cell population in man (6). This conflicting evidence might be due to the fact that the monoclonal antibodies used in these two studies were different. One of them was directed against antigens present on cells with low affinity for SRBC and the other one was not.

It is possible that because of the common ontogeny of monocytes and lymphocytes they share some antigenic epitope which can be detected by some monoclonal antibodies. The raised problem related to the antigenic specificity of monoclonal antibodies used can eventually be resolved by further studies on the molecular structure of those cell markers.

In conclusion it is probable that there are several types of lympocytes wich are involved in different suppressive reactions in vitro and the evidence at hand suggests, that the frequency in at least one of these populations is increased in psoriasis and alopecia (AA and AU). The relevance of these findings for the pathogenesis and clinical course of these diseases is still unknown.

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Psoriasis and Vitiligo

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Abstract. Twenty-nine patients with vitiligo and psoriasis observed over a 5-year period were reviewed. The incidence of concurrence of both diseases was not increased, and the onset and course of the psoriasis and vitiligo were separate. Psoriatic lesions occurred on vitiliginous areas and normal skin with equal frequency. These patients had a larger number of associated diseases than normally seen in psoriatics.

Key words: Psoriasis; Vitiligo; Distribution; Relationship

Psoriasis is one of the commonest dermatoses, occurring in about 1 % of the population of Northern Europe and the USA (1, 7, 9). Psoriatics are known to have an increased incidence of arthritis (17, 24) and occlusive vascular disease (16). Recently an association has been described with inflammatory bowel disease of probable autoimmune origin (25). Vitiligo is an acquired idiopathic hypomelanosis which is also seen in approximately 1 % of the population (8, 13) and is often associated with autoimmune disease includeing Graves' disease, thyroiditis, Addison's disease, and pernicious anemia (19). We have recently seen several patients with

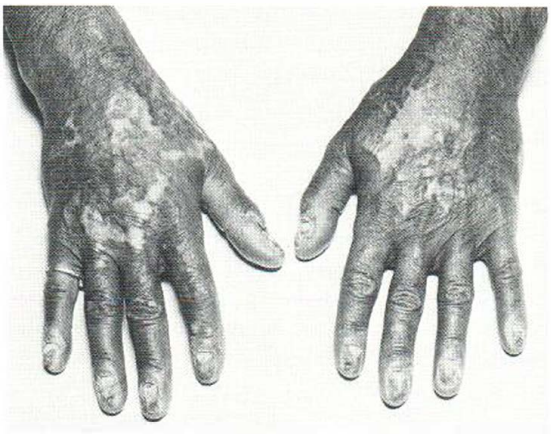

Fig. 1. Psoriatic nail dystrophy with symmetrical acral vitiligo. Psoriasis and vitiligo were distributed separately in this patient.

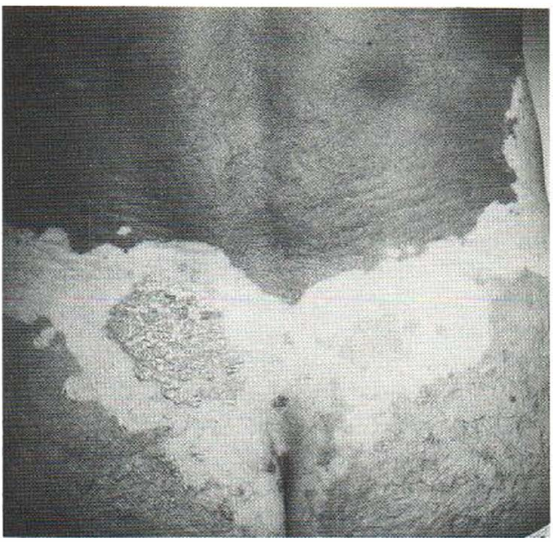

Fig. 2. Psoriatic plaques within patch of vitiligo.

both psoriasis and vitiligo and reviewed the patients with both these conditions seen at the Mayo Clinic over a 5-year period (1976–1981) to determine if there is a significant association between them, and to ascertain if the presence of vitiligo influenced the onset, severity or response to therapy of the psoriasis. We analysed the distribution of both these skin diseases to determine their interrelationship, and recorded associated diseases in these patients.

MATERIALS AND METHODS

Between 1976 and 1981, 717 patients with vitiligo and 4296 patients with psoriasis were seen at the Mayo Clinic. Twenty-nine patients had both conditions, i.e. 4.04% of the vitiligo group had psoriasis, and 0.67% of the psoriatic group had vitiligo. These patients' charts and photographic records were reviewed with particular reference to type and severity of psoriasis, relationship of onset of both conditions, distribution of skin lesions and associated diseases. Severity of the psoriasis was based on extent of involvement, type of therapy required to control it, and necessity for hospitalization. Their response to standard therapies, i.e. tar, UV light, and PUVA, was analysed.

RESULTS

Fourteen of the 29 patients were male, and 15 female. The majority, 27, had psoriasis vulgaris and 2 had guttate psoriasis. Twelve patients had mild psoriasis, 6 had moderate, and 11 severe disease. The relationship of onset of both conditions is shown in Table I. There was no definite pattern, but the onset of vitiligo preceded the psoriasis in 14 cases. Three patients could not date the onset of their diseases accurately. One patient had simultaneous onset of both conditions in a separate distribution at the age of 13 years. Seventeen patients had vitiligo vulgaris, and 6 had acrofacial vitiligo. Two patients had universal vitiligo. The distribution of lesions is shown in Table II. Psoriasis and vitiligo were distributed separately with little overlap in 13 patients (Fig. 1), while 14 had psoriatic plaques mainly within patches of vitiligo (Fig. 2). The associated diseases in this group of patients are shown in Table III. Arthritis was seen in 31%, thyroid disease in 38%, and diabetes in 16%. Two patients had alopecia areata and one had pernicious anemia. No patients complained of photosensitivity during psoriasis treatment and the time to clearing of their psoriasis was not prolonged.

DISCUSSION

Psoriasis and vitiligo are both common skin conditions and their simultaneous occurrence in patients

Table I. *Onset of psoriasis and vitiligo*

Onset of vitiligo before psoriasis	14
Onset of vitiligo after psoriasis	11
Simultaneous onset	1
Onset uncertain	3

Table II. *Distribution of lesions*

Psoriasis on patches of vitiligo	14
Psoriasis on normal skin only	13
Uncertain	2

is not unexpected. There is no previous study in the literature which attempts to determine the frequency of concurrence of these diseases, although there have been several case reports of patients with both diseases (3–6, 10, 12, 23) and some authors feel there is an association between them. Levai (14) and Ortonne et al. (20), reviewing large numbers of patients with vitiligo, found some patients with concurrent psoriasis and questioned an association between the two conditions. In our study, 4% of the patients with vitiligo had psoriasis, which is higher than would be anticipated in the general population. However, the percentage of psoriatic patients who had vitiligo (0.67%) is within the average range for the population as a whole (8), suggesting that the apparent increase in psoriasis in the vitiligo group was due to their presentation with the former disorder with incidental discovery of the vitiligo.

The presence of vitiligo did not seem to influence the type or severity of psoriasis in our patients. The majority had plaque psoriasis as expected and while 11 had severe psoriasis requiring hospitalization, this is not unusual for psoriatics seen in our institution.

There did not seem to be any definite relationship of onset of the two diseases. Only one patient had onset of both conditions simultaneously. Fourteen had vitiligo before their first psoriatic lesion appeared. Only 7 of these patients developed psoriasis on the vitiliginous areas, indicating that psoriasis can occur as readily on normal as on hypopigmented skin. This contradicts the suggestion that vitiliginous epidermis is unusually susceptible to the psoriatic process (6). Eleven patients developed vitiligo after their psoriasis. Six of these developed areas of vitiligo in a distribution similar to that of their psoriasis. Some of these cases may represent a Koebner phenomenon—which is known to occur in vitiligo (18, 22)—with the patches of vitiligo occurring in areas where the psoriatic lesions have resolved.

Table III. *Associated diseases*

Psoriatic arthritis	9
Thyroid disease	11
Diabetes	5
Alopecia areata	2
Pernicious anemia	1

The interrelationship of the psoriatic and vitiliginous lesions in individual patients has been discussed previously in the literature. De Moragas & Winkelmann (6) described two patients with vitiligo and psoriasis in whom the psoriatic lesions occurred only within patches of vitiligo and they felt this represented a significant biological response, as an inverse relationship between pigmentation and psoriasis had been previously noted (15). Howsden et al. (10), however, described a patient with the Vogt–Koyanagi–Hara syndrome in whom the psoriatic plaques were congruent with the vitiliginous areas, while Chapman (4) reported a patient with completely separate distribution of psoriasis and vitiligo. Our study clearly shows that the skin lesions follow no specific pattern when these diseases occur simultaneously.

A greater than expected number of associated diseases was seen in our patients. Psoriatic arthritis was seen in 33%—much higher than the 7–11% usually seen in psoriasis (11, 21) and endocrine disease occurred in over half of the group. Clearly, patients with psoriasis and vitiligo must be carefully evaluated for evidence of endocrine gland dysfunction and arthritis.

Patients with vitiligo are known to be photosensitive in the depigmented areas (2), but none of our patients had problems in tolerating tar and UV-B light which is the standard therapy for psoriasis at out institution, and their response to this therapy was similar to psoriatics without vitiligo. Two patients who received PUVA had clearing of their psoriasis and some re-pigmentation of the vitiliginous areas.

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The Genetics of Vitiligo

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Abstract. The genetics of vitiligo has been studied in 150 probands and their families. A familial concentration of the disease has been demonstrated which supports the concept that hereditary factors contribute to the etiology of vitiligo. Segregation analysis was not consistent with inheritance at a single autosomal or x-linked locus. Further analysis suggested that vitiligo is determined by multifactorial inheritance. An estimate of heritability of liability was found to be 72.4%, indicating that genetic factors play a significant role in the etiology.

Vitiligo affects all races and it is reported that it occurs in 1% of the population (Lerner, 1959: El Mofty, 1968). The frequency is probably the same in both sexes. However, racial differences in the incidence of vitiligo have been reported as being higher in those with racially pigmented skin (Levai, 1958).

Although the cause of vitiligo is unknown, various hypoteses have been evolved. The most videly accepted are the autoimmune (Cunliffe et al., 1968), the neurogenic (Lerner, 1959) and the melanocyte self-destruction (Lerner, 1971) theories. However, it was reported that between 30 and 40% of patients have a positive family history (Lerner, 1959), which indicates that a genetic factor is undoubtedly involved. For this purpose we planned a study of the genetics of vitiligo.

MATERIAL AND METHODS

The material for this study included 150 patients with vitiligo and their families. Living relatives of probands were classified as first-degree, second-degree, or third-degree relatives. First-degree relatives included parents, siblings, and children of the 150 probands. Second-degree relatives included aunts, uncles, and grandparents. Third-degree relatives comprised first cousins.

The probands and the available living relatives were examined clinically. Some relatives who were not available for examination were recorded. Pedigrees were constructed and the genetic analysis performed using the mathematics of population genetics (Emery, 1976).