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Original Research

Assessment of plasma adiponectin levels in Psoriasis patients: A case-control study

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ABSTRACT:

Background: Psoriasis is a common, disfiguring, and stigmatising skin disease. Adiponectin has been shown to exert anti-inflammatory, insulin-sensitizing and atheroprotective effect. The present study was undertaken for assessing plasma adiponectin levels in Psoriasis patients. **Materials & methods:** A total of 25 psoriasis patients and 25 healthy controls were enrolled. Complete demographic and clinical data of all the patients was obtained. Only patients with confirmed clinical and histopathological diagnosis of psoriasis were enrolled. Patients with history of any other systemic illness or any other co-morbid condition were excluded. Blood samples were obtained from all the patients and were sent to laboratory. Plasma adiponectin levels were measured. **Results:** Mean plasma adiponectin levels of the patients of the psoriasis group and control group was 8.12 µg/mL and 2.42 µg/mL respectively. On comparing statistically, it was seen that mean plasma adiponectin levels among the patients of the psoriasis group was significantly lower in comparison to the patients of the control group. **Conclusion:** Adiponectin levels are significantly lowered in psoriasis patients highlighting their role in the pathogenesis of the disease.

Key words: Adiponectin, Psoriasis

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INTRODUCTION

Psoriasis is a common, disfiguring, and stigmatising skin disease associated with profound impaired quality of life. Psoriasis is diagnosed on the basis of clinical findings (skin rash, changes to nails, joint involvement) and is usually straightforward. Occasionally patients present with atypical skin lesions that need to be differentiated from tinea, mycosis fungoides, discoid lupus, or seborrhoiec dermatitis, or non-specific skin signs such as minimal scaling of the scalp, isolated flexural erythema, or genital lesions. Careful assessment of all body sites may reveal undeclared, diagnostically useful features, and a skin biopsy may occasionally be indicated.[1- 4] Chronic plaque psoriasis is by far the most common type, but other morphological variants include guttate psoriasis, flexural or "inverse" forms (body folds), sebopsoriasis, erythrodermic psoriasis (total body redness and scaling), and pustular psoriasis (localised or generalised palmar plantar disease). Occasionally combinations of the different types develop simultaneously or sequentially over time in the same patient.[5- 7]

The adipokines leptin and adiponectin are key inflammatory mediators secreted by adipose tissue, which have multiple downstream effects, including regulation of insulin sensitivity, inflammation and immunity. Adiponectin has been shown to exert anti-inflammatory, insulin-sensitizing and atheroprotective effect.[6- 8] Hence; under the light of above mentioned data, the present study was undertaken for assessing plasma adiponectin levels in Psoriasis patients.

MATERIALS & METHODS

The present study was undertaken for assessing plasma adiponectin levels in Psoriasis patients. A total of 25 psoriasis patients and 25 healthy controls were enrolled. Complete demographic and clinical data of all the patients was obtained. Only patients with confirmed clinical and histopathological diagnosis of

psoriasis were enrolled. Patients with history of any other systemic illness or any other co-morbid condition were excluded. Blood samples were obtained from all the patients and were sent to laboratory. Plasma adiponectin levels were measured. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Student t test was used for evaluation of level of significance.

RESULTS

A total of 25 psoriasis patients and 25 healthy controls were enrolled. Mean age of the patients of the psoriasis group and control group was 43.6 years and 44.1 years respectively. 60 percent of the patients of the psoriasis group and 72 percent of the patients of the control group were males while the remaining were females. Mean plasma adiponectin levels of the patients of the psoriasis group and control group was 8.12 µg/mL and 2.42 µg/mL respectively. On comparing statistically, it was seen that mean plasma adiponectin levels among the patients of the psoriasis group was significantly lower in comparison to the patients of the control group.

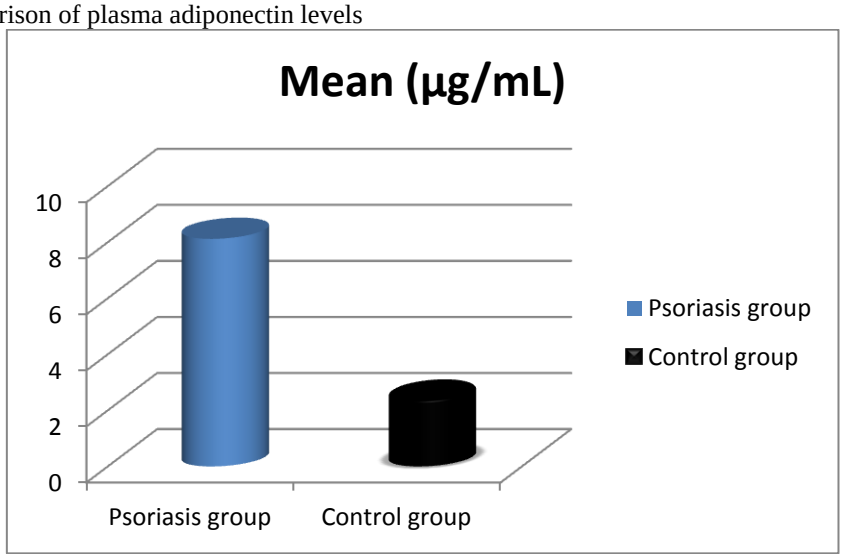
Table 1: Demographic data

Variable	Psoriasis group	Control group
Mean age (years)	43.6	44.1
Males (%)	60	72
Females (%)	50	28

Table 2: Comparison of plasma adiponectin levels

Plasma adiponectin levels	Psoriasis group	Control group
Mean (µg/mL)	8.12	2.42
SD	13.39	3.17
p- value	0.00 (Significant)	

Graph 1: Comparison of plasma adiponectin levels



DISCUSSION

Psoriasis is a chronic inflammatory skin disease characterized by T helper (Th) cell dysfunction and overexpression of pro-inflammatory cytokines. The disease is associated with cardiometabolic risk factors, such as dyslipidaemia, central obesity and insulin resistance, and psoriasis also increases the risk of cardiovascular disease (CVD). Pro-inflammatory cytokines found to be increased in the blood and skin of patients with psoriasis including tumour necrosis factor (TNF)-α, interleukin (IL)-6 and IL-17 have been implicated in adipose tissue dysfunction and insulin resistance in central obesity.[6- 9] Adipose tissue, although considered as an organ for energy storage in the past, is now accepted as an active endocrine and immune organ, which produces various bioactive molecules, named adipokines. These adipokines, in cooperation with macrophages and T cells, cause adipose tissue inflammation and finally develop metabolic syndrome.[5- 7] Hence; under the light of above mentioned data, the present study was undertaken for assessing plasma adiponectin levels in Psoriasis patients.

A total of 25 psoriasis patients and 25 healthy controls were enrolled. Mean age of the patients of the psoriasis group and control group was 43.6 years and 44.1 years respectively. 60 percent of the patients of the psoriasis group and 72 percent of the patients of the control group were males while the remaining were females. Mean plasma adiponectin levels of the

patients of the psoriasis group and control group was 8.12 µg/mL and 2.42 µg/mL respectively. Li RC et al analysed 122 participants with varying degrees of psoriasis severity. A random sample of 134 participants without psoriasis was recruited for this case–control study. Participants with psoriasis had mostly mild disease and were mainly on topical therapies, but still had a more adverse cardiometabolic profile compared with those without psoriasis. Furthermore, plasma adiponectin levels were significantly lower in participants with psoriasis than those without {7.13 µg/mL [interquartile range (IQR) 4.9–11.3) vs. 14.5 µg/mL (IQR 8.4–24.1); $P < 0.001$]}. Plasma leptin (ng/mL) levels were higher in the psoriasis group but this did not reach statistical significance [11.3 (IQR 6.4–21.8) vs. 9.8 (IQR 4.9–20.5); $P = 0.07$]. In multivariable modelling, plasma adiponectin levels were still negatively associated with psoriasis status after adjusting for waist size (% difference = −41.2%, $P < 0.001$), insulin resistance (% difference = −39.5%, $P < 0.001$) and both waist size and insulin resistance (% difference = −38.5%, $P < 0.001$). Plasma levels of adiponectin were lower in psoriasis, and this relationship persisted after adjusting for cardiometabolic risk factors known to decrease adiponectin levels.[9]

In the present study, on comparing statistically, it was seen that mean plasma adiponectin levels among the patients of the psoriasis group was significantly lower in comparison to the patients of the control group. Oh YJ et al measured serum levels of leptin and adiponectin in Korean patients with psoriasis. Twenty four patients with psoriasis and fifteen control subjects were included in the study. Serum leptin and adiponectin levels were determined by an immunometric sandwich enzymelinked immunosorbent assay (ELISA). The mean serum leptin concentration in patients with psoriasis was higher than in controls, and the difference was statistically significant. In contrast, serum adiponectin levels in patients with psoriasis were significantly decreased compared with healthy controls. Leptin levels in vitamin D-deficient patients were statistically significantly higher than in vitamin D-sufficient patients. Serum adiponectin concentrations showed a negative correlation with body mass index (BMI) and psoriasis area and severity index (PASI) in patients with psoriasis. In conclusion, the their study demonstrated that leptin and adiponectin may play a role in the immunopathogenesis of psoriasis and may be useful biomarkers indicating severity of psoriasis in Korean patients.[10]

CONCLUSION

Adiponectin levels are significantly lowered in psoriasis patients highlighting their role in the pathogenesis of the disease.

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