INTRODUCTION

Psoriasis is a common, chronic relapsing skin disease.\(^1\) Certain endocrinological disturbances exacerbate the disease.\(^2\) An improvement in psoriasis was reported in a psoriatic with hyperthyroidism.\(^3\) It was shown that two thyroid hormones, T\(_3\) and T\(_4\), cause an increase in Epidermal Growth Factor (EGF) which leads to epidermal hyperplasia.\(^4\) In two different studies Safet et al reported that T\(_3\) stimulates the proliferation of keratinocytes.\(^5,6\)

We compared the levels of thyroid hormones a group of patients with psoriasis vulgaris with those of a control group. We also correlated the PASI (Psoriasis Area and Severity Index) scores in the psoriasis group with serum levels of thyroid hormones.

METHODS

Consecutive patients with psoriasis who had not received any prior treatment within one month were included in the study. Exclusion criteria were psoriatics or controls with known thyroid impairment; those on thyroid hormone, anti-thyroid drugs or other drugs affecting thyroid function, such as lithium, iodine,
steroids, dopamine, anticonvulsant drugs, and interferon (which interferes with thyroid hormone level estimation); those who have undergone thyroidectomy; pregnant women and children aged less than 12 years. Patients with erythrodermic, pustular and only palmoplantar forms of psoriasis were also excluded. The control group was comprised of randomly selected patients from our clinic having skin diseases other than psoriasis.

Blood samples were collected on empty stomach between 08:30-10:30 hours. Measurements were carried out by using total T\textsubscript{3} (TT\textsubscript{3}), free T\textsubscript{3} (FT\textsubscript{3}), total T\textsubscript{4} (TT\textsubscript{4}), free T\textsubscript{4} (FT\textsubscript{4}) and TSH (Thyroid Stimulating Hormone) Immulite 2000 kits with the aid of an immunometric assay method. The severity of psoriasis was assessed by the PASI score for each patient.

Statistical assessment was done by using the SPSS 10.0 for Windows. Unpaired t-test was used when comparing mean values between groups. Chi-square test was used when comparing differences between the frequencies. A significance level of $P$ Value $< 0.05$ was chosen.

### RESULTS

A total number of 103 psoriatics (37 males and 66 females), and 96 controls (40 males and 56 females) were included in the study. The age of patients in the psoriasis group ranged from 16 to 79 (mean: 38.03 ± 21.48) years and 14 to 90 (mean: 34.16 ± 19.66) years in the control group. There was no statistical difference between the groups in terms of sex ($P$=0.406) and distribution of age ($P$=0.184). The duration of disease in the patient group ranged from 1 month to 65 years (mean: 11.02 ± 13.18 years).

The serum values of different thyroid hormones of both groups are shown in Table 1. On comparing both groups, the mean values of only FT\textsubscript{3} and TT\textsubscript{4} show a statistically significant difference ($P<0.05$). At least one thyroid hormone level in blood was increased in 23 (22.33%) patients of the psoriatic group as compared to 9 (9.37%) patients in the control group ($P=0.022$). The average PASI score in those 23 patients [$10.99 ± 5.01 (4.9-22.5)$] was relatively higher than that of patients in the psoriatic group having normal hormone levels [$6.24 ± 3.46 (1.4-15.5)$]. This difference in the average PASI scores between those two groups was statistically significant ($P<0.001$).

### DISCUSSION

In spite of the fact that many developments are recorded in the treatment and pathogenesis of psoriasis, its etiology still remains obscure. Propylthiouracil, an anti-thyroid preparation, was successfully used both in local\textsuperscript{7} and systemic\textsuperscript{8-10} treatment of psoriasis. Although the mechanism of action was unclear, it was suggested that this drug might have a regulatory effect on the T cells in the psoriasis plaque.\textsuperscript{9,10} Propylthiouracil increased the number of total and suppressor/cytotoxic T cells and reduced activated lymphocytes in psoriatic plaques.\textsuperscript{10} Other anti-thyroid agents, such as methimazole\textsuperscript{11} and thiamazole,\textsuperscript{12} have also been used successfully in the treatment of psoriasis. This means that thyroid hormones may have unknown effects on the disease.

It is postulated that T\textsubscript{3} receptors may play a role in the synthesis of keratin.\textsuperscript{8} The existence of T\textsubscript{3} receptors on the skin was also proved.\textsuperscript{13} Propylthiouracil, which is known to be an anti-thyroid drug, may affect the keratin synthesis process by binding to nuclear T\textsubscript{3} receptors.\textsuperscript{14} It is also known that T\textsubscript{3} has a major role in the regulation of cell growth and differentiation.\textsuperscript{15,16} Moreover, it has been stated that T\textsubscript{3} and T\textsubscript{4} have hyperproliferative effect on the skin by EGF.\textsuperscript{4}

In this study the serum TT\textsubscript{4} and FT\textsubscript{3} levels were
significantly higher in psoriatics than in the control group. The average PASI scores were significantly higher in these patients and this may be due to the direct or indirect effects of thyroid hormones on the course of psoriasis. Thus excessive production of thyroid hormones may aggravate psoriasis.

The skin may be a target organ for thyroid hormones and these hormones increase EGF and therefore accelerate epidermal proliferation. The role of these hormones on the etiopathogenesis of psoriasis will become clearer when the effect of thyroid hormones on keratinocytes and the anti-proliferative effect of antithyroid drugs on psoriasis are better demonstrated with experimental studies. Meanwhile, it may be useful to check the thyroid function in patients with uncontrolled and relapsing psoriasis.

REFERENCES