International Journal of Basic and Applied Medical Sciences ISSN: 2277-2103 (Online)
An Open Access, Online International Journal Available at http://www.cibtech.org/jms.htm
2015 Vol. 5 (2) May-August, pp. 15-19/Mala et al.
Research Article

PSORIASIS AND DYSLIPIDEMIA: IS THERE ANY CORRELATION

Priyanshu Mala[1], Ila Bhattacharjee[1], Niru Chhetri[1], Rina Kumari[1], Gora Chand Bhattacharya[1] and *Gautam Sarker[2]

[1]Department of Biochemistry, MGM Medical College & LSK Hospital Kishanganj-855 107, Bihar, India
[2]Department of Community Medicine, MGM Medical College & LSK Hospital Kishanganj-855 107, Bihar, India
**Author for Correspondence*

ABSTRACT

Psoriasis has been recognised as a chronic inflammatory skin disease associated with dyslipidemia. To find any association between dyslipidemia with psoriasis a case control study was carried out in the department of Biochemistry and Dermatology of MGM Medical College, Kishanganj, Bihar, India. 40 non psoriatic subjects of dyslipidemia were selected as controls and compared with 40 psoriatic subjects. Among the psoriasis participants, proportion of males was higher with a maximum in fourth decade (35.00%) of life and minimum in seventh decade (2.50%)**.** Dyslipidemia was significantly associated with psoriatic participants with increased cholesterol level (> 200 mg/dl in 20%) compared to 2.50 percent in the control groups *(X^2 = 17.455, p = 0.00016)*, higher LDL-cholesterol level in 40.00 percent compared to 15.00 percent in control groups *(x^2=6.27, p = 0.*012), higher Triglycerides level (>150 mg/dl in 40.00 %) compared to 12.50 percent in control groups *(x^2 = 9.028, p = 0.0026).* Significantly lower HDL-cholesterol level was also noted in 32.50 percent of psoriasis cases compared to 12.50 percent in control groups. *(X^2 = 7.22, P value = 0.027).* We noted higher total cholesterol, LDL-cholesterol and triglyceride levels and low HDL-Cholesterol level.

Keywords: *Psoriasis; Dyslipidemia; Hypercholesterolemia; Tryglyceridemia*

INTRODUCTION

Approximately one to three percent of the total population of the world is affected with psoriasis (Schon *et al*., 2005)**.** Dyslipidemia is one of the important risk factor for cardiovascular disease and few studies have been performed to find the lipid profile in patients with psoriasis before systemic treatment. Cohen and associates also demonstrated an association of psoriasis with dyslipidemia (Cohen *et al.*, 2008) observed total cholesterol, triglyceride and LDL-C levels were raised and HDL-C level were low in patient suffering from psoriasis.

Psoriasis is a common chronic and recurrent inflammatory skin disorder that has been associated with abnormal lipid metabolism, even may contribute to dyslipidemia and premature atherosclerosis. Severity of psoriasis seems to be related to the prevalence and higher frequency of cardiovascular events (Kremers *et al.*, 2007; Gisondi *et al.*, 2009; Vahlquist *et al.*, 1987). Available published reports on the correlation of psoriasis with dyslipidemia in Indian population (Megha *et al.*, 2011) are very less. Therefore, the present study was conducted with the objectives to establish correlation between lipid profile and psoriasis along with epidemiological parameters.

MATERIALS AND METHODS

A clinico-epidemiological case control study was conducted in the department of Biochemistry, Dermatology in M.G.M. Medical College & Lions Seva Kendra Hospital, Kishanganj, Bihar during July 2012 to June 2013 after obtaining clearance from Institutional Ethical Committee. Eighty patients of were selected, forty of them were psoriatic subjects and forty were non psoriatic subjects. The data collection tool used for the study was an interview schedule that was developed it the institute with the assistance from the faculty members and statistician. A semi-structured predesigned, pretested questionnaire was used for data collection regarding psoriasis. Case definition were used in the study as "Psoriasis was defined as a chronic immune mediated inflammatory disease and the lesions are erythematous papules that form plaques and increased scaling (Griffiths and Barker, 2007).Inclusion criteria, the subjects of

study were selected before starting of any treatment. The study sincerely excluded patients with psoriasis having complications of the disease.The participants were explained about the purpose of the study and were assured that the information collected would be kept confidential. Informed consent form was signed by all participants.

Five (5) ml blood was collected from the patient in a plain vial and subsequently serum was collected by centrifugation.

Cholesterol estimation was performed by **CHOD-PAP METHOD[192], END POINT** using the kit from M/S E-Merck (Biological reference value is Up to 200 mg/dl). Triglycerides were estimation by **GPO-PAP Method[192], End Point** using the kit from M/S E-Merck (Biological reference value Normal fasting levels Up to 150 mg/dl). HDL-Cholesterol was estimated by **Phosphotungstic Acid Method[193], End Point** using the kit from M/S Siemens (Biological reference range for male 30-65 mg/dl and for female 35-70 mg/dl). Very Low Density Lipoprotein Cholesterol (VLDL) was estimation by indirect method as recommended by National Cholesterol Education Programme-NCEP (Biological reference range 20-40 mg/dl). LDL-Cholesterol concentration was calculated by using the empirical equation by (Friedewald *et al.,* 1972) [Biological reference value up to 100 mg/dl].

Statistical Analysis

The collected data were thoroughly screened and entered into Excel spreadsheets and analysis was carried out. The procedures involved were transcription, preliminary data inspection, content analysis, and interpretation. SPSS 19.0 was used to calculate proportions, and significance test was used in this study.

RESULTS AND DISCUSSION

Results

In the present study, the frequency of psoriasis was higher in males than in female subjects. Low HDL-Cholesterol level in 32.50 percent of psoriatic subjects and 12.50 percent in control groups **[**Chi Square test = 7.22, degree of freedom = 2, P value = 0.027(Significant)]. An increase in LDL-Cholesterol level in 40.00 percent of psoriatic subjects and 15.00 percent in control groups [Chi Square test = 6.27, degree of freedom = 1, P value = 0.012(Significant)]. Triglycerides concentration was more than 150 mg/dl for 40.00 percent of psoriatic subjects and 12.50 percent in control groups. Chi Square test = 9.028, degree of freedom = 1, P value = 0.0026 (Significant) [Table 1].

Discussion

The present study revealed that a higher incidence of psoriasis in male. The study conducted by (Griffiths *et al*., 2010) showed that both the sexes are equally affected.

Our study showed that 35 percent psoriatic patients were in the 4th decade of life versus 2.5 percent in the 7th decade of life. A study done in Switzerland by (Brown and Korman, 2008) showed the major peak of onset was in 3rd decade and a small peak was observed in the 6th decade. Our study revealed that the majority of the patients (Type 1 Psoriasis) had onset before the age of 40 years (Buntin *et al.*, 1993) showed that 75 percent were type 1 Psoriasis. Holgate (1975) considered that the age 30 years as the demarcating age between the early and late onset of Psoriasis.

In the present study, total cholesterol was significantly high in 20% (n=8) of psoriatic subjects and [2.5% (n=1)] of control subjects (P value <0.05). The studies conducted by Piskin *et al.*, (2003), Javidi *et al.*, (2007) and Rocha-Pereira *et al.*, (2001) showed that higher value of total cholesterol in psoriatic subjects. Hence, (Rocha-Pereira *et al.*, 2001) showed that psoriasis was associated with abnormal plasma lipid metabolism. In our study, HDL-cholesterol was significantly low in [32.5% (n=13) of psoriatic group as compared to [12.5% (n =5)] of control group (P value <0.05). Gupta *et al.*, (2011) reported in their study an elevation of total cholesterol, Triglycerides, VLDL- cholesterol and LDL- cholesterol & significant reduction of HDL- cholesterol in 50 psoriatic patients**.** LDL-cholesterol was increased in 40% (n=16) of case group as compared to 15% (n=6) of control groups (P value <0.05). Piskin *et al.*, (2003), Javidi *et al.*, (2007) and Rocha-Pereira *et al.*, (2001) observed higher LDL-cholesterol level in psoriatic subjects as compared to its controls. In our study, Triglycerides was significantly high in 42.5% (n=17) of psoriatic subjects as compared to 12.5% (n=5) of control group (P value <0.05). Our study confirmed Seishima *et*

al., (1994) study. They observed a higher triglyceride concentration in 38 male patients with psoriasis**.** Javidi *et al.*, (2007) and Rocha-Pereira *et al.*, (2001) and Gupta *et al.*, (2011) also observed an elevation of triglycerides concentration. In our study, HDL-cholesterol was significantly low in [32.5% (n=13) of psoriatic group as compared to [12.5% (n =5)] of control group (P value <0.05). Gupta *et al.*, (2011) reported in their study an elevation of total cholesterol, Triglycerides, VLDL- cholesterol and LDL-cholesterol & significant reduction of HDL- cholesterol in 50 psoriatic patients**.** In our study, LDL-cholesterol was increased in 40% (n=16) of case group as compared to 15%(n=6) of control groups (P value <0.05). Our study confirmed Piskin *et al.*, (2003) study.

Table 1: Distribution of study population and their lipid profile

Age Group	**Case (n=40)**			**Control (n= 40)**		
	Male	**Female**	**Total**	**Female**	**Male**	**Total**
	n (%)	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**
10 and less	0(0.00)	3(7.50)	3(7.50)	0(0.00)	0(0.00)	0(0.00)
11 – 20	2(5.00)	4(10.00)	6(15.00)	0(0.00)	0(0.00)	0(0.00)
21 – 30	3(7.50)	1(2.50)	4(10.00)	4(10.00)	1(2.50)	5(12.50)
31-40	8(20.00)	6(15.00)	14(35.00)	0(0.00)	2(5.00)	2(5.00)
41-50	5(12.50)	3(7.50)	8(20.00)	7(17.50)	9(22.50)	16(40.00)
51-60	2(5.00)	2(5.00)	4(10.00)	5(12.50)	3(7.50)	8(20.00)
61 -70	1(2.50)	0(0.00)	1(2.50)	4(10.00)	1(2.50)	5(12.50)
71 and above	0(0.00)	0(0.00)	0(0.00)	4(10.00)	0(0.00)	4(10.00)
Total	21(52.50)	19(47.50)	40(100)	24(60.00)	16(40.00)	40(100)
Lipid profile (mg/dl)						
Total Cholesterol	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
<160 mg/dl	6 (15.00)	9(22.50)	15(37.50)	19(47.50)	14(35.00)	33(82.50)
160 to 200 mg/dl	10(25.00)	7(17.50)	17 (42.50)	4(10.00)	2(5.00)	6(15.00)
Above 200 mg/dl	5(12.50)	3(7.50)	8(20.00)	1(2.50)	0(00.00)	1(2.50)
HDL	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
<40 mg/dl; low	7(17.50)	6 (15.00)	13(32.50)	3(7.50)	2(5.00)	5(12.50)
40 to 60 mg/dl; Normal	13(32.50)	12(30.00)	25(62.50)	18(45.00)	13(32.50)	35(87.50)
>60 mg/dl; high	1(2.50)	1(2.50)	2(5.00)	3(7.50)	1(2.50)	0(00.00)
LDL	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
≤100 mg/dl	11(27.50)	13(32.50)	24(60.00)	19(47.50)	15(37.50)	34(85.00)
>100 mg/dl	10(25.00)	6 (15.00)	16(40.00)	5(12.50)	1(2.50)	6(15.00)
Triglycerides	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
>150 mg/dl	10(25.00)	6 (15.00)	16(40.00)	4(10.00)	1(2.50)	5(12.50)
≤150 mg/dl	11(27.50)	13(32.50)	24(60.00)	20(50.00)	15(37.50)	35(87.50)

HDL: *High density lipoprotein;* ***LDL:*** *Low density lipoprotein*

They observed in their study a significant increase in LDL- cholesterol levels (Piskin *et al.*, 2003; Javidi *et al.*, 2007; Rocha-Pereira *et al.*, 2001) higher LDL-cholesterol in psoriatic subjects as compared to its controls. In our study, Triglycerides was significantly higher in 42.5% (n=17) of psoriatic subjects as compared to 12.5% (n=5) of control group (P value <0.05). Dyslipidemia may have some contributory factor in the pathogenesis of psoriasis (Piskin *et al.*, 2003). A higher serum lipoprotein a and triglyceride level was observed in 72 patient of psoriasis by Uyanik *et al.*, (2002)**.** Dyslipidemia has also been reported by Mallbris *et al.*, (2006) in psoriasis patient. A study conducted by Rocha-Pereira *et al.*, (2001) observed in control versus patients presenting with mild and severe psoriasis, a rise in cholesterol (P<0.01), triglycerides (P<0.001), low density lipoprotein cholesterol (P<0.01), very low density lipoprotein (P<0.01), and a reduction in high density lipoprotein cholesterol (P<0.001). A study

conducted by Nisa and Qazi (2010) reported that psoriatic patients had a significant higher prevalence of hypertriglyceridaemia**.**

Strength of the Study: The study was conducted with an objective to reveal relationship with psoriasis and dyslipidemia in eastern Indian population.

Conclusion

Higher total cholesterol level was observed in 20% (n=8) of case group as compared to 2.5% (n=1) of control group. A reduction of HDL- cholesterol level was observed in 32.5% (n=13) of case group as compared to 12.5% (n=5) of control group. Higher LDL- cholesterol level was observed in 40% (n=16) of case group as compared to 15% (n=6) of control group. Higher triglycerides level was observed in 40.00% (n=16) of psoriatic subjects as compared to 12.50% (n=6) of control group.

ACKNOWLEDGEMENT

We would like to acknowledge Dr P K Mukherjee, Acamadic Director and Dr Sanjay Ghosh, Department of Dermatology, MGM Medical College and LSK Hospital for their support.

REFERENCES

Brown AJ and Korman NJ (2008). Psoriasis and Psoriatic arthritis: a clinical review; Treatment of Psoriasis. *Birkhhauser Verllag/Switzerland* 23-29.

Buntin D *et al.*, (1993). Onset of Psoriasis at age 108. *Journal of the American Academy of Dermatology* **9** 276 -77.

Cohen AD *et al.*, (2008). Association between psoriasis and the metabolic syndrome. A cross sectional study. *Dermatology E. Pub* **216**(2) 152-5.

Friedwald WT *et al.*, (1972). *Estimation of the Concentration of Low Density Lipoprotein Cholesterol in Plasma without Use of the Preparative Ultracentrifuge Clinical Chemistry* **18**(6) 499-502.

Gelfand JM *et al.*, (2005). Prevalence and treatment of psoriasis in the United Kingdom: A population-based study. *Archives of Dermatology* **141** 1537-41.

Gisondi P *et al.*, (2009). Chronic Plaque Psoriasis is associated with increased arterial stiffness. *Dermatology* **218**(2) 110-13.

Griffiths CE and Barker JN (2007). Pathogenesis and clinical feature of Psoriasis. *Lancet* **370**(9583) 263 -71.

Gupta M *et al.*, (2011). Dyslipidemia and oxidative stress in patients of psoriasis. *Biomed Research* **22**(2) 221-4.

Holgate MC (1975). The age of onset of Psoriasis and the relationship to parental psoriasis. *British Journal of Dermatology* **92** 443 -48.

Javidi Z *et al.*, (2007). Serum lipids abnormalities and psoriasis. *Indian Journal of Dermatology* **52**(2) 89-2.

Kremers HM *et al.*, (2007). Heart disease in Psoriasis. *Journal of the American Academy of Dermatology* **57**(3) 347-54.

Mallbris L *et al.*, (2006). Psoraisis is associated with lipid abnormalities at the onset of skin disease. *Journal of the American Academy of Dermatology* **54** 614-21.

Megha KA *et al.*, (2011). High Cardiovasculr risk in patients with psoriasis. *International Journal of Pharma and Bio Sciences* **2**(1) B-155-60.

Nisa N and Qazi MA (2010). Prevalence of metabolic syndrome in patients with psoriasis. *Indian Journal of Dermatology, Venereology and Leprology* **76**(6) 662-65.

Piskin S *et al.*, (2003). Serum lipid levels in Psoriasis. *Yonsei Medical Journal* **44** 24-6.

Rocha-Pereira P *et al.*, (2001). Dyslipidemia and oxidative stress in mild and in severe psoriasis as a risk for cardiovascular disease. *Clinica Chimica Acta* **303**(1-2) 33-9.

Schon MP and Boehncke WH (2005). Psoriasis. *New England Journal of Medicine* **352** 1899-912.

Seishima M *et al.*, (1994). Serum Lipid and apolipoprotein levels in patients with psoriasis. *British Journal of Dermatology* **130** 738-42.

Uyanik BS *et al.*, (2002). Serum lipids and apolipoproteins in patients with Psoriasis. *Clinical Chemistry and Laboratory Medicine* **40** 65 – 8.
Vahlquist C *et al.*, (1987). Serum lipoproteins in middle aged men with psoriasis. *Acta Dermato-Venereologica (Stockh)* **67** 12-5.