the cause of attendance or an incidental finding. In addition, a few psoriatics were found through tracing relatives of patients who consulted.

The blood pressure of patients with psoriasis was taken in the consulting room at the time of registration and again in the patients' own homes after they had been seated for at least five minutes. Often blood pressures had already been recorded in the notes at former consultations. The reading taken in patients' homes was used as the value for comparison.

The reading at the home visit varied notably from previous readings in only three patients.

**Table 1.** Blood pressures of men with psoriasis compared with men in the general population and male controls from the practice.

Age	A	B	C	D	E	F
	Patients with psoriasis Diastolic < 95 mm Hg	Patients with psoriasis Diastolic > 95 mm Hg	(B as percentage of A and B)	Gen. pop. males Diastolic > 95 mm Hg as percentage of all gen. pop. males	Controls from the practice Diastolic < 95 mm Hg	Controls from the practice Diastolic > 95 mm Hg
0 to 14	1	—	0	—	1	—
15 to 24	3	—	0	—	3	—
25 to 34	1	3	75.0	—	4	—
35 to 44	1	2	66.6	5.3	2	—
45 to 54	1	5	83.4	12.7	7	—
55 to 64	2	3	60.0	33.0	3	1
65 to 74	—	—	—	30.2	—	1
75 and over	—	—	—	—	—	—

Figures for percentage of hypertensives in the population as a whole derived from the survey of Hamilton and colleagues (1954).

*Clinical criteria*

Korotkoff sounds 1 (onset of sounds) and 5 (extinction) were used as systolic and diastolic values. Pressure readings were taken in units of 10 mm Hg, the next lowest 10 mm mark on the sphygmomanometer being used as the value. By the use of these criteria digital preference was avoided, over-reading in comparison with other studies was minimized, and diastolic values were categorized as either above or below the 95 mm level regarded as definitive by some research workers into hypertension. All readings were taken by me, using the same orthodox mercury sphygmomanometer, the calibration of which had been checked for the purpose of the study. A 13 cm x 21 cm cuff balloon was used.

Psoriasis was diagnosed when the characteristic florid lesions were present on elbows and knees. In the absence of these characteristic lesions patients were referred to a consultant dermatologist whose clinical diagnosis of psoriasis was then taken as the basis for inclusion in the study.

Age and sex-matched paired controls were selected from the practice to match the patients with psoriasis. Each psoriatic male was matched with the next non-psoriatic male in alphabetical sequence of surname (other than the same surname) who had a date of birth within six months. Each control was visited at home, and the blood pressure recorded under the same conditions as for a patient with psoriasis.

All patients with psoriasis were examined clinically in order to exclude secondary hypertension from renal or other causes.

**Results**

During the seven years of collection 22 males and 33

females with psoriasis were listed on the disease register, representing a prevalence of 1.8 per cent. Although this is less than that reported in hospital studies, such as those quoted by Rook and colleagues (1968), it approximates to the level of prevalence in the general population. The only studies available for comparison for the proportion of males to females are based on hospital populations, but these give ratios which are broadly similar. Nyfors and Lemholt (1975) quote 64 per cent females to 36 per cent males, Lane and Crawford (1937) quote 53.2 per cent females to 46.89 per cent males, and Farber and colleagues (1968), 55 per cent females to 45 per cent males.

Because the size of the sample was small, the blood pressure values obtained were initially compared with those based on the studies of Hamilton and colleagues (1954) and the Office of Health Economics (1971). This comparison showed that there was a significant degree of association between psoriasis and hypertension in the male sample ( $p < 0.0001$ ; Fischer's test) for males over 25 years of age with diastolic pressure above 95 mm Hg.

Significant levels were not obtained in the female sample and here further studies on a larger sample will be required before conclusions can be drawn.

The male psoriatics were then compared with the controls of their matched pairs. Comparison of systolic pressures between pairs and diastolic pressures between pairs (Wilcoxon's test) and of patients and controls with diastolic pressures over 95 mm Hg (McNemar's test) showed a highly significant level of association for the two diseases (Table 1). Moreover the results of the three statistical tests were in close agreement.

An interesting finding obtained from a search of the female records was that of the ten patients for whom complete antenatal records of all pregnancies were

available, eight had evidence of pre-eclamptic toxæmia with a rise in blood pressure in one or more pregnancies. I am now studying this.

## Discussion

As a rule psoriasis and essential hypertension are present only for part of a lifetime. However, hypertension may be intermittent in the early stages, and three of the patients in this study were known to have intermittent hypertension from previous recordings. Psoriasis tends to relapse and remit, and several patients had remissions during the seven-year period. Collecting cases over seven years has meant that psoriatics have been surveyed for hypertension whether or not their skin condition was in relapse at the time, a factor which gives this type of study in general practice an advantage over surveys in the general population at one point in time, and over studies of hospital populations.

A big problem in a statistical study of disease in general practice is that of obtaining an adequate sample size. It is only because the two conditions studied here occur commonly, and the differences in blood pressure values between patients and controls have been adequate, that statistical significance has been achieved in the male sample.

In order to study blood pressure in female psoriatics it will be necessary for several general practices to link together and pool their results. I believe it is desirable that female psoriatics should be studied in view of the possibility that pre-eclamptic toxæmia is more prevalent in psoriatics and the known fact that hypertension in later life is more likely to occur in women who formerly had pre-eclamptic toxæmia during pregnancy.

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## A prospective study of urinary tract infections in a Dutch general practice

In a Dutch general practice the adult female population was screened for asymptomatic bacteriuria (AB) by repeated urine culture after vulval cleansing. The prevalence of significant AB was 4.7 per cent and increased with age. Women with significant AB were followed up for one year. All symptomatic urinary tract infections were recorded during the same period (incidence: 59 per 1,000 population). Women with significant AB at screening were divided into three groups according to the pattern of the follow-up results: transitory AB, symptomatic AB, and persistent AB. The last group differed from the penultimate group with regard to the site of urinary tract involvement, symptomatic cases having predominantly upper urinary tract involvement, and persistent cases lower urinary tract infection. In the matched control group the acquisition rate of both symptomatic and asymptomatic bacteriuria was over 12 per cent, a figure similar to the percentage of women present in the practice population during one year with transient, symptomatic, and persistent AB. Screening for AB in the general non-pregnant female population is not advocated at present. Screening and treatment of existing AB should be carried out in pregnant women, who run an increased risk.

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