ISSN: 0975-1556

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2021; 13(5); 334-338

Original Research Article

# A Comparative Assessment of Psoriasis Area Severity Index and Fasting Blood Glucose Levels in Psoriasis Patients with Diabetes Mellitus.

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**Received: 03-08-2021 / Revised: 04-09-2021 / Accepted: 24-09-2021**
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**Conflict of interest: Nil**

**Abstract**

**Purpose:** The research was conducted in view of growing interest in association of psoriasis and diabetes mellitus and their potential for having an impact on each other, screening for diabetes mellitus as well as emerging new treatment options for patients welfare. **Objective:** To correlate Psoriasis Area and Severity Index (PASI) with Fasting Blood Sugar (FBS) in psoriatic patient with diabetes mellitus. **Materials & Method:** This was Cross sectional observation study conducted in the department of dermatology at the **Government Medical College, Aurangabad** from September 2020 to August 2021. All patients of psoriasis age more than 18 years and willing to be participate and to sign informed consent were included in this study. Exclusion criteria were those patients who were not willing to participate and those who had another systemic severe disease, pregnant females. **Results:** Total 54 psoriasis patients were examined. The male: female ratio was 1: 1. Mean (SD) age of the patients was 44.3 (16.4) years. Majority 50% of the patients were having palmoplantar psoriasis. Also 29.6% patients were joint involvement. The Pearson's Correlation Coefficient between PASI with FBS was 0.60 & statistically significant. **Conclusion:** Psoriasis Area and Severity Index was positively correlated with fasting blood sugar in this study.

**Keywords:** Fasting blood sugar, Psoriasis Area and Severity Index, Diabetes Mellitus



## Introduction

Psoriasis is a chronic, inflammatory, proliferative condition of skin, with genetic and environmental influences having a critical role in its aetiology and pathogenesis. It is heterogenous in morphology, affected sites, natural history, age of onset and precipitating factors. Desease presents with pruritis, scaling and plaques in a wide size range with a fluctuating disease activity. It affects individuals in 3rd to 4th decades or 5th to 7th decades and males twice as commonly as females.

Psoriasis has an important genetic component with type I psoriasis being associated to HLA (particularly HLA C: 06:02) while type II is sporadic. Various environmental factors considered in pathogenesis psoriasis are infection, medication, alcohol, smoking, psychological distress, physical trauma and sunlight.

The mechanism of immune activation in psoriasis is not fully understood. There is T cell activation, specifically T helper17 cells. IL 2, IL 8, INF GAMMA, TNF ALPHA, IL 15, IL 17, IL 22 and IL 23 are found at increased levels in psoriatic plaques. Diabetes mellitus encompasses heterogenous group of disorder with insulin resistance or hypo secretion.

The association between psoriasis and various comorbidities- CVS disease, hypertension, diabetes mellitus, obesity, dyslipidaemia has been reviewed in several studies but still it remains one the most important and interesting fields of study because of controversial results obtained in various studies and the important of performing screening tests in these patients. [1]

It has been pointed out in WHO's Global report on psoriasis that there are many unmet research gaps in psoriasis epidemiology. Research methods need to be harmonised and reflect cultural as well as geographical differences. [2] Since psoriasis has environmental influences [3], ethnic differences are quite commonly expected involving all aspects of disease. Hence data obtained from research done on different ethnic communities holds importance.

There is emerging genetic evidence linking psoriasis to diabetes. Genetic variation in IL12B, IL23R, IL23A has an influence on risk of psoriasis, its severity and diabetes mellitus. [4] they may share common inflammatory pathways. Positive correlation between PASI and blood glucose levels would add to the growing evidence supporting role of potential of hypoglycemics in psoriasis especially with coexisting diabetes where immunosuppression may be unwelcomed. [5] this would open newer avenues of research.

This would contribute to the growing evidence of similar pathways for inflammation in psoriasis and diabetes mellitus, screening of psoriasis patients for diabetes mellitus and basis for better control of both diseases due to their impact on each other. Research will objectively measure fasting blood glucose levels and psoriasis area severity index to establish correlation and analyse it.

**Materials & Methods:**

This was Cross sectional observation study conducted in the department of dermatology at a **Government Medical College, Aurangabad** from September 2020 to August 2021. All patients of psoriasis age more than 18 years and willing to be participate and to sign informed consent were included in this study. Exclusion criteria were those patients who were not willing to participate and those who had another systemic severe disease, pregnant females.

Patients were enrolled by using simple random sampling technique & total 54 patients were enrolled for the study. Sample size calculated by using correlation method, with 95% of confidence interval, 90% of power of size & 2.14 times consider was design effect in psoriasis.

Data were collected from the patients on vitals, liver function test, renal function test, complete blood count, fasting blood glucose levels & PASI score assessment to severity of psoriasis.

**Statistical Analysis:**

The recorded data was compiled & entered in a Microsoft excel 2013 and then exported to data of Statistical packages of social science (SPSS) version 20.0 (SPSS. Inc. Chicago, Illinois, USA). Descriptive statistics included computation of percentages, means and standard deviations. For all tests, confidence level was considered 95% & p value less than 0.05 were considered as a statistically significant.

**Results:**

In this cross-sectional study total 54 patients were examined. Out of these, male:

female was equally participated in this study. Majority of the patients were males (53.7%). The mean age of the patients was 44.3 years with the 16.40 years were spreads. Also, maximum patients were belonging to the age group between 21 - 40 yeas. (Table no. 1)

**Table 1: Demographic data of study subjects.**

| Variables | | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 29 | 53.7% |
| | Female | 25 | 46.3% |
| Age Group | 18 - 20 years | 3 | 5.6% |
| | 21 - 40 years | 23 | 42.6% |
| | 41 - 60 years | 17 | 31.5% |
| | 61 - 80 years | 11 | 20.4% |
| Age | 44.3 $\pm$ 16.4 years | | |

In the table 2 shows that the characteristics of the psoriasis patients. Out of 54 patients, 50.0% were having palmoplantar type of psoriasis followed by the 42.6% were having chronic plaque psoriasis. The duration of psoriasis was classified is as follows: 17 patients were less than 1 year; 21 patients were 1 - 3 years & 16 patients were more than 3 years. The joint was involved in 16 (29.6%) patients while 38 (70.4%) did not have joint involvement.

**Table 2: Characteristic of psoriasis patients.**

| Variables | | Frequency | Percentage |
|---|---|---|---|
| Type of Psoriasis | Palmoplantar | 27 | 50.0% |
| | Chronic plaque | 23 | 42.6% |
| | scalp | 2 | 3.7% |
| | Acrodermatitis | 2 | 3.7% |
| Duration | < 1 year | 17 | 31.5% |
| | 1 - 3 years | 21 | 38.9% |
| | > 3 years | 16 | 29.6% |
| Joint Involvement | Yes | 16 | 29.6% |
| | No | 38 | 70.4% |

According to the objective were calculated Pearson's correlation coefficient between Psoriasis area and severity index (PASI) with fasting blood sugar (FBS) was 0.60 and p value was 0.01 shows that the psoriasis area and severity index (PASI) was positively correlated with fasting blood sugar (FBS) and also statistically significant. (Table no. 3)

**Table 3: Correlation off PASI with Fasting blood sugar (FBS).**

| Score | Fasting blood sugar |
|---|---|
| PASI | r = 0.60 & p = 0.01 (Significant) |

**Discussion:**

Psoriasis and diabetes have a certain common underlying pathogenic mechanism. Both have an inflammatory nature, and both are associated with T-lymphocite mediated adaptive immune

events and mechanisms, involving innate immunity. Specifically, both psoriasis and diabetes are associated with T-helper. The prevalence of obesity, diabetes, and metabolic syndrome has been shown to be increased in psoriasis patients in the general population. At least one study has demonstrated a higher prevalence of diabetes in patients who have psoriasis independent of traditional diabetes risk factors such as age, gender, obesity, hypertension, and hyperlipidemia, indicating that the disease itself, or possibly its chronic treatments, may predispose to the development of diabetes. A major problem limiting our understanding of the genetic basis of type 2 diabetes is that many environmental and genetically based factors influence insulin sensitivity and insulin secretion: these include age, gender, ethnicity, physical fitness, diet, smoking obesity, and fat distribution.

In this study done in the Indian subpopulation, the male had slightly higher proportion compare to females which was in agreement with previous studies from India have shown that Psoriasis is twice more common in males compared to females[6,7]. In our study, females were found to have a lower PASI score compared to males. This is consistent with previous studies done among Swedish patients, which show that women had statistically significant lower median PASI scores (5.4) than men (7.3). [8] A family history of psoriasis was obtained from 9% patients. Farber et al reported familial occurrence in 36% of their patients. [9]

The most common type of psoriasis among Indians is chronic plaque psoriasis followed by palmoplantar psoriasis. [10] However in this study done in South India, palmoplantar psoriasis was found to be slightly more common (50%) compared to chronic plaque psoriasis (40.9%). Our study showed a statistically significant correlation between PASI and FBS. The Pearson co-relation coefficient was 0.6, and p value was 0.001. Previous studies have shown a significant positive correlation between PASI and FBS. [11]

**Conclusion:**

In conclusion it was found that significant differences are noted compared to the pattern of psoriasis in western countries. The most common clinical type of psoriasis observed was palmoplantar psoriasis. The severity of psoriasis as measured by the PASI score was found to be lower in females compared to males. A statistically significant positive correlation between PASI and FBS was noted in this study.

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