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COMPARATIVE STUDY OF METABOLIC SYNDROME MARKERS IN PSORIATIC PATIENTS AND NON PSORIATIC CONTROLS

Manikya Latha S.[1]* and V. V. V. Satyanarayana[2]

[1]*Department of Dermatology, NIMRA Medical College and Hospital, Vijayawada. Andhra Pradesh, India.
[2]Department of Dermatology, Rajiv Gandhi Institute of Medical Sciences, Srikakulam, Andhra Pradesh, India.

***Corresponding Author: Manikya Latha S.**

Department of Dermatology, NIMRA Medical College and Hospital, Vijayawada. Andhra Pradesh, India.

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ABSTRACT

Aim and Objective: Psoriasis is a chronic inflammatory skin disorder affecting 1-3% of the population. Psoriasis may act as an external indicator of underlying immune and metabolic dysregulation. The present study aims to know the prevalence of metabolic syndrome in Psoriatic patients and also prevalence of individual components of syndrome. **Materials and Methods:** 100 patients of psoriasis confirmed by histopathological examination, aged >25yrs. Age and sex matched controls were included in the study. severity of psoriasis was assessed according to Psoriasis Area and Severity Index[PASI] and body surface area[BSA]. Metabolic syndrome was diagnosed by the presence of at least 3 criteria of NCEP ATP III with Asian modification for waist circumference. The markers of metabolic syndrome in psoriatic patients and nonpsoriatic controls which includes Abdominal obesity, Blood pressure Fasting blood glucose level was measured using a glucose oxidase method. Serum triglyceride level, Serum HDL level are measured with enzymatic procedures. **Results:** In the present study prevalence of metabolic syndrome in psoriatic patients was higher than in controls [42.0% vs 22.0%] and association between psoriasis and metabolic syndrome was statistically significant. Prevalence of abnormal fasting blood sugars was more in psoriasis patients than controls [56.0% vs 24%]. HDL levels are low in psoriatic patients than in controls [58% vs 32%]. Serum triglycerides levels are higher in Psoriatic patients than in controls(41.0% vs 35%). Abnormal blood pressure was more in psoriatic patients than in controls [37% vs 12%]. Central obesity was more in psoriatic patients than in controls [42% vs 18%]. **Conclusion:** Our study showed higher prevalence of metabolic syndrome in psoriatic patients than in controls. Prevalence of components of metabolic syndrome: diabetes, hypertention, obesity and dyslipidemia was higher in psoriatic patients than controls and significant statistical association was found with Central obesity, Hypertension, Fasting glucose and low HDL levels.

KEYWORDS: diabetes, hypertention, obesity and dyslipidemia.

INTRODUCTION

Psoriasis is a chronic inflammatory skin disorder affecting 1-3% of the population. It is characterized by epidermal hyperproliferation, abnormal keratinocyte differentiation, angiogenesis with blood vessel dilatation and Th1 and Th17 inflammation.[1] Psoriasis may act as an external indicator of underlying immune and metabolic dysregulation.[2] Recently associations between psoriasis and metabolic diseases such as obesity, diabetes, atherogenic dyslipidemia have been recognized. Moreover, an increased mortality from cardiovascular disease in patients with severe psoriasis has been documented and psoriasis may confer an independent risk of myocardial infarction especially in hospitalized young patients.[3, 4, 5]

These diseases may share a common pathophysiological link permitting them to join atherosclerosis and consequent cardiovascular disease.

Metabolic syndrome is a cluster of risk factors including central obesity, atherogenic dyslipidemia, and hypertension and glucose intolerance and is a strong predictor of cardiovascular disease. It confers a cardiovascular risk higher than individual components.[6] The present study aims to know the prevalence of metabolic syndrome in Psoriatic patients and also prevalence of individual components of syndrome and compare them with age and sex matched controls. The study was conducted in patients attending the department of dermatology, venereology and leprosy, Government General Hospital, Vijayawada, a tertiary care centre in Andhra Pradesh. The present study is to compare the prevalence of markers of metabolic syndrome in psoriatic patients and nonpsoriatic controls which includes Abdominal obesity, Blood pressure Fasting blood glucose level, Serum triglyceride level, Serum HDL level.

MATERIALS AND METHODS

The present study was conducted in patients who attended the outpatient department of Dermatology and venereology, NIMRA medical college and Hospital, Vijayawada. The study was conducted over a period of 1year from august 2015- august 2016. Total number of patients who attended dermatovenereologyleprosy OP department during this period. Total number of patients with psoriasis included in the study was 100. 100 patients of psoriasis confirmed by histopathological examination, aged >25yrs. Age and sex matched controls were included in the study. Patients receiving any systemic therapy like methotrexate, acitretin, and phototherapy 1month before enrollment were excluded. All patients attending outpatient department of DVL, are screened for the presence of psoriasis identified clinically by chronic well defined erythematous scaly plaques. Informed consent was taken and subjected to histopathological examination of lesion by taking punch biopsy. General data regarding age, sex, symptoms, duration of disease, history of treatment, smoking & alcohol, family history, history of cardiovascular disease and cerebro-vascular disease are collected, type and distribution of lesions noted, severity of psoriasis was assessed according to Psoriasis Area and Severity Index[PASI] and body surface area[BSA].

Controls were enrolled among patients referred for dermatological conditions other than psoriasis. The source population for cases and controls was the same. Cases and age and sex matched controls are screened for the presence of metabolic syndrome as defined by National cholesterol education program adult panel III 2001 as given below.

Criteria of metabolic syndrome	Values
Central obesity:Waist circumference	≥102cm in males ≥88cm in females
Hypertriglyceridymia	≥150mg/dl or on specific medication
Low HDL cholesterol	<40mg/dl in males <50mg/dl in females or on specific medication
Hypertension: Blood pressure	≥130mm systolic or≥85 mm diastolic or on specific medication
Fasting blood glucose	≥100mg/dl or on specific medication

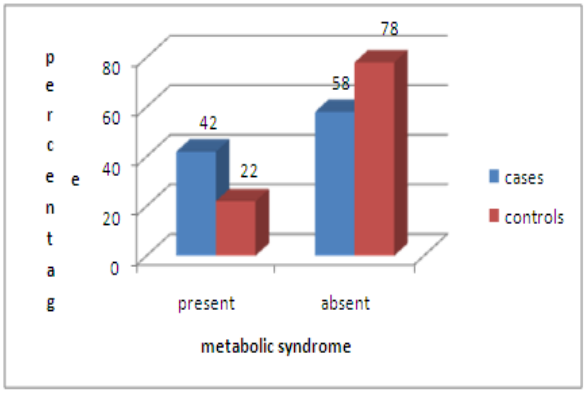
3 or more criteria is required for diagnosis of metabolic syndrome.

Waist circumference is determined by placing tape at upper most part of hip bone around abdomen, horizontally. The tape measure was snug but did not cause compression on the skin. Blood pressure was recorded as the average of two measurements after asking patients to sit for 5min. Serum samples were taken after the subjects had fasted over night at least for 8 hrs. Serum HDL cholesterol and triglycerides are measured with enzymatic procedures. Plasma glucose was measured using a glucose oxidase method.

OBSERVATIONS AND RESULTS

TABLE: 1 Prevalence of metabolic syndrome among cases and controls is as follows

Metabolic syndrome	Cases No (%)	Controls No(%)	Total No(%)
Present	42(42.0%)	22(22.0%)	64(32.0%)
Absent	58(58.0%)	78(78.0%)	136(68.0%)
Total	100(100.00%)	100(100.00%)	200(100.00%)



Chi-Fig: 1 square equals 9.191 with 1 degree of freedom. The two tailed p value equals to 0.0024 statistically significant.

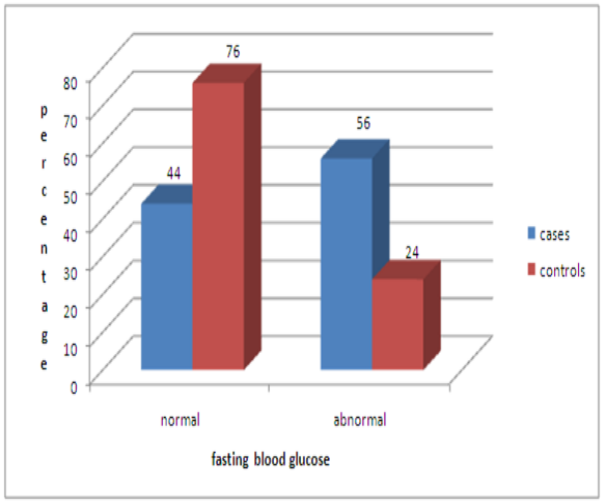


Fig: 2 *FASTING GLUCOSE LEVELS [≥ 100mg/dl]*

Chi-square equals 21.333 with 1 degree of freedom. The two tailed p value equals to 0.0001. Statistically significant

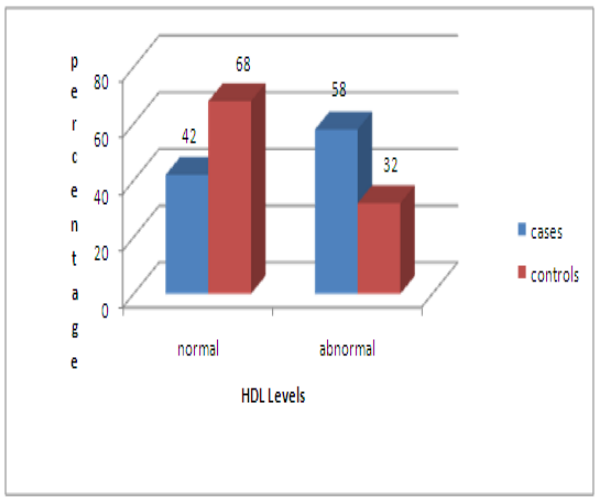


Fig: 3 LOW HDL LEVELS [MALES<40mg/dl, MALES<50mg/dl]

Chi-square equals to 13.657 with 1 degree of freedom. The two tailed p value equals to 0.0002.Statistically significant.

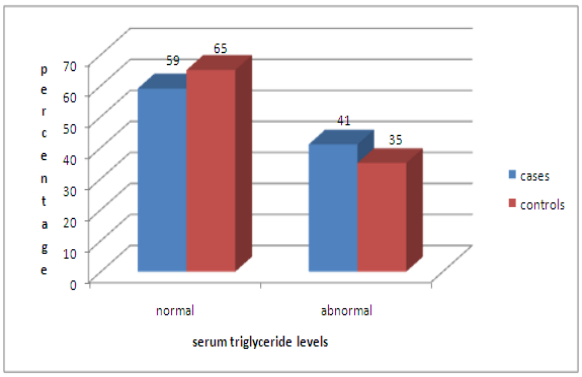


Fig: 4 *HYPERTRIGLYCERIDE LEVELS [≥150mg//dl]*

Chi-square equals to 0.764 with 1 degree of freedom. The two tailed p value equals to 0.3821. not statistically significant.

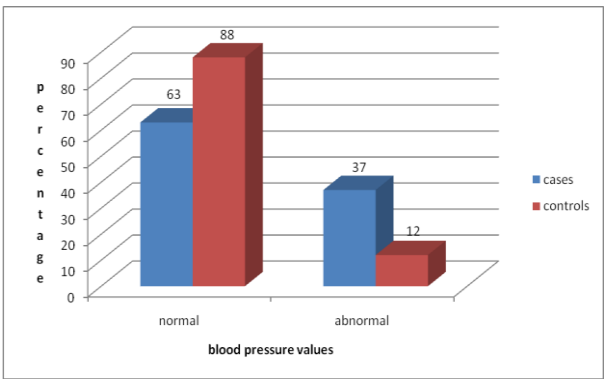


Fig: 5 HYPERTENSION [VALUES ≥130/85mm OF Hg]

Chi-square equals to 16.894 with 1 degree of freedom. The two tailed p value equals to 0.0001. statistically significant.

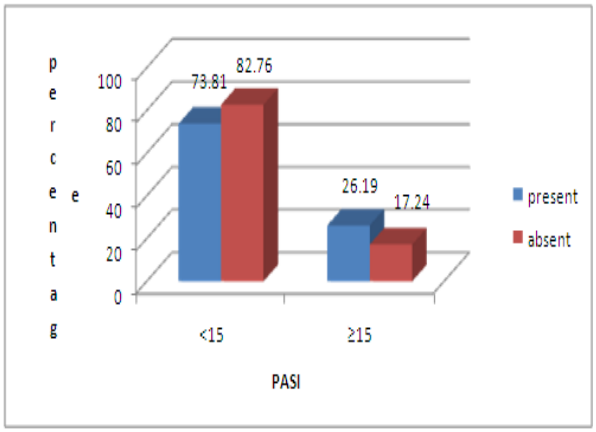
TABLE-2 *CENTRAL OBESITY*
[Waist circumference ≥102cm in males, ≥88cmin females]

	Cases	Controls	Total
Normal	58 (58.0%)	82 (82.0%)	140 (70.0%)
Abnormal	42 (42.0%)	18 (18.0%)	60 (30.0%)
Total	100 (100.00%)	100 (100.00%)	200 (100.00%)

Chi-square equals to 13.714 with 1 degree of freedom. The two tailed p value equals to 0.0002. Association statistically significant.

TABLE-3 *PASI SCORE AMONG PSORIATIC PATIENTS AND CORRELATION WITH METABOLIC SYNDROME*

	METABOLIC SYNDROME		
PASI	Present	absent	total
<15	31(73.81%)	48(82.76%)	79(79%)
>15	11(26.19%)	10(17.24%)	21(21%)
total	42(100.00%)	58(100.00%)	100(100%)



Chi- Fig: 6 square equals to 1.18 with 1 degree of freedom. The two tailed p value equals to 0.278. not statistically significant.

TABLE-4 BSA *IN PSORIATIC PATIENTS AND CORRELATION WITH METABOLIC SYNDROME*

	Metabolic syndrome		
BSA	Present	Absent	Total
<10	12(28.57%)	32(55.17%)	44(44%)
>10	30(71.43%)	26(44.83%)	56(56%)
Total	42(100%)	58(100%)	100(100%)

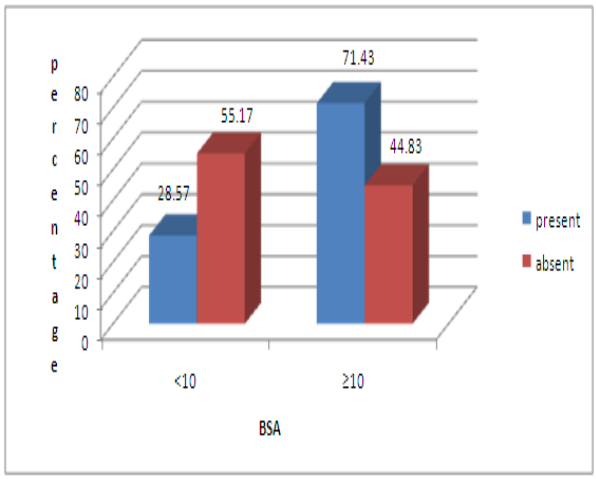


Fig: 7 Chi-square equals to 6.996 with 1 degree of freedom. The two tailed p value equals to 0.0082. Associations statistically significant.

DISCUSSION

Psoriasis is a chronic inflammatory skin disease, which predisposes patients to a state of increased risk for cardiometabolic disease. Psoriasis is associated with the cardiometabolic risk factors of the metabolic syndrome: type 2 diabetes, obesity, hypertension, dyslipidaemia. Skin changes [inflammation] caused by psoriasis have a direct role in determining these risk factors. Epidemiological studies have established these associations and increasingly they are determining the directionality of the associations and the role of psoriasis as an independent risk factor for these outcomes. In our study males outnumbered females, the ratio being 1.85:1. In the study conducted by Gisondi et al.[6] male to female ratio was 0.89:1 which differs from our study. Majority of the patients are between age group 36-55[54%].

Patients had PASI scores ranging from 0.5 to 32.4; 79% had a PASI score <15, whereas 21% had PASI score of ≥15. BSA affected ranged from 2% to 95%; 44% patients had a BSA < 10% whereas 56% patients had BSA ≥10%. this was similar to study conducted by Gisondi et al[33] (45.3% with BSA <10% and 54.7% with BSA ≥10%). Chronic plaque psoriasis was most common type accounting for 54% of cases.

In the present study prevalence of metabolic syndrome in psoriatic patients was higher than in controls [42.0% vs 22.0%] correlating with the studies of Laurie Barclay et al[7] (40% vs 23%), Gisondi et al[6] (30.1% vs 20.6%) A.S. Kourosh et al[2] (30% vs 20.6%) and Nuzhatum Nisa et al[8] (28 vs6%) and association between psoriasis and metabolic syndrome was statistically significant.

There was no statistical difference in the prevalence of metabolic syndrome between males and females similar to the study of Gisondi et al[6], but metabolic syndrome was more frequent after the age of 45 in both cases and controls.

Prevalence of metabolic syndrome was not correlated to severity of psoriasis in terms of PASI score similar to the studies of Gisondi et al[6] and Takahasi et al.[9] Prevalence of metabolic syndrome was correlated to severity of psoriasis in terms of BSA. This is in contrast to the study of Gisondi et al.[6]

Prevalence of various parameters of metabolic syndrome

Prevalence of abnormal fasting blood sugars was more in psoriasis patients than controls [56.0% vs 24%] and association was statistically Significant. Similarly significant association is found in Jocob Drehier and Dahlia[10] [19.8 vs 15.2].

HDL levels are low in psoriatic patients than in controls [58% vs 32%]. Association with psoriasis was statistically significant. The findings are similar to studies of Jocob Drehier and Dahlia[10] [57.1% vs 47.4%] and Thorvardur Jon Love et al[11] [33.9% vs 23.9%].

Serum triglycerides levels are higher in Psoriatic patients than in controls(41.0% vs 35%) similar to study of Laurie Barclay et al[49] (44% in cases) Gisondi et al[6] [37.8% vs 23.3%] and Jocob Drehier and Dahlia[10] [57.1% vs 47.4%], but their association is not significant in our study in contrast to the above mentioned studies.

Abnormal blood pressure was more in psoriatic patients than in controls [37% vs 12%] and their association is significant similar to Jocob Drehier and Dahl[10] [(37.5% vs 29%], Cohen et al[12] [27.5% vs14.4%] and the findings are in contrast to Gisondi et al[6] [40.8% vs 39.5%].

Central obesity was more in psoriatic patients than in controls [42% vs 18%] and their association is significant. This is in similar to studies conducted by Gisondi et al[6] (57.1% vs 47.6%), Thorvardur et al[11] [62.9% vs 49.9%] and Jocob Drehier and Dahlia[10] [24% vs 17.9%].

CONCLUSIONS

Our study showed higher prevalence of metabolic syndrome in psoriatic patients than in controls. Prevalence of components of metabolic syndrome: diabetes, hypertention, obesity and dyslipidemia was higher in psoriatic patients than controls and significant statistical association was found with Central obesity, Hypertension, Fasting glucose and low HDL levels.

Prevalence of metabolic syndrome did not correlate to severity of psoriasis in terms of PASI score. While heart disease remains a quiet killer ignored for years by those at risk, psoriasis being a highly visible disease due to its impact on social interaction and quality of life prompts early dermatological consultation. Association of psoriasis with metabolic syndrome throws some light on the need for comprehensive and multidisciplinary investigative approach to management of psoriasis, as well as a number of potential serious cardiovascular co-morbidities. As most markers of metabolic syndrome are associated with psoriasis it can be taken as one of the marker.

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