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# PSORIASIS AND THYROID: A RETROSPECTIVE RESEARCH FROM TURKEY

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## ABSTRACT

**AİM**: Psoriasis is a chronic, inflammatory and immuno-mediated skin disease. Many autoimmune diseases have been reported with psoriasis such as autoimmune thyroiditis. Although the relationship between psoriasis and thyroid has been repeatedly studied and over-emphasized, this relationship has not yet been fully elucidated.

**PATIENTS AND METHOD:** The study was carried out with a retrospective review of the files of psoriasis patients (n=82) and healty controls (n=47) admitted to the Dermatology clinics. Age, gender, serum anti-TPO levels, anti-TG levels, thyroid stimulating hormone (TSH) levels, free T3 levels and free t4 levels were corresponden between the two groups.

**RESULTS:** The median anti-TPO level of psoriatic patients was 5.6 (0.1-1300) IU/L. In the control group, the median anti TPO level was 1.30 (0.2-727.6) IU/L. The difference was statistically significant (p <0.001).

The median anti-TG level of psoriatic patients was 3.65 (0.1-310) IU/L. The median anti-TG level of healthy controls was 2.20 (2.20-511.2) IU/L. The difference was statistically significant (p=0.001).

The mean free T3 level of patients with psoriasis was 2.56 (0.63-4.52) IU/L. In healthy controls this level was 3.11 (1.70-4.44) IU/L. There was a statistically significant difference (p=0.002).

**CONCLUSION:** In our view, the relationship between these two diseases can be better elucidated by extensive studies on pathogenesis.

**KEYWORDS** : Psoriasis, Anti-tpo, Anti-tg, Autoimmunity,autoimmune Thyroidit

## INTRODUCTION

Psoriasis is a chronic, inflammatory and immuno-mediated skin disease. Generally, the frequency is given as 1-2% (1,2) although it varies in different societies. The etiopathogenesis of psoriasis is still unclear, but it is now the most widely accepted view (3,4,5) that T cells induce keratinocyte hyperproliferation as a consequence of genetic and environmental factors.

It has a chronic course and is characterized by recurrences and exacerbations (1). It is characterized by erythematous-silver-colored squamous patches, plaques, papules. There are generally five types (6): plaque type, guttate type, inverse type, pustular type and erythrodermic type. Many autoimmune diseases have been reported with psoriasis. The most common of these are rheumatoid arthritis, systemic lupus erythematosus, scleroderma, mixt connective tissue disease, autoimmune thyroid disease, pernisiosis anemia, Sjogren's syndrome and myasthenia gravis (4,7,8,9).

Although the relationship between psoriasis and thyroid has been repeatedly studied and over-emphasized, this relationship has not yet been fully elucidated. However, some points in the context of autoimmunity have begun to be clarified about this relationship and they are briefly mentioned in the discussion section.

The aim of this study is to determine whether the thyroid autoantibodies and thyroid hormones of psoriatic patients in the Turkish community are different from healthy volunteers.

## PATIENTS AND METHOD

The study was carried out with a retrospective review of the files of psoriasis patients (n = 82) who applied to the Kayseri Training and research hospital dermatology clinic. Patients known to have a specific thyroid gland pathology were not included in the study group or control group. As the control group, the data of non-psoriasis patients known to have no autoimmune pathology were used (n=47). Age, gender, serum anti-thyroid peroxidase (anti-TPO) levels, anti-thyroglobulin (anti-TG) levels, thyroid stimulating hormone (TSH) levels, free T3 levels and free T4 levels were recorded in the patients and control group. These values were compared between the control group and the psoriasis group.

### Statistical analysis

The normality of the distributions of the data was analyzed by using histograms and the Shapiro-Wilk test. Continuous variables were presented as mean±standard deviation. The mean values between the groups were compared using Student's T test. Chi-square test was used to compare categorical data. A value of p<0.005 was considered statistically significant. All statistical analyzes were performed using Statistical Package for the Social Sciences (SPSS), version 21.0 (SPSS Inc., Chicago, IL, US).

According to the Helsinki Declaration of 2004, the necessary approvals were obtained from **the local ethics committee.**

## RESULTS

The study included 82 psoriatic patients and 47 normal healthy subjects.

The mean age of patients with psoriasis was 45.0±16.0 years. The mean age of the control group was 45.8±15.5 years. In terms of age, the two groups were similar (p=0.798).

42.7% (n=35) of psoriasis patients were male while 57.3% (n=47) were female. In the control group, the proportion of males was 27.7% (n=13) and the proportion of females was 72.3% (n=37). The difference between the sexes of the patients was not considered statistically significant (p=0.089).

The median anti-TPO level of psoriatic patients was 5.6 (0.1-1300) IU/L. In the control group, the median anti TPO level was 1.30 (0.2-727.6) IU/L. The difference was statistically significant (p <0.001).

The median anti-TG level of psoriatic patients was 3.65 (0.1-310) IU/L. The median anti-TG level of healthy controls was 2.20 (2.20-511.2) IU/L. The difference was statistically significant (p=0.001).

The median TSH level in psoriatic patients was 1.8 (0.03-16.1) IU/L. TSH median was 1.49 (0.06-4.67) IU/L in healthy volunteers. The difference was not statistically significant (p=0.095).

The mean free T3 level of patients with psoriasis was 2.56 (0.63-4.52) IU/L. In healthy controls this level was 3.11 (1.70-4.44) IU/L. There was a statistically significant difference (p=0.002).

The mean free T4 level of psoriatic patients was 1.09 (0.4-4.16) IU/L. The median T4 level of the control group was 0.89 (0.67-1.27) IU/L.

The difference was not statistically significant (p=0.055).

**When patients are categorized as normal or increased according to serum anti-TPO levels:**

In 60% of male psoriasis, anti-TPO was found at normal intervals, while in 40% of men it was found to be increased. Anti-TPO was found in the normal range in 44.7% of the women psoriasis patients and increased in 55.3% of the women. The difference was not statistically significant (p = 0.170).

Anti-TPO was found in the normal range in 51.2% (n = 42) of psoriasis patients while it was found to be increased in 48.8% (n = 40) of the patients. In the control group, anti-TPO was in the normal range of 85.1% (n = 40) while it was above normal range in 14.9% (n = 7). The difference between these two ratios was statistically significant (p <0.001).

## DISCUSSION

Psoriasis is a chronic, inflammatory and immunomedicated skin disease. Due to the immunologic character of the disease, it is more common to be seen with some autoimmune systemic diseases, and one of them is autoimmune throid disease (7,8,9).

The main purpose of our study was to investigate the relationship between psoriasis and autoimmune thyroid disease in Turkish population. We examined thyroid function tests and autoimmune thyroid antibodies in patients with psoriasis compared with normal healthy subjects.

For this purpose, laboratory tests of 82 psoriasis patients and 47 healthy volunteers of similar age / sex were used.

The relationship between thyroid hormones and psoriasis has been tried to be elucidated in various previous studies (10). In 1995, Ribeiro et al. (11) published a study suggesting that the skin is a synthesis site for thyroid hormone receptors. On the other hand, changes in the level of thyroid hormones by activation of the disease and post-treatment decline may indicate the link between these two (12).

Many studies conducted before us did not reveal any association between thyroid hormones and psoriasis (10,13,14,15). There are also studies advocating the opposite (13). TSH levels and free t4 levels in our study were similar in both groups. Within the thyroid hormones, a statistically significant difference between the two groups was observed only for free t3. Patients with psoriasis had lower free t3 levels compared to the control group. This finding was consistent with a similar designed study in Turkish society (13).

In our cohort the anti-TPO levels of patients with psoriasis were statistically significantly higher than those in the control group.

Anti-TG was also significantly higher in the psoriasis group compared to the control group. T3 values were significantly higher in psoriasis group, too. In a similar study with 114 psoriasis patients, anti-TPO and anti-TG levels were not different compared to the control group (16). Conversely, the results of a recent study were consistent with our study, anti-TPO and anti-TG antibodies were significantly higher in the psoriatic group (17). Autoimmune thyroid disease is a T1-mediated disease and Thelper1 lymphocytes, interferon-gamma and interferon-gamma-dependent chemokines (CXCL9-10-11) play an important role in the pathogenesis. Psoriasis has increased IL-23 and TH17 levels. Likewise, these levels increase in autoimmune thyroid disease. (18,19). Our finding of high antithyroid antibodies in the psoriatic group may be related to this common pathogenetic mechanism.

In a study investigating the association of psoriasis with hashimoto thyroiditis, 856,615 people were screened. Of these, 9654 psoriasis and 1745 hadhimoto thyroiditis were found, and 41 patients were found to have both diseases. (20). Another factor is that biological and non-biological agents used for psoriasis are immunomodulators and may disrupt troid functions and increase the development of troid autoantibodies (21).

## CONCLUSION

Psoriasis and thyroid involvement have been studied frequently but have not been linked to a conclusion. We have studied this relationship in the context of Turkish society. In our view, the relationship between these two diseases can be better elucidated by extensive studies on pathogenesis.

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