Clinic epidemiological evaluation of co morbidities in patients with psoriasis in a tertiary care hospital

Submission : 20-08-2020
Review : 8-9-2020
Acceptance 29-9-2020

SK Jaffer Basha

Associate Professor, Department of Dermatology, Shadan Medical College, Hyderabad

DOI: 10.47799/pimr.0803.03

Address for Correspondence : Dr.Sk.Jaffer Basha, H.No. 10-5-396/16/A1, Flat No 104 Hanging Gardens, Mithilanagar, Inside Kaman, Banjarahills, Road No 12, Hyderabad-500034. Mobile: +91988 55 555 94Email: dr.jaffermd@gmail.com

ABSTRACT

Background: Psoriasis is a common disease presented to the dermatology clinics. There are several reports concerning co morbidities in patients with psoriasis. Some of them include diabetes mellitus, hypertension, dyslipidemia, obesity, IHD, ulcerative colitis. Hence, we in the present study tried to evaluate the existing comorbidities in patients diagnosed with psoriasis in presenting to our hospital.

Methods: This study was conducted in the Department of Dermatology, Venereology, and Leprosy, Prathima Institute of Medical Sciences, Karimnagar. This case-control study evaluated the prevalence of diabetes mellitus, hypertension, obesity, dyslipidemia and metabolic syndrome in patients with psoriasis. The existence of hypertension, diabetes mellitus, dyslipidemia, obesity was determined by standard criteria. The data was recorded and analyzed using SPSS version 17 for p values.

Results: BSL (Blood Sugar Level) derangement as increased fasting BSL was observed in 23 (23%) cases compared to 8(8%) controls. There was a statistically significant difference between psoriatic cases and controls. The total number of male patients with raised waist circumference was 24 (33.8%) compared to 9(13.2%) controls. There was a statistically significant association of raised waist circumference in psoriasis cases compared to controls, the p-value was <0.004. The existence of metabolic syndrome was 27% in the study group and 8% in the control group the p values were <0.004 and significant.

Conclusion: The results of the present shows that there is a significant prevalence of psoriasis in males as compared to females. There is a significant association of metabolic syndrome in patients with psoriasis. Hence all the patients with psoriasis need to be evaluated for metabolic syndrome which may be a risk factor for systemic diseases.

Keywords: Psoriasis, Co morbidities, Epidemiological Study.

Introduction :

Psoriasis is a chronic inflammatory disease generally manifested by skin lesion on elbows, knees, scalp, genitals, and trunk affects 1-3% of the population worldwide [1]. The causes are unknown, but an autoimmune mechanism triggered by an as yet unknown antigen is the probable cause [2]. The disease is characterized by epidermal hyperproliferation, abnormalkeratinocyte differentiation, angiogenesis with blood vessel dilatation, and Th1 andTh17 inflammation [3]. The chronic inflammatory nature of psoriasis is also thought to predisposepatients to other diseases with an inflammatory component, the most notable being cardiovascular and metabolic disorders. This concept is supported by studiesshowing that psoriasis is associated with cardiovascular risk factors such as diabetes, obesity, hypertension, dyslipidemia, and smoking[4,5].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 [6]. Environmental risk factors including streptococcal pharyngitis, stressful life events, low humidity, drugs, HIV infection, trauma, smoking, alcohol, obesity have been associated with psoriasis and psoriatic arthritis[7,8].The link between psoriasis and hypertension may be related to the increased levels of angiotensin-converting enzyme, endothelin-1(ET-1) and renin in patients with psoriasis [9]. TNF-a which plays a central role in the immuno-pathogenesis of psoriasis may be involved in the increased insulin resistance observed in patients with psoriasis. Oxidative stress, which is present in patients with psoriasis, may play arole in hypertension by destructive effects of reactive oxygen species, damaging endothelium-dependent vasodilation [10]. Genetics plays a critical role in the susceptibility of psoriasis and metabolicdiseases. For instance, the Psoriasis Susceptibility loci PSORS2, PSORS3 andPSORS4 are also associated with loci of susceptibility for disorders such as Diabetes Mellitus type 2, Familial hyperlipidemia and cardiovascular disorders [3].It is necessary for treating physicians to recognize these comorbidities, earlyas they influence the management options. So, this study aims to determine: the role of disorders such as Diabetes Mellitus, Hypertension, Dyslipidaemia, Obesity and Metabolic syndrome in psoriatic patients and compare them with age and sex-matched controls.

Materials and Methods

This study was conducted in the Department of Dermatology, Venereology, and Leprosy,Prathima Institute of Medical Sciences, Karimnagar.We conducted a matched case-control study to quantify the prevalence of diabetes mellitus, hypertension, obesity, dyslipidemia and metabolic syndrome in patients with psoriasis and to compare with that in the control population without psoriasis.

a) Inclusion criteria:

1) Case patients were defined as those having psoriasis for more than 3 years of duration and age >20years.
2) Control patients were defined as those patients with non-psoriatic chronic skin diseases attending to the outpatient department.
3) Chronic plaque psoriasis involving >30% of body surface area.
4) Cases and controls were age and sex-matched.

b) Exclusion criteria:

1) Patients with age <20years.
2) Patients taking medication that precipitate co morbidities.
3) Patients who were pregnant & breastfeeding.
4) Patients were unwilling to take part in the study.

Relevant data included age, gender, weight, height, waist circumference,blood pressure, smoking habit, age of onset and duration of psoriasis, type of psoriasis. Obesity was determined based on waist circumference and to record it welocated the upper hip bone and placed the measuring tape at the level of the uppermost part of the hip bone around the abdomen (ensuing the tape measure was horizontal). The tape measure was snug but did not cause compression on the skin.Blood pressure was recorded as the average of two measurements after subjects have been sitting for five minutes. Metabolic syndrome was diagnosed by the presence of three or more of five criteria of the modified version of the National Cholesterol Education Program Adult Treatment Panel III (NCEP-ATP III). Venous samples were taken after the patients had fasted overnight (at least 8hours).Serum cholesterol and triglycerides were measured with enzymatic procedures. Plasma glucose was measured using a glucose oxidase method. Informed consent was taken from all patients and patient characteristics were recorded on a standard proforma. Statistical analysis of the data was done using statistical processing software (SPSS-17).

Results

In our study, the age of patients ranged from 21 years to 68 years was the maximum number of patients (n=35) was in the fourth decade followed by the fifth decade (n=23). The other distribution no cases and controls are shown in table 1.

Table1: Age-wise distribution of study population

Age in years	Number of cases	Number of controls
21-30	22	26
31-40	35	36
41-50	23	21
51-60	16	14
61-70	4	3
Total	**100**	**100**

BSL (Blood Sugar Level) derangement as increased fasting BSL was observed in 23 (23%) cases compared to 8(8%) controls. There was a statistically significant difference between psoriatic cases and controls after applying the Chi-square test (p-value0.003).

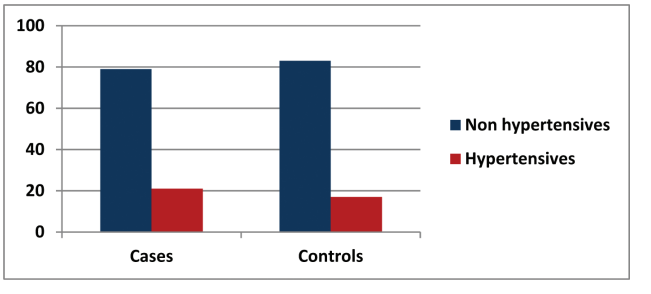
Table2: Association of Diabetes mellitus in the study population

Fasting BloodSugar	Cases	Controls	Chi-square Df=1	P-value
Non-diabetics	77	92	8.59	<0.003*
Diabetics	23	08		
Total	100	100		

* Significant

There were 21 (21%) patients out of 100 cases of psoriasis having hypertension compared to 17(17%) controls. By applying the Chi-square test, there was no statistically significant difference in the occurrence of hypertension (p-value0.471).

Graph 1: showing the association of cases and controls with Hypertension



In the present study, the total number of male patients with raised waist circumference was 24 (33.8%) compared to 9(13.2%) controls. There was a statistically significant

association of raised waist circumference in psoriasis cases compared to controls, by applying the Chi-square test p-value is <0.004.

Table 3: Association of increased waist circumference among males

Waist Circum ference(cm)	Cases	Controls	Chi-square Df=1	P-value
Normal	47	59	8.12	<0.004*
=102	24	09		
Total	71	68		

* Significant

In the present study, the total number of female patients with raised waist circumference was 9 (31.03%) compared to 3(9.3%) controls. There was a statistically significant association of raised waist circumference in psoriasis cases compared to controls; by applying the Chi-square test (p-value is0.033).

Graph 2: waist circumference among Females

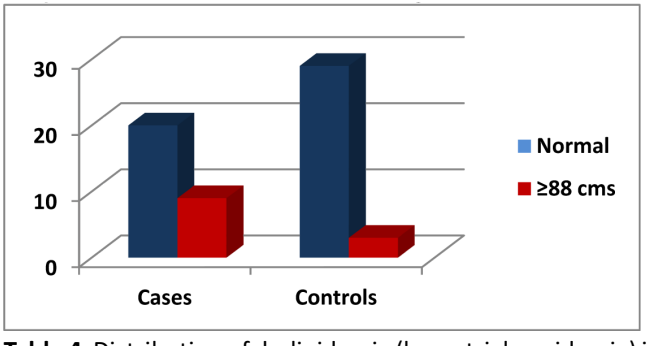


Table 4: Distribution of dyslipidemia (hypertriglyceridemia) in the study population

Triglycerides	Cases	Controls	Chi-square Df=1	P-value
Normal	76	92	9.52	<0.002*
=150 mg/dl	24	08		
Total	100	100		

Table 5: Distribution of dyslipidemia- Reduced HDL in males and females

Distribution of Reduced HDL in Males				
HDL	**Cases**	**Controls**	**Chi-square**	**P-value**
Normal levels	42	61	16.8	<0.001*
HDL<40mg/dl	29	07		
Total	71	68		

Redyuced HDL	**Cases**	**Controls**	**Chi-square**	**P-value**
Reduced HDL	22		3.87	<0.049*
Normal	07			
F<50 mg/dl	29			
Total				

The number of psoriatic patients with reduced HDL was 29(40.8%) among cases and 7(10.2%) among controls. This difference was statistically significant after applying the chi-square test (p-value <0.001). Numbers of psoriatic patients with reduced HDL were 7(24.1%) females among cases, as compared to 2(6.6%) females among controls. By applying the chi-square test, there was a significant association (p-value <0.049).

Table 6: Study of metabolic syndrome among cases and controls

Metabolic Syndrome	Cases	Controls	Total	Chi-square Df=1	P-value
Present	27	8	35	12.5	<0.0004*
Absent	73	92	165		
Total	100	100	200		

* Significant

In the present study, 27 (27%) patients had metabolic syndrome compared to 8 (8%) in the control group. By applying the Chi-square test, the p-value was statistically significant (p-value0.0004).

Discussion

In our study, the age of patients ranged from 21years to 68years. The maximum number of patients (n=35) was in the fourth decade followed by the fifth decade (n=23). The mean age of cases was 36.69 ± 11.35 years and that of controls was 38.56 ± 11.3 years. Okhandiar et al; [16] and Bedi et al;[17] et al found the highest incidence to be in the third and fourth decade.Bedi et al; [18] in another study from North India found the highest incidence to be in the fourth decade similar to the present study.

In our study group, 71 cases (71%) were males and 29 cases (29%) were females.Thus, in psoriatic patients, a high male: female ratio of 2.4: 1 was observed. Multiple studies have shown a higher incidence of the disease in males. There were 68 (68%) males and 32(32%) females in the control group and difference between cases and controls were not statistically significant (p-value 0.61)

Bedi et al; [17] found a male: female ratio of 2.5:1.Kaur et al; [19] found a distinct male preponderance in their study with a male: female ratio of 2.3: 1.In Asokan et al; [20]study, M: F ratio was 2.9: 1.In the present study, male: female ratio was 2.4:1 and higher prevalence was found in males compared to females similar to the above-mentioned studies. Metabolic syndrome associated with psoriasis in the study population and factors were studied and cut-off values were decided according to The National Cholesterol Education Program Adult Treatment Panel III(2001). [21] Central obesity: waist circumference = 102cm or 40 inches (male), = 88 cm or 36 inches(female) Dyslipidemia : TG = 1.7 mmol/L (150mg/dl) Dyslipidemia : HDL-C < 40 mg/dl (male), < 50 mg/dl(female) Blood pressure = 130/85 mmHg Fasting plasma glucose = 6.1 mmol/dl(100mg/dl). To study the association of Diabetes Mellitus, we analyzed the fasting blood sugar levels of 100 cases and 100 controls. BSL derangement was observed to increase fasting BSL in 23 (23%) patients compared to 8% controls. Prevalence of diabetes mellitus was more in cases (23%) compared to controls (8%) similar to studies of Nisa et al;[22] (18% vs. 2.6%) and Khunger et al;[23](16% vs. 6%) but contrast to NM Ali et al;[24](23% vs 29%). Among cases, numbers of patients with raised waist circumference were 24 (33.8%) males and 9 (31.03%) females as compared to 9 (13.2%) males and 3(9.3%) females among controls. Hence, the prevalence of increased waist circumference among cases was 33 (33%) in comparison to controls where it was 12 (12%).There was a statistically significant association of increased waist circumference in psoriasis among cases. Association of obesity with psoriasis was studied about waist circumference. Hence, in the present study, there was a positive association of obesity with psoriasis (p-value < 0.05). Twenty four patients (24%) in the psoriasis group were found to have hypertriglyceridemia as compared to 8(8%) in the control group. This difference was statistically significant with a positive association with psoriasis (P value=0.002). Results in our study were consistent with that of studies done by Madanagobalane et al;[25] (34.7% vs 32.5%), Khunger et al;[23] (38% vs 14%), Kothiwala et al;[26] (26.4% vs 11.4%).There were 21 (21%) patients out of 100 cases of psoriasis having hypertension compared to 17% controls. patients in the psoriatic group had a higher prevalence of hypertension. Results of our study were distinct from studies of Nisa et al; [22](49.3% vs 16%) and Khunger et al;[23](26% vs 10%)where there was significant association between psoriasis and hypertension, however, study of Ali et al(39% vs 34%) did not show significant association.In the present study, 27 (27%) patients had metabolic syndrome compared to 8 (8%) in the control. Results of our study were consistent with Nisa et al;[22](28% vs 6%),Khunger et al;[23] (30% vs 8%),Sharma et al;[27] (38% vs 12%),Aarti et al; [28](38.95% vs 21.05%), Banavasi S Girisha et al; [29](28.8% vs 16.7%).

Conclusion

In conclusion, the results of the present show that there is a significant prevalence of psoriasis in males as compared to females. There is a significant association of metabolic syndrome in patients with psoriasis. Hence all the patients with psoriasis need to be evaluated for metabolic syndrome which may be a risk factor for systemic diseases.

REFERENCES

1. Gudjonsson JE, Elder JT. Psoriasis: epidemiology. Clin Dermatol. 2007 Nov-Dec;25(6):535-46. doi: 10.1016/j.clindermatol.2007.08.007. PMID: 18021890.
2. Albareda M, Ravella A, Castelló M, Saborit S, Peramiquel L, Vila L. Metabolic syndrome and its components in patients with psoriasis. Springerplus. 2014;3:612. Published 2014 Oct 17. doi:10.1186/2193-1801-3-612
3. Azfar RS, Gelfand JM. Psoriasis and Metabolic Diseases: Epidemiology and pathophysiology. CurrOpinRheumatol2008;20(4):416-22.
4. Menter A, Griffiths C, Tebbey P, Horn E, SterryW; on behalf of the International Psoriasis Council. Exploring the association between cardiovascular and other disease-related risk factors in the psoriasis population: The need for increased understanding across the medical community. J Eur Acad Dermatol Venereol2010;24:1371-77.
5. 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 Res2006; 298:321-28.
6. Gisondi P, Tessari G, Conti A, et al; Prevalence of metabolic syndrome in patients with psoriasis: a hospital-based case-control study. Br J Dermatol2007;157:68-73
7. Chandran V, Raychaudhuri SP. Geoepidemiology and environmental factors of psoriasis and psoriatic arthritis. J Autoimmun2010; 34:314-21.
8. Raychaudhuri SP, Gross J. Psoriasis risk factors: role of lifestyle practices. Cutis2000;66:348-52.
9. Ena P, Madeddu P, Glorioso N, Cerimele D, Rappelli A. High prevalence of cardiovascular diseases and enhanced activity of the renin-angiotensin system in psoriatic patients. Acta Cardiol1985;40:199-05.
10. Bonifati C, Mussi A, Carducci M, Dauria L, Ameglio F. Endothelin-1 levels are increased in sera and lesional skin extracts of psoriatic patients and correlatewith disease severity. Acta DermVenereol1998; 78:22-26.
11. Okhandiar RP, Banerjee BN. Psoriasis in the tropics: An epidemiological survey. J Indian Med Assoc. 1963;41:550–56.

12. Bedi TR. Psoriasis in North India. Geographical variations.Dermatologica.1977;155:310–14.

13. Bedi TR. Clinical profile of psoriasis in North India. Indian J Dermatol VenereolLeprol1995;61:202-25.

14. Kaur I, Handa S, Kumar B. Natural history of psoriasis: Astudy from the Indian subcontinent. J Dermatol1997;24:230-24.

15. Asokan N, Prathap P et al. Pattern of psoriasis in a tertiary care Teaching Hospital in South India. Indian J Dermatol2011;56:118-19.

16. Okhandiar RP, Banerjee BN. Psoriasis in the tropics: An epidemiological survey. J Indian Med Assoc. 1963;41:550–56.

17. Bedi TR. Psoriasis in north India. Geographical variations.Dermatologica.1977;155:310–14.

18. Bedi TR. Clinical profile of psoriasis in North India. Indian J Dermatol VenereolLeprol1995;61:202-5.

19. Kaur I, Handa S, Kumar B. Natural history of psoriasis: A study from the Indian subcontinent. J Dermatol1997;24:230-4

20. Asokan N, Prathap P et al. Pattern of psoriasis in a tertiary care teaching hospital in south India. Indian J Dermatol2011;56:118-9.

21. Ellie C. Stefanadi , Georgios Dimitrakakis, et al. Metabolic syndrome and the skin: a more than the superficial association. Reviewing the associationbetweenskin diseases and metabolic syndrome and a clinical decision algorithm for high-risk patients. DiabetolMetabSyndr 2018; 10:9

22. Nisa N, Qazi MA. Prevalence of metabolic syndrome in patients with psoriasis. Indian J Dermatol VenereolLeprol2010;76:662-5

23. Khunger N, Gupta D, et al. Is psoriasis a new cutaneous marker for metabolic syndrome? A study in Indian patients. Indian J Dermatol 2013;58:313-4.

24. Ali NM, Kuruvila M, Unnikrishnan B. Psoriasis and metabolicsyndrome: A case control study. Indian J Dermatol VenereolLeprol2014;80:255-7.

25. Madanagobalane S, Ananda S. Prevalence of metabolic syndrome in South Indian patients with psoriasis Vulgaris and the relation between disease severity and metabolic syndrome: A hospital-based case-control study. Indian J Dermatol 2012;57:353-7.

26. Kothiwala SK, Khanna N, et al. Prevalence of metabolic syndrome and cardiovascular changes in patients with chronic plaque psoriasis and their correlation with disease severity: A hospital-based cross-sectional study. Indian J Dermatol VenereolLeprol2016;82:510-8.

27. Sharma YK, Prakash N, Gupta A. Prevalence of metabolic syndrome as per the NCEP and IDF definitions vis-a-vis severity and duration of psoriasis in a semi-urban Maharashtrian population: A case-control study. Diabetes MetabSyndr2016

28. Aarti sudamsulanke et al. Association of Metabolic Syndrome in Chronic Plaque Psoriasis Patients and their Correlation with Disease Severity, Duration, and Age: A Case-Control Study From Western Maharashtra. Journal of Clinical and Diagnostic Research. 2017 Aug, Vol-11(8): WC06- WC10.

29. Banavasi S Girisha, NeethaThomas.Metabolic syndrome in Psoriasis among Urban South Indians: A Case-Control Study Using SAM-NCEP Criteria.Journal of Clinical and Diagnostic Research. 2017 Feb, Vol- 11(2): WC01-WC04.

How to cite this article : SK Jaffer Basha . Clinic epidemiological evaluation of co morbidities in patients with psoriasis in a tertiary care hospital. Perspectives in Medical Research 2020; 8 (3):8-12

DOI: 10.47799/pimr.0803.03

Sources of Support: Nil, **Conflict of interest:** None declared