IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 11 Ver. III (Nov. 2017), PP 14-18
www.iosrjournals.org

A Case Control Study of Metabolic Syndrome in Psoriasis Patients in A Tertiary Care Center Of Jharkhand

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Abstract: *Psoriasis is a common chronic, disfiguring, inflammatory and proliferative condition of the skin in which both genetic and environmental influences have a critical role. It has been suggested that psoriasis is associated with metabolic syndrome.The major features of Metabolic Syndrome include central obesity, Hypertriglyceridemia, low high density lipoprotein (HDL) cholesterol, hyperglycemia and hypertension. In this study 68 psoriatic patient were selected as case and age and sex matched 68 control were selected. Blood sugar, lipid profile, was estimated,blood pressure and waist circumference was measured. Among cases 17.65% vs 14.7% in control had diabetes, 16.18%cases vs 11.76% control were hypertensive, serum triglyceride was raised 29.4%vs 25% in control, 19.12%cases were obese vs 14.7%control, and HDL level was low in 23.5% cases vs 19.12% in control. Metabolic syndrome was present in 22.1% case vs 17.6% in control. Study showed metabolic syndrome and its parameter was on higher side in cases as compared to control , but it was statistically it was not significant.*

Keywords: *Diabetes Mellitus, Hypertension, Metabolic Syndrome, Psoriasis*

Date of Submission: 23-10-2017 Date of acceptance: 09-11-2017

I. Introduction

Psoriasis is a common chronic, disfiguring, inflammatory and proliferative condition of the skin in which both genetic and environmental influences have a critical role. The most characteristic lesions consist of red scaly sharply demarcated indurated plaques present particularly over extensor surfaces and scalp.(1) The disease is enormously variable in duration, periodicity of flares and extent. Estimates of the occurrence of psoriasis in different parts of the world vary from 0.1% to 3%.(2)It has been suggested that psoriasis is associated with metabolic syndrome. An association of psoriasis and cardiovascular disease (CVD) has long been recognized(3).CVD risk is highest in those with more severe disease, with standardized mortality rates reaching 2.6, particularly in younger patients. The metabolic syndrome (syndrome X, Insulin resistance syndrome) consists of a constellation of a metabolic abnormality that confers increase in cardiovascular disease & diabetes mellitus (DM). The major features of Metabolic Syndrome include central obesity, Hypertriglyceridemia, low high density lipoprotein (HDL) cholesterol, hyperglycemia and hypertension. Association between psoriasis and metabolic syndrome is also true for mild severity psoriasis and it is independent from the tendency of psoriatic patients to be obese (4)

The metabolic syndrome (MetS) is a cluster of risk factors including obesity, atherogenic dyslipidaemia, hypertension, glucose intolerance and a proinflammatory and prothrombotic state predisposing the patients to cardiovascular diseases (CVD), type 2 diabetes (DM), renal failure and stroke.Recent study have demonstrated that the prevalence of metabolic syndrome is significantly higher in psoriatic patients compared to controls after the age of 40 years and psoriatic patients have an increased risk for the individual components of MetS(5). Although the link between psoriasis and metabolic syndrome is not completely elucidated, the pathophysiology of both these entities shows many shared cytokines contributing to the underlying chronic inflammatory status. The association of metabolic syndrome with psoriasis could be due to higher prevalence of cigarette smoking, obesity, physical inactivity, hyperhomocysteinemia and psychological stress among patients(6). Moreover hypertension, dyslipidaemia, insulin resistance and obesity are independently related to psoriasis other than as components of metabolic syndrome (7-9)

II. Aims & Objective

To study the prevalence of metabolic syndrome among patients of psoriasis vulgaris.

III. Materials And Method

A descriptive study was conducted in the department of Dermatology, Venereology and Leprosy Rajendra Institute of Medical Sciences,Ranchi.duration of study was 1 year. All clinically diagnosed new cases of psoriasis in the age group of 10 – 70 years giving consent was included in the study.Patient not willing to take part in the study or not giving written consent and patient with past history of systemic or topical treatment of psoriasis were excluded.A total of 68 cases of newly diagnosed patients of psoriasis fulfilling above mentioned inclusion and exclusion criteria were selected from inpatient and outpatient department of Dermatology, Venereology and Leprosy at Rajendra Institute of Medical Sciences, Ranchi. The control subjects were taken from patients attending the dermatology OPD for disorders other than psoriasis..Specimen CollectionBlood: 5 ml plain venous blood after overnight fasting was obtained by venepuncture. This was followed by centrifugation and then sample was processed immediately after collection.Determinations-Plasma glucose was tested by glucose oxidase method.Serum total cholesterol was estimated by enzymatic method.Serum triglyceride (S.TG) was determined by enzymatic method.Serum HDL Cholesterol (S.HDL-Ch) was estimated by phosphotungsatemethod.Serum VLDL cholesterol was calculated by the formula VLDL = S.TG/5 The diagnosis of metabolic syndrome (MS) was based on the criteria of National Cholesterol Education Program – Adult Treatment Plan III, with Asian modification for abdominal circumference (10). The criteria are:i) Increased waist circumference – ≥ 102 cm in males and ≥ 88 cm in females;ii) Raised triglycerides ≥150 mg/dl (or on treatment for raised triglycerides);iii) Decreased HDL < 40 mg/dL in men and < 50 mg/dL in women (or on treatment for reduced HDL-c);iv) Increased blood pressure systolic ≥130 and/or diastolic ≥ 85 mm Hg (or on treatment for hypertension);v) Increased fasting glucose ≥ 100 mg/dL (or on treatment for increased blood glucose).The presence of any 3 or more of these 5 risk factors constitutes a diagnosis of MS(10). Case control statistical analysis was carried out in the present study. Significance was assessed at 5% level of significance, Chi-square/2x2 test has been used to find the significance of study parameters on categorical scale between two groups.

IV. Results

68 cases and 68 control were selected , among cases 18 were female and 50 were male, in control 22 were female 46 were male.(table 1, fig. 1). Maximum 39.7% case were in age group 41–50years, 23.5% were in 31- 40 years. Mean age in cases was 39.43±13.02 and in control was 38.27±12.00 (table 2, fig. 2). Among cases 17.65%vs14.7%in control had diabetes (p value 0.641), 16.18%cases vs 11.76% control were hypertensive (p value 0.458), serum triglyceride was raised 29.4%vs 25% in control(p value 0.563), 19.12%cases were obese vs 14.7%control (p value 0.492, and HDL level was low in 23.5% cases vs 19.12% in control(0.529). Metabolic syndrome was present in 22.1% case vs 17.6% in control(p value 0.519).(table 3, figure 3).

TABLE 1. MALE FEMALE RATIO

Sex	Case	Control
Male	50	46
Female	18	22
Total	68	68

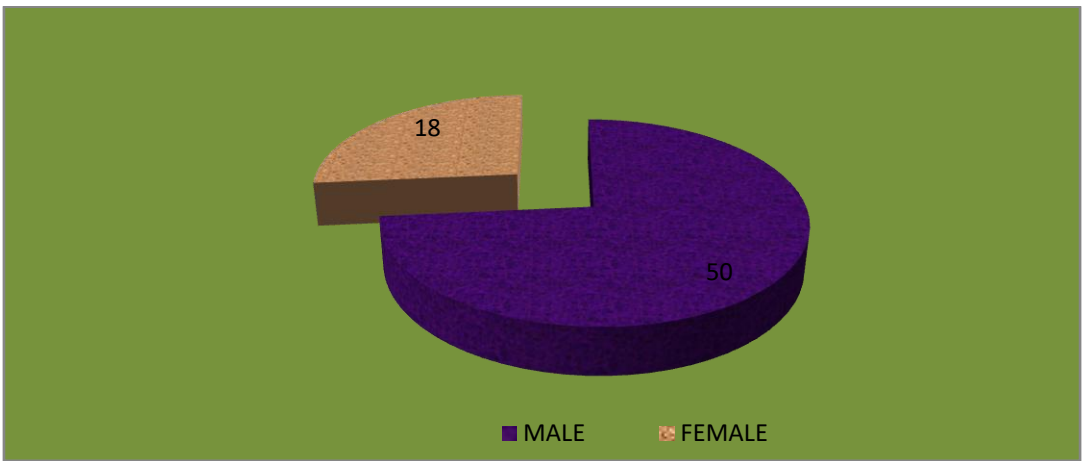

FIGURE 1.

TABLE 2.AGE DISTRIBUTION

Age group (years)	Case		Control	
	No.	%	No.	%
10–20	8	11.8	6	8.8
21–30	10	14.7	12	17.6
31–40	16	23.5	17	25
41–50	27	39.7	23	33.8
51–60	4	5.9	6	8.8
61–70	3	4.4	4	5.9
Total	68	100	68	100
Mean±SD	39.43±13.02		38.27±12.00	

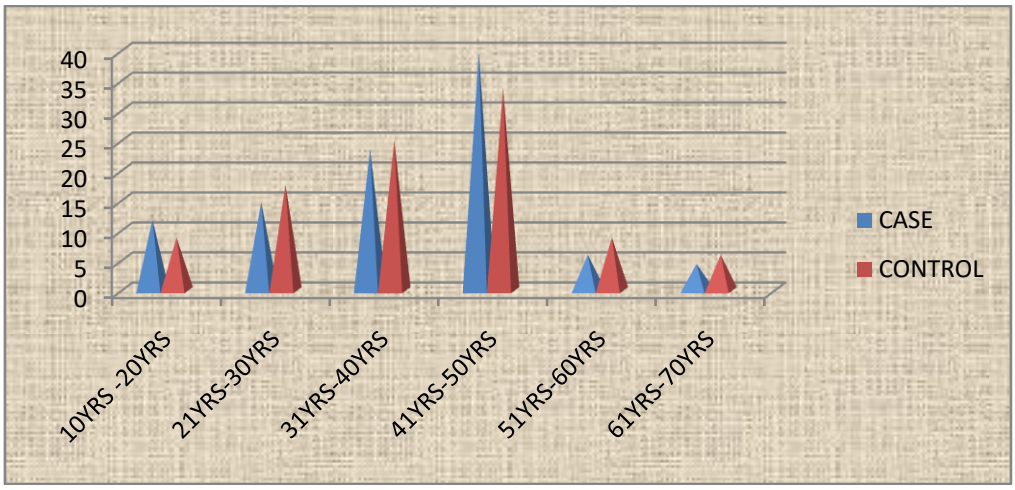

FIGURE 2

TABLE 3: FOR DIFFERENT PARAMETER OF METABOLIC SYNDROME IN CASES VS CONTROL

S.NO	PARAMETER	CASES	%	CONTROL	%	P.VALUE (significant <0.05)
1	DIABETES	12	17.65	10	14.7	0.641
2	HYPERTENSION	11	16.18	8	11.76	0.458
3	HDL LEVEL <40mg/ml in males 7< 50mg/ml in females	16	23.5	13	19.12	0.529
4	SERUM TRIGLYCERIDE >150mg/ml	20	29.42	17	25	0.563
5	CENTRAL OBESTY .>102cm in males &>88cm in females	13	19.12	10	14.7	0.492
6	METABOLIC SYNDROME	15	22.1	12	17.65	0.519

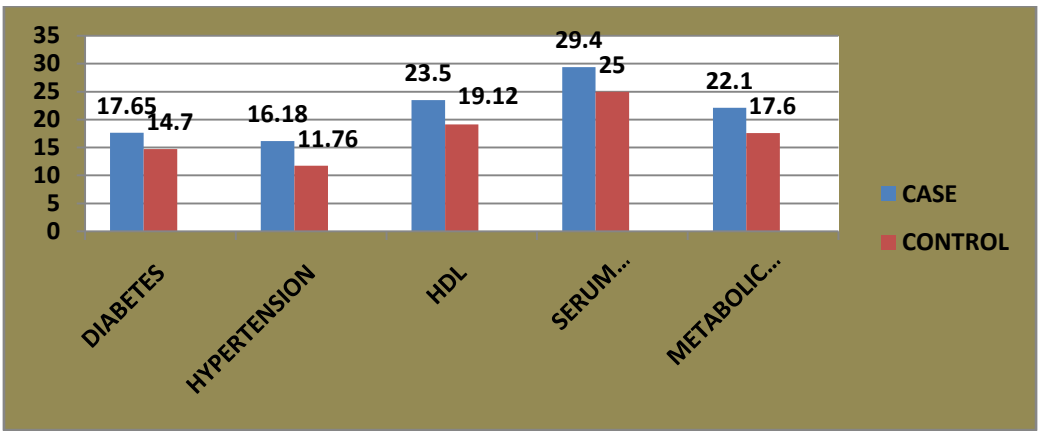

FIGURE 3

V. Discussion

Out of 68 cases 50 were males & 18 were females ratio 2.7:1. Higher male preponderance was seen in our study, which correlated with other published studies (11,12). Thus the sex ratio in our study correlated with the above literature. Prevalence of DM in cases of psoriasis was 17.6% as compared to control 14.7 %. There was no significant increase in prevalence of DM in patient of psoriasis ($p = 0.641$). Our findings are however similar to a study done in Delhi where no significant difference was reported between cases and controls regarding number of subjects with elevated blood glucose and the previous study in Pondicherry where the average fasting blood glucose was similar among psoriasis cases and controls (13,14) However reports from western literature contradict this finding.(15,16) Sommer et al (2006), Shapiro et al (2007) & Cohen et al (2008) have reported an increase in the prevalence of diabetes in patients with psoriasis(15-17) Prevalence of hypertension in our study was 16.18% in cases compared to 11.76% of control being statistically insignificant as p value $= 0.458$. Our study was consistent with that of Indian study by Alexander et al which revealed a prevalence of hypertension in 8.1% of psoriasis patient.(18) However there was conflicting reports from west, Cohen AD et al (2008) showing Hypertension was present in 44.4% of the patients with psoriasis, compared with 37.2% of the controls (p=0.007).(17)

In our study cases with serum triglyceride > 150 mg/dl was 29.41% compared to 25 % of control ($p = .563$). HDL level <40 mg/dl in males and <50 mg/dl in females was 23.5% in cases compared to of control 19.12% ($p = 0.529$). Studies have demonstrated higher lipid levels in psoriasis. Shapiro et al (2007) found that psoriasis was associated with hyperlipidemia, but was not associated with an increase in LDL level.(16) Dreiheret al found a significant increase in lipid levels among psoriasis patients than in controls ($p< 0.001$).(19) Cohen etal have found that psoriasis is associated with dyslipidemia ($p< 0.015$).(17)Central obesity taking waist circumference ≥102 cm in males and ≥ 88 cm in females was present in 19.12% cases compared to control was 14.7% ($p = 0.492$) which was statistically not significant. Cohen et al showed obesity was present in 29.4% of the patients with psoriasis, compared with 23.5% of the controls ($p = 0.012$).(17)Mebazaaetal (2011) study showed a marginally higher prevalence of Metabolic Syndrome in psoriatic patients (35.5%) compared to controls (30.8%).(20) Kim etal (2012), also have found no statistical difference in Metabolic Syndrome between patients with psoriasis and controls ($p = 0.2$).(21) Lakshmi et al (2014) in their study observed a higher prevalence of MS in cases (32.5%) compared to controls (30%) as per NCEP ATP III criteria, but the difference was not statistically significant. In our study prevalence of Metabolic Syndrome was 22.1% in case compared to of control 17.6% ($p = 0.519$) which was consistent with the above literature.(22)

VI. Conclusion

Although there have plenty of studies from the west reporting an association of psoriasis with the metabolic syndrome, there are no large scale Indian studies evaluating Asian patients. The present study was an endeavour in this regard. Our study clearly refuted any association of psoriasis with metabolic syndrome in Indian patients. The plenty of reports from west approving such an association can be explained on the basis of increased prevalence of obesity, abnormal BMI and hypertension in western patient as compared to Indian patients. In addition, there is also higher prevalence of coexistent risk factors like smoking and alcohol intake in the west which may contribute to the morbidity and prevalence of metabolic syndrome. Looking at various studies around the world, which included population samples, aged from 20 to 25 and upwards, the prevalence of metabolic syndrome in healthy adults varies from 8% in India to 24% in United States in men.This goes on to prove that there are additional metabolic and risk factors that contribute to the increased prevalence of metabolic syndrome in western patients.

References

[1] Tony Burns, Stephen Breathnach, Neil Cox, Christopher Griffths, *Rooks Textbook Of Dermatology*.(Wiley-Blackwell; Hoboken, NJ 2010)

[2] Lomholt G, ed. Psoriasis: prevalence, Spontaneous Course& Genetic. A Census Study on Prevalence Of Skin Diseaseson the Faroe Islands. Copenhagen: GEC GAD 1963.

[3] Mallbris L, Akre O, Granath F et al . Increased risk for cardiovascular mortality in psoriasis inpatients but not in outpatients. Eur J Epidemiol. 2004; 19:225-30.

[4] Mallbris L, Granath F, Hamsten A, and Ståhle M. Psoriasis is associated with lipid abnormalities at the onset of skin disease. Journal of the American Academy of Dermatology, 2006;54(4):614-621.

[5] Gisondi P, Tessari G, Conti A, et al. Prevalence of metabolic syndrome in patients with psoriasis: a hospital-based case-control study. British Journal of Dermatology, 2007;157(1):68-73.

[6] Nisa N, Qazi MA. Prevalence of metabolic syndrome in patients with psoriasis. Indian J DermatolVenereolLeprol. 2010;76:662–65. [PubMed]

[7] Sterry W, Strober BE, Menter A. Obesity in psoriasis: the metabolic, clinical and therapeutic implications. Report of an interdisciplinary conference and review. Br J Dermatol. 2007;157:649–55. [PubMed]

[8] Pearce DJ, Morrison AE, Higgins KB, Crane MM, Balkrishnan R, Fleischer AB, et al. The comorbid state of psoriasis patients in a university dermatology practice. J Dermatolog Treat. 2005;16:319–23. [PubMed]

[9] Shapiro J, Cohen AD, David M, Hodak E, Chodik G, Viner A, et al. The association between psoriasis, diabetes mellitus, and atherosclerosis in Israel: a case-control study. J Am AcadDermatol. 2007;56:629–34. [PubMed]
[10] Alberti KG, Eckel RH, Grundy SM, Zimmet PZ, Cleeman JI, Donato KA, et al. Harmonizing the metabolic syndrome: a joint interim statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; and International
[11] Association for the Study of Obesity. Circulation. 2009;120:1640–45. [PubMed]
[12] Langan SM, Seminara NM, Shin DB, Troxel AB, Kimmel SE, Mehta NN, et al. Prevalence of metabolic syndrome in patients with psoriasis: a population-based study in the United Kingdom. J Invest Dermatol. 2012;132:556–62. [PMC free article] [PubMed]
[13] Zindancı I, Albayrak O, Kavala M, Kocaturk E, Can B, Sudogan S, et al. Prevalence of metabolic syndrome in patients with psoriasis. ScientificWorldJournal. 2012;2012:312463. [PMC free article] [PubMed]
[14] Khunger N, Gupta D, Ramesh V. Is psoriasis a new cutaneous marker for metabolic syndrome? A study in Indian patients. Indian J Dermatol. 2013;58:313–14. [PMC free articlePubMed
[15] Sommer DM, Jenisch S, Suchan M, Christophers E, Weichenthal M. Increased prevalence of the metabolic syndrome in patients with moderate to severe psoriasis. Arch Dermatol Res. 2006;298:321–28. [PubMed]
[16] Shapiro J, Cohen AD, David M, Hodak E, Chodik G, Viner A, et al. The association between psoriasis, diabetes mellitus, and atherosclerosis in Israel: a case-control study. J Am AcadDermatol. 2007;56:629–34. [PubMed]
[17] Cohen AD, Dreiher J, Shapiro Y, Vidavsky L, Vardy DA, Davidovici B, et al. Psoriasis and diabetes: A population-based cross-sectional study. J EurAcadDermatolVenereol; 2008;22:585-9.
[18] Alexander E, Pinto J, Pal GS, Kamath N, Kuruvilla M. Disease concomitance in psoriasis: a clinical study of 61 cases. Indian J DermatolVenereolLeprol. 2001;67:66–68. [PubMed]
[19] Dreiher J, Weitzman D, Davidovici B, Shapiro J, Cohen AD. Psoriasis and dyslipidaemia: A population-based study. ActaDermVenereol 2008;88:561-5.
[20] Mebazaa A, El Asmi M, Zidi W, Zayani Y, CheikhRouhou R, El Ounifi S, et al. Metabolic syndrome in Tunisian psoriatic patients: Prevalence and determinants. J EurAcadDermatolVenereol 2011;25:705-9.
[21] Kim GW, Park HJ, Kim HS, Kim SH, Ko HC, Kim BS, et al. Analysis of cardiovascular risk factors and metabolic syndrome in Korean patients with psoriasis. Ann Dermatol 2012;24:1
[22] Lakshmi S, Nath AK, Udayashankar C. Metabolic syndrome in patients with psoriasis: A comparative study. Indian Dermatology Online J. 2014;5:132–37. [PMC free article] (PubMed)

SoumyaPriyadarshini Tirkey A Case Control Study of Metabolic Syndrome in Psoriasis Patients in A Tertiary Care Center Of Jharkhand." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.11 (2017): 14-18.