

# Does Prolactin Indicate Severity of Psoriasis?

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## Abstract

**Background:** Psoriasis vulgaris is a common chronic and inflammatory disease of skin that its etiology is not completely known. However, it seems that genetic and environmental factors play a role in this disease. In vitro studies show that prolactin as a neurohormone has an etiologic effect on psoriasis. This study aimed to compare serum prolactin levels in psoriatic patients with control group.

**Method:** Prolactin level in serum was measured with ELISA method in 30 patients with psoriasis vulgaris and in 30 healthy persons as control group, which they had been matched with a view to age and sex.

**Result:** Mean serum prolactin level in psoriatic patients was not significantly higher than control group. However, there was statistically significant relation between severity of disease and serum prolactin levels ( $r=0.521$ ,  $p=0.003$ ).

**Conclusion:** Positive relation between severity of psoriasis vulgaris and serum prolactin levels may suggest that prolactin is an index that shows severity of disease. (*Iran J Dermatol 2009;12: 79-81*)

**Keywords:** psoriasis, prolactin, severity

## Introduction

Psoriasis is a T-cell mediated autoimmune skin disease<sup>1,2</sup> and most of the factors involved in autoimmunity can be categorized in four groups: genetic, immune defects, hormonal and environmental<sup>3</sup>.

Prolactin (PRL) is a hormone, mainly produced in anterior pituitary gland, although it can be produced in extrapituitary sites<sup>4</sup>. It has been hypothesized that PRL may modulate the skin immune system and may be involved in the pathogenesis of psoriasis<sup>5</sup>. Functional PRL receptors are detected on epidermal keratinosis and PRL effectively increased the *in vitro* growth of keratinocytes in psoriasis<sup>6</sup>.

A literature survey show that clinical studies on PRL in psoriasis are lacking with different results. Thus in this study, we have compared the serum levels of PRL in patients with psoriasis vulgaris (PV) and control group.

## Patients and Methods

After approval by medical ethics committee of the university, 30 patients with PV were included in this study during one year (Feb. 2008 – Feb.2009).

Diagnosis of PV was based on clinical findings. Severity of the disease was evaluated according to criteria of Psoriasis Area and Severity Index (PASI). The patients not received any treatment at least one month before that, were included in this study.

The exclusion criteria of the patients were drugs and any other conditions which affecting serum PRL levels. In females, pregnancy, lactation and menstrual abnormalities were also exclusion criteria. The control group consisted of 12 healthy males and 18 female volunteers.

The serum PRL levels and TSH (to discover subclinical hypothyroidism and due to its hyperprolactinemia) were measured by ELISA method and using Pishtaz Teb kit. The samples were taken between 8-10AM and in fasting status for at least 8 hour.

The statistical analysis were done by SPSS 11.5 ; using Chi square, student T-Test, Mann-witnny and Pearson regression test and  $p$ -value < 0.05 was considered significant.

## Results

In each group there were 12 males and 18 females. In patients group, age range was 14-67

years old (mean±SD 34.6±10.9) and in control group, 15-70 years old (mean±SD 33.2±10.2), respectively. Thus, two groups were matched not only by gender, but also by age.

Table 1 shows the age distribution between two groups.

In patients group PRL range was 1.8-48.2 ng/ml (mean± SD 11.7±9.1 ng/ml) and in control group was 2- 21.3 ng/ml (mean± SD 9.3 ±5.4 ng/ml), respectively. There was no significant difference in serum PRL levels between patients and control group.

The range of psoriasis duration among the patients was 1-14 years (mean±SD 5±3.29 years). There was no significant difference between serum PRL levels and duration of psoriasis.

The range of psoriasis area and severity index (PASI) scores in patients group was 2-25 (mean± SD 8.7 ±5.1). Table 2 shows distribution of PASI scores in patients group. Pearson regression test showed positive correlation between PRL levels and severity of psoriasis ( $r= 0.521$ ,  $p=0.003$ ).

## Discussion

Based on *in vitro* studies PRL can effectively increase keratinocytes proliferation<sup>6</sup>, indicating that PRL may be involved in the hyperproliferation of keratinocytes in psoriasis. Also PRL shows a variety of immunoregulatory effects. It enhances INF- $\gamma$  production in T-cells and natural killer cells<sup>7</sup>. Recently Kanda and Watanabe found that PRL up regulated INF- $\gamma$ -induced production of CXC Ligand 9 (CXCL9), CXCL10 and CXCL11 in human neonatal foreskin keratinocytes. They supposed that the production of this chemokines by keratinocytes may thus generate abundant infiltrates of type 1 T cells; their results theoretically support that PRL can be a candidate therapeutic target for psoriasis<sup>5</sup>.

Regana and Millet reported three cases of women with plaque-type psoriasis that severity and extent of the skin lesions correlated with development of a prolactinoma. All three patients were treated with bromocriptin. They had normalization of PRL level and also improvement of psoriatic lesions. Then, they discontinued bromocriptin and all cases had relapsed in psoriasis<sup>8</sup>. These clinical findings support Kanda and Watanabe *in vitro* study.

Giasuddin et al, investigated serum PRL level in 12 patients with PV and the results were compared with 9 patients with atopic dermatitis and 20 normal control subjects. Serum PRL in PV was significantly higher compared with those two other groups. Three patients had the highest serum levels

**Table 1.** The age distribution between two groups.

Age (years)	Psoriasis group		Control group	
	Number	percent	Number	percent
< 20	2	6.7	2	6.7
20-29	8	26.7	9	30
30-39	9	30	8	26.7
≥ 40	11	36.7	11	36.7
total	30	100	30	100

**Table 2.** Distribution of psoriasis severity in patients group

Severity of disease (PASI index)	Number	percent	Serum prolactin level (ng/ml)	
			mean	SD
<5	4	13.8	8.5	3
5-9	14	48.3	9.9	7.6
10-14	8	27.6	11.3	5.1
>15	3	10.3	23.8	21.4
total	30	100	-	-

above the normal range but they were <100 ng/ml (the minimum limit for diagnosis of prolactinoma)<sup>9</sup>. This study also support above studies. Of course, in this study the severity of disease in psoriatic patients was not clear.

Gorpelioglu et al, investigated PRL levels in 39 patients with psoriasis and compared these levels with 36 controls. Nine patients and five controls had slightly increased PRL levels but below 100 ng/ml. In this study, there was no significant difference in serum PRL levels between patients and controls. Also, no statistical correlation was found between the PASI scores of patients and their PRL levels<sup>10</sup>.

Similarly, we could not find any association between PRL levels and psoriasis, but in our study PRL levels had relationship with severity of disease. As mentioned above and due to our results, it can be concluded that the role of PRL in pathogenesis of psoriasis should not be rule out. Additional studies must be done with large sample size. Also, we suggest that PRL level is done in psoriatic patients with a high PASI score and in patients who are resistant to treatment. PRL may play a role in severity of the disease and high levels of PRL could indicate the severity of psoriasis.

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