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Original Research Article

Comparative assessment of psoriasis area and severity index and fasting blood sugar levels in psoriatic patients with diabetes mellitus

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ABSTRACT

Background: Present study was done with objectives to study the co-relation between PASI and Fasting blood sugar (FBS) levels in psoriatic patients with diabetes mellitus and to study the association between duration of topical steroid therapy and Fasting blood sugar (FBS) levels.
Methods: Present study was conducted in the 26 patients at the Department of Dermatology at a tertiary care centre in Bhuj, Gujarat. A detailed history on the type of psoriasis, duration, associated co-morbid conditions and details of topical steroid therapy was obtained from all patients. They were examined in detail and assigned a PASI score to assess the severity of psoriasis. Patients with nail involvement were scored using N NAIL tool. Fasting blood sugar levels were noted in patients with Diabetes.
Results: Age of patients ranged from 15 years to 72 years. The different types of psoriasis observed were palmoplantar psoriasis-14 (50%), and chronic plaque psoriasis - 11. The joint was involved in 7 patients while 19 did not have joint involvement. The Pearson co-relation coefficient between PASI and FBS was 0.60 and p value was 0.001. The Pearson co-relation coefficient between duration of topical steroid therapy and FBS was 0.15, and p value was 0.50.
Conclusions: A statistically significant positive correlation between PASI and FBS was noted in this study. The duration of topical steroid therapy was not associated with significant changes in FBS in psoriatic patients with diabetes mellitus.

Keywords: Diabetes mellitus, Fasting blood sugar, Psoriasis, Pearson co-relation coefficient

INTRODUCTION

The term diabetes mellitus (DM) encompasses a heterogeneous group of disorders characterized by insulin hypo secretion and/or insensitivity. Type 1 DM is a chronic autoimmune disease associated with selective destruction of insulin producing pancreatic b-cells. A variety of gene loci have been studied to determine their association with type 1 DM. The early studies suggested that the B8 and B15 of HLA class I antigens were increased in frequency in the diabetics compared to the control group. However, more recently the focus has shifted to the class II HLA-DR locus. It was found that DR3 and DR4 were more prevalent than HLA-B in type 1.DM than HLA-B.

Psoriasis is a chronic inflammatory disease of the skin, scalp, nails, and sometimes joints that affects 1-2 percent of the general population. Psoriasis is a clinical diagnosis.

The disease is characterized by erythematous and indurate plaque which usually is covered by thick silvery white scales and can manifests as psoriatic arthritis (PsA), an inflammatory joint disease resulting in extensive bone resorption and joint destruction. Although the clinical course of psoriasis is highly variable between individuals, the lesions are typically recurrent.[1,2]

Psoriasis is a common multisystem inflammatory disease with predominantly skin and joint involvement. It has a bimodal age of onset and affects both sexes equally. There are different clinical types of Psoriasis, the most common of which is chronic plaque psoriasis, affecting 80% to 90% of patients with psoriasis. The hallmark of classic plaque psoriasis is well demarcated, symmetric and erythematous plaques with overlying silvery scale. Plaques are typically located on the scalp, trunk, buttocks and extremities but can occur anywhere on the body.[1]

Metabolic syndrome is a complex entity represented by a set of cardiovascular risk factors usually related to insulin resistance and central adiposity. Among the related factors are hypertension, abdominal obesity, dyslipidemia and glucose intolerance. Several reports have shown an increased risk for the metabolic syndrome in patients with psoriasis.[3]

The Psoriasis Area and Severity Index (PASI) were developed in 1978 by Fredricksson and Pettersson. The PASI results in a single score for psoriasis severity from 0 to 72.[4] Method for calculating the Psoriasis Area and Severity Index. It involves assessment over 4 body regions (head [h], trunk [t], upper [u] and lower [l] extremities of erythema (E), infiltration (I), and desquamation (D), and body surface area involvement (A). Because the head, upper extremities, trunk and lower extremities correspond to approximately 10%, 20%,30%,and 40% of body surface area, respectively, the PASI score is calculated by the formula:

PASI = 0.1 (Eh +Ih +Dh) Ah +0.2(Eu +Iu +Du) Au +0.3 (Et +It +Dt) At +0.4 (El +Il +Dl) Al

Nail involvement is seen 10% to 80%of psoriatic patients and manifests as features resulting from nail matrix or nail plate alterations. The Nijmegen Nail psoriasis activity index tool (NAIL) is a recent scoring system, which better reflects clinical severity than all other tested nail psoriasis scoring systems.[5]

The association of psoriasis with type 2 diabetes mellitus and obesity has been extensively studied and has been the subject of numerous meta-analysis that clearly establish an association of psoriasis with both obesity and diabetes. The results of these studies suggest that Psoriasis is associated with an increased risk of diabetes mellitus independent of major risk factors in a manner that correlates with the severity of psoriasis. Psoriasis is associated with diabetes mellitus independent of age, sex, smoking and BMI.

There is emerging genetic evidence linking psoriasis to diabetes. Genetic variation in IL12B, IL23R and IL23A has an influence not only on the risk for psoriasis but also on its severity and type 2 diabetes. Emerging studies suggest that Psoriasis is associated with more HbA1c, and that increasing body surface area affected by psoriasis is associated with an increased risk for diabetic complications.[6]

The different presentations of psoriasis require a variable approach to treatment and the current treatment concept advocates that the type of therapy prescribed should be appropriated to disease severity. Although there is a wide range of therapies available for the treatment of psoriasis, either systemic or topical agents, the use of topical therapy remains a key component of the management of almost all psoriasis patients. While mild disease is commonly treated only with topical agents, the use of topical therapy as adjuvant therapy in moderate to-severe disease may also be helpful and can potentially reduce the amount of phototherapy or systemic agent required to achieve satisfactory disease control.

Although topical steroids are an integral part of the psoriasis therapeutic armamentarium, limitations due to the occurrence of well-known adverse effects, both cutaneous and systemic.[7]

Significant percutaneous absorption of glucocorticoids may result in hyperglycemia and the unmasking of latent diabetes mellitus by means of a multifactorial mechanism. Consequently, systemically absorbed topical glucocorticoids may precipitate or exacerbate hyperglycemia.[8]

Present study was done with objectives to study the co-relation between PASI and fasting blood sugar (FBS) levels in psoriatic patients with diabetes mellitus and to study the association between duration of topical steroid therapy and FBS levels.

METHODS

Present study was a cross-sectional study conducted in the 26 patients at the Department of Dermatology at a tertiary care centre in Bhuj, Gujarat from July 2016 to August 2017. Inclusion criteria were: Psoriatic patients attending the outpatient department for the period of 4 months were enrolled in the study after taking informed consent. Exclusion criteria were those patients who were not willing to participate and those who had another sever systemic disease.

A detailed history on the type of psoriasis, duration, associated co-morbid conditions and details of topical steroid therapy was obtained from all patients. They were examined in detail and assigned a PASI score to assess the severity of psoriasis. Patients with nail involvement were scored using N NAIL tool. Fasting blood sugar levels were noted in patients with diabetes.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA).

Descriptive statistics included computation of percentages, means and standard deviations. For all tests, confidence level and level of significance were set at 95% and 5% respectively.

RESULTS

Of the 26 patients examined, 14 were males and 12 were females. Age of patients ranged from 15 years to 72 years (Table 1). Eleven patients belonged in the age group 20-40 years. The next most frequent age group was the 41-60 years group, which had 8 patients. Very few patients (4.4%) belonged to the age group <20 years, while the 61-80 years age group had 6 patients. The different types of psoriasis observed were palmoplantar psoriasis-14 (50%), and chronic plaque psoriasis - 11. One patient each had psoriasis limited to the scalp, and acrodermatitis continua. The duration of psoriasis was classified into 3 categories and the number of patients in each category is as follows: Short term (<1 year)- >8(37.1%) Intermediate (1-3 years) >10 (44.9%) Long-term (>3 years)->4 (18%) The joint was involved in 7 patients while 19 did not have joint involvement. Based on the nail involvement, an N-NAIL score was assigned to all patients as shown in Table 2. The Pearson co-relation coefficient between PASI and FBS was 0.60 and p value was 0.001. The Pearson co-relation coefficient between duration of topical steroid therapy and FBS was 0.15, and p value was 0.50.

Table 1: Demographic data of study participants.

Gender	Number	Percentage (%)
Male	14	53.8
Female	12	46.1
Total	26	100
Age of the study participants (Mean±SD): 35.22±07.12		

Table 2: N-NAIL score among study participants.

NAIL score	Number of patients (%)
0-5	19 (73.07)
6-10	2 (7.6)
>10	5 (19.2)

DISCUSSION

Psoriasis and diabetes have a certain common underlying pathogenic mechanisms. 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..[9.10] 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).[11] A family history of psoriasis was obtained from 9% patients. Farber et al reported familial occurrence in 36% of their patients.[12]

The most common type of psoriasis among Indians is chronic plaque psoriasis followed by palmoplantar psoriasis.[13] 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 co-relation 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 co-relation between PASI and FBS.[14]

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. The duration of topical steroid therapy was not associated with significant changes in FBS in psoriatic patients with diabetes mellitus.

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Ethical approval: The study was approved by the institutional ethics committee

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