ORIGINAL RESEARCH PAPER

Dermatology

PSORIASIS AND DIABETES MELLITUS :A STUDY ON THE CO-RELATION BETWEEN PSORIASIS AREA AND SEVERITY INDEX (PASI) AND FASTING BLOOD SUGAR LEVELS.

KEY WORDS: Psoriasis, Diabetes, PASI

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ABSTRACT

Background : Psoriasis is a multisystem inflammatory disease with predominantly skin and joint involvement. Psoriasis is associated with an increased risk of Diabetes Mellitus independent of major risk factors in a manner that co-relates with the severity of Psoriasis. The present study is an attempt to study the co-relation between PASI and FBS.
Methods : This was a cross-sectional study conducted in the Department of Dermatology at a tertiary care centre in South India. Psoriatic patients attending the outpatient department were enrolled in the study and examined after taking informed consent.
Results : The most common type of Psoriasis observed was palmoplantar psoriasis, followed by chronic plaque psoriasis. The male: female ratio was 1:1. The PASI score was found to be lower in females compared to males. A significant positive co-relation between PASI and FBS was observed in our study. There was no association between duration of topical steroid therapy and FBS.
Conclusion : The most common clinical type of psoriasis observed was palmoplantar psoriasis. There is a significant positive co relation between PASI and FBS. The PASI scores were lower in females compared to males. There was no association between duration of topical steroid therapy and FBS.

INTRODUCTION

Psoriasis is a common multisystem inflammatory disease with predominantly skin and joint involvement. It has a bimodal age of onset (16 to 22 and 57-60 years) 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 [2].

Several reports have shown an increased risk for the metabolic syndrome in patients with psoriasis [3].

The Psoriasis Area and Severity Index (PASI) was 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).as shown in Table 1

Table 1. Calculation of Psoriasis Area and Severity Index

Degree of severity (per body region)	Value given
No symptoms	0
Slight	1
Moderate	2
Marked	3
Very marked	4
Surface involved (per body region)	Value given
<10%	1
10%-29%	2
30-49%	3
50-69%	4
70-89%	5
90-100%	6

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]

Table 2 The Nijmegen – Nail psoriasis Activity Index tool.

Feature	Manner of scoring
Onycholysis	0=absent 1 =0-25 % 2 =25-50 % 3 =>50 %
Pitting	0=absent 1 =mild 2 =moderate 3 =severe
Crumbling	0=absent 1 =mild 2 =moderate 3 =severe
Beau's lines	0=absent 1 =1Beau line 2 =2 Beau line 3 =>3 Beau lines
Subungual hyperkeratosis	0=absent 1= 1mm 2 = 2mm 3= >3 mm

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]. Treatment 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 therapiesavailable 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].

METHODS

The study was a cross-sectional study conducted in the Department of Dermatology at a tertiary care centre in South India. Aims and objectives :1) To study the co-relation between PASI and Fastingblood sugar (FBS) levels in psoriatic patients with Diabetes mellitus.

2)To study the association between duration of topical steroid therapy and Fasting blood sugar(FBS) levels. Psoriatic patients attending the outpatient department between March 2018 and May 2018 were enrolled in the study after taking informed consent. A detailed history focusing 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 collected data were analysed using SPSS(IBM SPSS statistics 20). The selected variables were presented using the frequency and percentage tables. Association /relationship between 2 variables were performed using the Chi-square and Pearson co-relation coefficient. Statistical significance was considered at 5% alpha level.

RESULTS

Of the 21 patients examined, 11(50%) were males and 11(50%) were females. Age of patients ranged from 16 years to 71 years.Nine(40.9%) patients belonged in the age group 20-40 years. The next most common age group was the 41-60years group, which had 7(31.8%)patients. A minority (4.5%) belonged to the age group <20 years, while the 61-80 years age group had 5(22.7%) patients.

The different types of psoriasis observed were, in decreasing order of frequency, palmoplantar psoriasis-11 (50%), and chronic plaque psoriasis - 9(40.9%). 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(36.3%) Intermediate (1-3 years) –>10(45.4%) Long-term (>3 years)->4 (18.1%) The joint was involved in 5(22.7%) patients while 17(77.3%) did not have joint involvement. Based on the nail involvement, an N-NAIL score was assigned to all patients as shown in Table 3

Table 3. N-NAIL score

NAIL score	Number of patients
0-5	17(77.3%)
6-10	1(4.5%)
>10	4(18.2%)

A family history of psoriasis was obtained from 2 patients. The co-relation between PASI and FBS is shown in Figure 1.

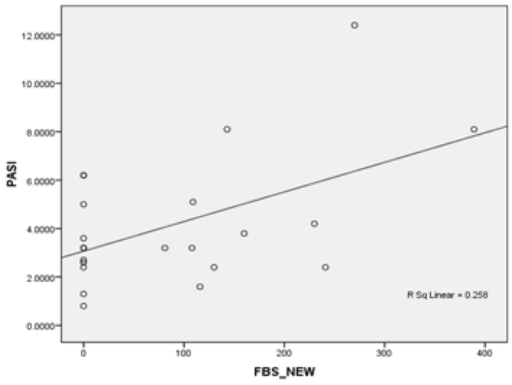

Figure 1.The co-relation between PASI and FBS in psoriatic patients with diabetes mellitus.

The Pearson co-relation coefficient was 0.0508 and p-value was 0.0.16(significant).

The association between duration of topical steroid therapy and FBS is shown in Figure 2.

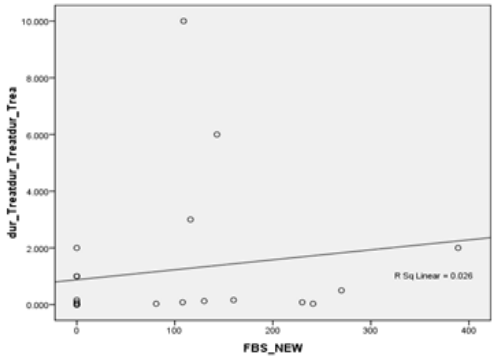

Figure 2. The association between duration of topical steroid therapy and FBS in psoriatic patients with diabetes mellitus.

The Pearson co-relation coefficient was 0.162, and p-value was 0.471.

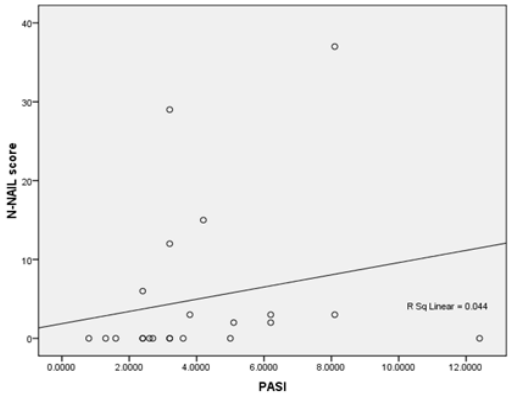

Figure 3. The correlation between NAIL score and PASI.

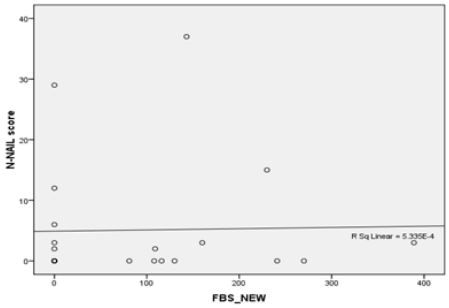

Figure 4. The correlation between NAIL score and FBS.

DISCUSSION

In this study done in the Indian subpopulation, the male to female ratio was 1:1. 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 followedby palmoplantar psoriasis. [10], [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 0.508, and p – value was 0.016.Previous studies have shown a significant positive co-relation between PASI and FBS. [14].

CONCLUSION:

In this study done on a section of the Indian population, considerable differences are noted compared to the pattern of psoriasis in western countries. The male to female ratio was found to be equal. 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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