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A STUDY ON FASTING BLOOD SUGAR AND LIPID PROFILE IN PATIENTS OF PSORIASIS: CASE-CONTROL STUDY

Biochemistry

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ABSTRACT

Background - Psoriasis is a common chronic recurrent inflammatory skin disorder characterized by hyperproliferation and reduced differentiation of keratinocytes. It is a lifelong chronic inflammatory condition affecting approximately 2% of general population. Psoriasis is an interminable, non communicable, agonizing, deforming and debilitating sickness for which there is no fix and with extraordinary negative effect on patients' personal satisfaction (QoL).It can occur at any age and is most common in the age group of 50–69. The present study is aimed to evaluate Lipid Profile and Fasting Blood Sugar levels in Patients with psoriasis. Furthermore correlation between serum FBS and lipid profile in patients of psoriasis case and control group was investigated.

Methods: A case-control study was conducted in Department of Biochemistry, Central Research Lab and Central Clinical Lab of Integral Institute of Medical Sciences and Research. Patients were divided in two groups i.e Case: Psoriasis patients and Control: Apparently Healthy Individuals.

Results: The mean serum FBS and lipid profile were significantly higher in case group compared to control group. Moreover, significant positive correlation was observed between FBS level and lipid profile in psoriasis patients.

Conclusion: We found abnormal blood sugar level and lipid profile (Except HDL) in case group compared to control group which can be concluded a risk factor for cardiovascular diseases (CVD) in psoriasis patients. Therefore, the above findings should be kept in mind during the management of psoriasis and controlling the blood sugar levels and lipid level can save psoriasis patients from cardiovascular risk.

KEYWORDS

Fasting blood sugar (FBS), lipid profile, CVD, QoL

Introduction

Psoriasis is an interminable, non communicable, agonizing, deforming and debilitating sickness for which there is no fix and with extraordinary negative effect on patients' personal satisfaction (QoL). It can occur at any age, and is most common in the 50–69 age group[1]. Psoriasis includes the skin & nails and is related with various co-morbidities. Skin sores are confined or summed up, for the most part symmetrical, strongly divided, red papules and plaques, and typically secured with white or silver scales. Lesions cause itching, stinging and pain[2].

The etiology of psoriasis remains unclear, although there is evidence for genetic predisposition. The etiology is still unknown while genetic, metabolic and immunological mechanism has been implicated. The role of the immune system in psoriasis causation is also a major topic of research[3]. Psoriasis causes great physical, emotional and social distress but Quality of life (QoL) in general is often significantly.

Psoriasis is a disorder of skin affecting 1 to 3% of the global population and these were associated with obesity, cardiovascular disease, diabetes mellitus and metabolic syndrome[4]. It is a lifelong chronic inflammatory condition affecting approximately 2% of general population[5]

The Psoriasis has been associated with an increased morbidity and mortality from high frequency of cardiovascular events. Obesity is considered as one of the major risk factors for the development of psoriasis and improvement was observed after reduction of weight[6].

Several studies showed that patients with psoriasis carried an increased risk of developing co morbidities related to the metabolic that included arterial hypertension, obesity and abnormalities in lipid and glucose metabolism[7].So, looking into the view of importance of disease. The present study was aimed to evaluate fasting blood sugar level & lipid profile in patients with psoriasis.

MATERIALS & METHODS

This Case-control study was conducted for the period of 6 months (January 2018 to June 2018) at Department of Biochemistry, Central Research Lab and Central Clinical Lab of Integral Institute of Medical Sciences and Research, Lucknow after getting approval by the Institutional Ethics Committee (IIMS&R). 50 subjects each (Case group and Control group) were selected as per the inclusion and exclusion criteria.

Inclusion criteria

- Psoriasis patients of age group between 20-60 years.
- Subject who signed the informed consent form.

Exclusion criteria

- Diabetes mellitus or other endocrine Disorders
- History of Hypertension, Renal disorders, Coronary artery disease.
- History of drug intake like steroids, hypolipidemic drugs etc.

Methodology:

A detailed clinical history including age, sex, and occupation were collected from the patients after obtaining written informed consent. 5ml of Blood sample was collected by venepuncture under aseptic precautions after an overnight fast or after 12 hours of fasting. 2ml of blood was transferred to a fluoride vial for the estimation of Fasting Blood Sugar Levels and 3ml of blood was transferred to plain vial for the estimation of Lipid Profile and Centrifuge at 2000 r.p.m. for 5 min. Then the serum so obtained was analyzed further. Serum or Plasma were separated and stored at 2-8° temperature to analyze FBS and Lipid profile was done. Analysis of Fasting blood sugar (FBS) was estimated by GOD-POD enzymatic kit methods while estimation of serum Triglycerides was measured by GPO/PAP method. Similarly, estimation of serum total cholesterol was done in CHOD/PAP kit method while HDL cholesterol were measured by PEG/CHOD-PAP enzymatic kit method.

Statistical Analysis

Statistical analysis was done using SPSS version 20.0 (Chicago, US). The Mean ± SD (Standard Deviation) of all quantitative clinical parameters were calculated and $p<0.05$ were considered statistically significant. Correlation was determined by using Pearsons correlation coefficient.

OBSERVATION & RESULT

Following results were obtained during the study period_

TABLE 1: Fasting Blood Sugar Levels In Cases And Controls Group

Groups	Case	Control	Significance
Fasting blood sugar (mean±SD)	115.72 ± 25.98	93.72 ± 8.44	**p=0.0002***

- In our study shows that Mean serum concentration of fasting blood sugar level in psoriasis patients was significantly higher in

compared with healthy individual's control group(both P<0.0002).Statistically significant.

Table 2: Total Cholesterol Levels In Cases And Controls Group

Groups	Case	Control	Significance
Total Cholesterol (mean±SD)	194.72 ± 39.81	138.72 ± 17.56	**p< 0.0001***

- Our study shows that Mean serum concentration of total cholesterol levels in psoriasis patients (cases) was significantly higher compared with healthy individuals control group (Both p<0.0001) So statistically significant

Table 3: Serum Triglycerides Levels In Cases And Controls Group

Groups	Case	Control	Significance
Serum Triglycerides (mean±SD)	165.28 ± 89.11	97.8 ± 26.01	**p= 0.0007***

- Mean serum concentration of triglycerides levels in psoriasis patients (cases) was compared with healthy individuals control group was showing in table 8. Statistically significant (Both p<0.0007)

Table 4: Serum Hdl Levels In Cases And Controls Group

Groups	Case	Control	Significance
Serum HDL (mean±SD)	37.56 ± 12.83	39.56 ± 5.88	**p<0.4819***

- Mean serum concentration of serum HDL levels in psoriasis patients (cases) and healthy individuals (control) was showing in table 9. Statistically not significant because p<0.4819.

Table 5: Serum Ldl Levels In Cases And Controls Group

Groups	Case	Control	Significance
Serum Ldl (mean±SD)	124.04 ± 39.07	83.76 ± 11.89	**p<0.0001***

- Mean serum concentration of serum LDL levels in psoriasis patients (cases) and healthy individuals (control) was showing in table 10. Statistically significant (Both p<0.0001)

Table 6: Serum Vldl Levels In Cases And Controls Group

Groups	Case	Control	Significance
Serum Vldl (mean±SD)	31.08 ± 16.23	19.75 ± 5.22	**p=0.0017***

- Mean serum concentration of VLDL levels in psoriasis patients (cases) and healthy individuals (controls) is showing in table 11. Statistically significant (For both p<0.0017)

Karl Pearson's Correlation among the parameters (IN CASES)

	FBS	TC	TG	HDL	LDL	VLDL	
FBS	Pearson Correlation	1	.474*	.344	-.254	.409*	.283
	Sig. (2-tailed)		.017	.092	.221	.043	.170
	N	52	52	52	52	52	52
TC	Pearson Correlation	.474*	1	.246	-.004	.907**	.220
	Sig. (2-tailed)	.017		.235	.985	.000	.290
	N	52	52	52	52	52	52
TG	Pearson Correlation	.344	.246	1	-.426*	-.069	.891**
	Sig. (2-tailed)	.092	.235		.034	.744	.000
	N	52	52	52	52	52	52
HDL	Pearson Correlation	-.254	-.004	-.426*	1	-.136	-.437*
	Sig. (2-tailed)	.221	.985	.034		.518	.029
	N	52	52	52	52	52	52
LDL	Pearson Correlation	.409*	.907**	-.069	-.136	1	-.038
	Sig. (2-tailed)	.043	.000	.744	.518		.859
	N	52	52	52	52	52	52
VLDL	Pearson Correlation	.283	.220	.891**	-.437*	-.038	1
	Sig. (2-tailed)	.170	.290	.000	.029	.859	
	N	52	52	52	52	52	52

* . Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

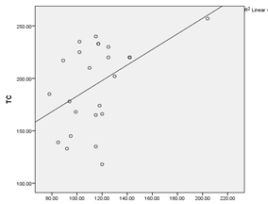

Fig.1:Scatter Diagram showing the correlation between FBS and LDL and Total Cholesterol level among the cases.

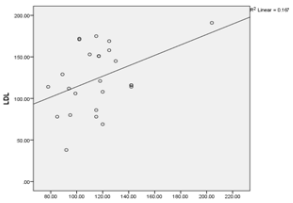

Fig.2:Scatter Diagram showing the correlation between FBS Level among the cases.

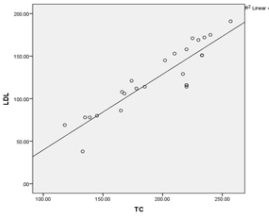

Fig.3: Scatter Diagram showing the correlation between Total cholesterol and LDL level among the cases

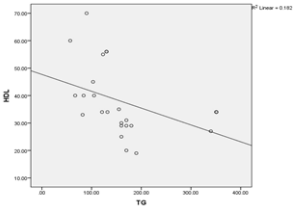

Fig.4: Scatter Diagram showing the correlation between TG and HDL level among the cases

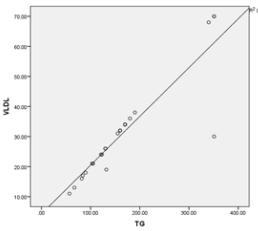

Fig.5: Scatter Diagram showing the correlation between TG and VLDL level among the cases.

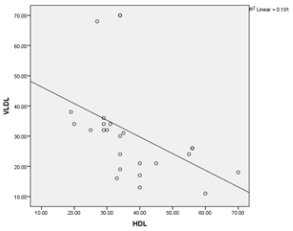

Fig.6: Scatter Diagram showing the correlation between HDL and VLDL level among the cases

DISCUSSION

It has been observed in multiple studies that Lipid Profile and Fasting Blood Sugar levels are altered in Psoriasis. The present study was conducted on patients with mild to moderate psoriasis in whom the risk factors and secondary causes of atherosclerosis were excluded. In our study, fasting blood Sugar (FBS) was significantly higher psoriasis cases patient in comparison to control group. Our study results were similar to the findings of Kothiwala, *et al*.[8] while it was contradictory to the finding of Rupinder Kaur et al.[9] However the reason for this discrepancy may be due to difference in sample size.

There are controversial results about serum cholesterol levels in psoriasis patients. Some reporting like high[10] low[11] and some even normal levels.[12] In presented study the cholesterol levels were significantly higher in case group compared to control group(p<0.0001). Our studies were almost similar to the findings of Piskin S et al who reported that serum total cholesterol levels were higher in psoriasis patients.[13]

Our study showed that there was significant increased level of TG in psoriatic patients in comparison to control group. Similar findings were reported in other study and the reason were correlated positively with psoriasis severity.[14] But these findings were in different from the result of Vahliquist C et al who found that triglyceride were low in psoriatic patients than control group.[15]

Our study showed that HDL level didn't show any significant difference between the case group and control group. These findings were similar with the results obtained by Fortinskaia ES et al.[16] while it was contradictory to the findings of Tekin SN et al.[17] who found a significant low concentration of HDL in both group.

In Our study we found that LDL cholesterol level in psoriasis patients were significantly increased compared with control group which was in accordance with the findings of Farshchian M et al.[18] while Seckin D et al.[19]reported low density lipoprotein (LDL) level in psoriasis

patients to be normal.

The mean values of very low density lipoprotein (VLDL) in cases and control group were 16.23 and 5.22 respectively. The Significant association was seen in VLDL values between cases and controls group (p value 0.0017). Not much of the findings were found in literature reporting VLDL level.

The result of this study revealed that the mean value of serum Total Cholesterol, TGs, LDL & VLDL were statistically significant when compared among case group and control group whereas the HDL were not statistically significant when compared among case group and control group.

CONCLUSIONS

In this study, serum fasting blood sugar, total cholesterol, Triglycerides, low density lipoprotein, very low density lipoprotein, were significantly increased in psoriasis patients when compared with control group but high density lipoprotein was significantly decreased in case group compared with control group. We found abnormal blood sugar level and lipid profile (Except HDL) in case group compared to control group which can be concluded a risk factor for cardiovascular diseases (CVD) in psoriasis patients. Therefore, the above findings should be kept in mind during the management of psoriasis and controlling the blood sugar levels and lipid level can save psoriasis patients from cardiovascular risk. Though, the study had a small sample size. However it may form a base for a larger future study.

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