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Evaluation of Lipid Profile in Psoriasis Patients: A Hospital Based Study

Medical Science

KEYWORDS : Psoriasis, Serum lipids, & CVD.

Dr Prafula Kumar Mishra

Professor & Head, Department of Biochemistry, Hi-Tech Medical College & Hospital, Rourkela, Odisha, India

ABSTRACT

Psoriasis is a common chronic recurrent inflammatory skin disorder characterized by hyperproliferation and reduced differentiation of keratinocytes. The etiology is still unknown, while genetic, metabolic and immunological mechanism has been implicated. Psoriasis has been associated with an increased morbidity and mortality from high frequency of cardiovascular events. My aim was to evaluate the lipid profile status and its impact on psoriasis patients. We found significant differences for all examined biomarkers (TC, TG, LDL-c and VLDL-c) with the exception of HDL-c in psoriatic patients compared with controls

Introduction:

Psoriasis is a lifelong chronic inflammatory skin disorder affecting upto 1-2% of the world's population.[1] Psoriasis is a common chronic recurrent inflammatory skin disorder characterized by hyperproliferation and reduced differentiation of keratinocytes.[2] The etiology is still unknown, while genetic, metabolic and immunological mechanism has been implicated. Psoriasis has been associated with an increased morbidity and mortality from high frequency of cardiovascular events. This seems to be related to the severity of psoriasis, considering that it occurs much more frequently in patients presenting with large areas of body affected with psoriatic lesions.[3]

Earlier data has been suggested that abnormal lipid profile Psoriasis has been associated with an may be the reason for the increased risk of cardiovascular diseases in these patients.[4,5] However, the pathogenesis of atherothrombotic events in psoriasis patients remains to be recognized. Multiple factors including abnormal lipids and lipoprotein profiles and risk factors such as hypertension, obesity, diabetes mellitus have been associated with psoriasis.[6] Several reports suggests that psoriatic patients have proatherogenic lipid profile including increased levels of serum triglycerides, LDL-cholesterol, VLDL-cholesterol and low HDL-cholesterol levels. However, studies are not consistent, involving heterogenous study population and not considering the severity of the disease.[7-11] MY aim was to evaluate the lipid profile status and its impact on psoriasis patients.

Material and methods:

The present study was conducted in the Department of Biochemistry, Hi-Tech Medical College & Hospital Rourkela, Odisha, India, during the period from May 2014 to December 2015. The study protocol was approved by the Ethics committee of Hi-Tech Medical College & Hospital Rourkela. The present study consists of total 55 subjects between the age group 15-65 years who are further subdivided into two groups;

Group-A: Non-psoriatic healthy subjects (n= 25) as controls.

Group-B: Consists of psoriatic patients (n= 30) as cases.

Biochemical Analysis:

An overnight fasting blood sample were collected under all aseptic precautions 5-8 ml of blood was collected and was analysed by methods[12] for following parameters:

Total Cholesterol (TC) by enzymatic end point CHOD-POD methods.

Triglyceride (TG) by enzymatic glycerol phosphate oxidase/ peroxidase methods.

HDL-Cholesterol by direct enzymatic end point method.

LDL-Cholesterol by Friedewald's formula.

VLDL-Cholesterol by Friedewald's eqution.

LDL-c = Tc-HDL-c(TG/5)

Statistical Analysis:

All values were expressed as mean±sd. We used student t-test to find the statistical significance. A P-value <0.05 was to be considered statistically significant.

Results and Discussion:

The present study was conducted on 30 patients with psoriasis and 25 healthy volunteers served as a control groups. Patients in the psoriasis group had a mean age of (44.06 ± 10.16 yrs) while Non-psoriatic healthy subjects had a mean age of (42.06 ± 7.01yrs) ranged from 15-65 Years. The mean BMI was 24.3±2.5kg/m2 in patient group and 21.2±3.01kg/m2 in control group. Table No.-1 shows the values of lipid profile for the control and total psoriasis patient groups. Psoriasis is a chronic inflammatory skin disease characterized by an accelerated turnover of epidermal cells and an incomplete differentiation in epidermis with lesion. However, the exact etiology of Psoriasis is unknown. Also abnormalities in essential fatty acid metabolism, free radical generation, lipid peroxidation, and release of lymphokines have been proposed in Psoriasis.[13]

Table No.-1: Comparison of psoriatic patients between the two groups:

Parameters	Controls (n=25) (mean±sd)	Cases (n=30) (mean±sd)	P- value
Age (yrs)	42.06 ± 7.01	44.06 ± 10.16	-
BMI kg/m2	21.2±3.01	24.3±2.5	-
Total Cholesterol(mg/ dl)	157±3.02	227±1.09	<0.001
Triglycerides (mg/ dl)	99±2.04	119±4.3	<0.001
LDL-c(mg/ dl)	102±7.1	143±3.0	<0.001
HDL-c(mg/ dl)	46±1.02	47±3.4	NS
VLDL-c(mg/ dl)	19.4±4.0	24±5.21	<0.001

**Statistically Significant (P<0.05)*

Patients with psoriasis could be considered as a group with an increased atherosclerotic risk because of increased oxidant stress, decreased antioxidant capacity and abnormalities in lipid profile and lipoprotein.[13] It is controversial whether changes in lipid composition are primary events or secondary to psoriasis.[14] Abnormalities of plasma lipids are likely to play an important role in the increased risk of

atherosclerosis,[15] as patients with psoriasis seem to have an increased morbidity and mortality from cardiovascular events.[15] Our results showed that there was significant increased of TG level in psoriatic patients in comparison to controls. This is in agreement with the results obtained by Kural et al[13] ,Akhyani et al[18] , Tekin *et* a1[16] and Vahliquist et al[17] as they all found significant increase in plasma level of triglycerid in psoriatic patients in comparison to controls and correlated positively with psoriasis severity.

But these findings are in disagreement with the results obtained by Fortinskaia et al[19] who found that triglyceride (TG) is low in psoriatic patients than controls. Also, The present study showed that highly significant increased level of Cholesterol in psoriatic patients in comparison to controls. These findings are concised with the results obtained by Hashemi et al[20], Kural et al[13] Akhyani et al[18],Tekin et al[16] and pietrzak et al[21] as they all found significant increased level of cholesterol in psoriatic patients in comparison to controls and correlated positively with psoriasis severity, as excessive loss of cholesterol with scaling during active disease may increase significantly the need for its synthesis. But these findings were in disagreement with the results obtained by Brener et al[22] who found that psoriatic patients have low serum cholesterol level as extensive scaling lead to marked loss of cholesterol through the skin and if these was prolonged , it could finally be reflected in the serum cholesterol . Also our results were in disagreement with the results obtained by Sekin et al[23] and Seishima et al[24] as they all found that cholesterol is normal among psoriatic patients. Our results showed that Low density lipoprotein (LDL) in the psoriatic patients was significantly higher than the control groups. These findings were in agreement with the results obtained by Kural et al[13] , Akhyani et al[18] ,and Tekin et al[16] as they all found that LDL of the psoriatic patients was significantly higher than the control groups especially with extensive and severe skin involvement.

But these findings are in disagreement with the results obtained by Utas et al[25] Cohen et al [26] and farshchian[27], as they all found that LDL is normal in psoriatic patients, but the correlation between duration of the disease and LDL were significant apart from the race and Imamura et al[28] who found a significant low levels of LDL in psoriatic patients and explained this as there was a reciprocal correlation between cell differentiation and LDL receptor expression. This lead to increased LDL receptor expression in psoriatic keratinocytes and increased catabolism of LDL in psoriatic patients. Our study showed that, High density lipoprotein (HDL) level didn't show significant difference between the patients and controls.

Conclusion:

We found significant differences for all examined biomarkers (TC, TG, LDL-c and VLDL-c) with the exception of HDL-c in psoriatic patients compared with controls. These findings suggest that the lipid levels were increased with the progression of disease. This rise in lipid levels and decreased High density lipoprotein fraction is an alarming sign that psoriasis is progressing towards Cardiovascular risk.

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