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Dyslipidemia in Patients of Psoriasis

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ABSTRACT

Background: *Psoriasis is a common and recurrent proliferative inflammatory skin disease that has been associated with abnormal plasma lipid metabolism. The high prevalence of atherosclerosis has been reported in psoriatic patients. The aim of our work was to evaluate the development of dyslipidemia in psoriasis and to look for a correlation between their levels and worsening of disease.*

Methods: *We evaluated the fasting lipid profile in 300 clinically diagnosed psoriasis patients (Group II) which were further grouped as 200 plain psoriasis (Group IIA) and 100 psoriasis with mixed complications (Group IIB) and 200 age and gender matched healthy subjects as the controls (Group I).*

Result: *Patient presented risk changes in lipid profile, serum total cholesterol and LDL-cholesterol were found to be significantly increased ($P < 0.01$) while there is no significant difference in triglyceride, VLDL-cholesterol, HDL-cholesterol levels in Group IIB psoriasis patients with mixed complications than in Group IIA plain psoriasis patients.*

Conclusion: *Our data suggests that high serum lipid profile level especially. Total cholesterol and LDL-cholesterol is significantly more common in psoriasis and must be considered as a group at high risk for cardiovascular accidents (CVA). It may be useful to do early screening and treatment of hyperlipidemia in psoriasis to prevent the atherosclerosis and its complications.*

Keywords- *Psoriasis, serum lipids, cardiovascular accident, dyslipidemia, hyperlipidemia.*

INTRODUCTION

Psoriasis is a common chronic and recurrent inflammatory skin disorder ^[1] that has been associated with abnormal plasma lipid metabolism and high frequency of cardiovascular events ^[2]. This prevalence seems to be related to the worsening of psoriasis, as it occurs more frequently in patients of psoriasis with mixed complications rather than in plain psoriasis. Though dyslipidemia is known to occur, less is known about its relation with the worsening of disease.

In the present study, we investigated the lipid profile in healthy controls (Group I) and in two groups of psoriasis patients to evaluate the correlation between the lipid levels and worsening of psoriatic lesions by selecting plain psoriasis (Group IIA) & psoriasis with mixed complications (Group IIB) to look for an increased risk for cardiovascular diseases.

METHODS

The study group consisted of 300 psoriasis patients grouped as 200 plain psoriasis (Group IIA) and 100 psoriasis with mixed complications (Group IIB) and 200 age and gender matched healthy subjects as the controls (Group I) were selected from the out patient clinic of Department of Dermatology. The duration of the disease range from 1-25 years (Mean 11 ± 6.71). The ethics committee approved the protocol and informed consent was obtained from the subject after fully explaining the purpose of study. All the patients had clinical diagnosis for psoriasis. Inclusion criteria for both the groups was patients with clinical diagnosis of psoriasis of any duration and exclusion criteria for Group IIA were

coexisting inflammatory skin disease, smoking, alcoholics, diabetes mellitus and hypertension & history of dyslipidemia and for Group IIB were coexisting inflammatory skin disease, smoking and alcoholics.

Serum was collected using vacutainer tubes from subjects following 12 hrs of fasting for determination of lipid profile. Serum triglycerides (TG) were measured enzymatically by modified glycerol-3-phosphate oxidase /peroxidase method using commercially available kits (GPO-PAP Boehringer)[3]. Serum total cholesterol (TC) was measured enzymatically by modified cholesterol oxidase/peroxidase (CHOD-PAP Boehringer) an autoanalyzer (Hitachi 917 BM)[4]. HDL-Cholesterol was measured using the method referred for total cholesterol after precipitation of lipoproteins (LDL/VLDL/Chylomicrons) with sodium phosphotungstic acid magnesium chloride mixture ^[5]. LDL-Cholesterol was computed by Friedwalds formula: $(LDL=TC-[HDL+TG \div 5])$ [6]. VLDL-C was calculated by formula: $(VLDL= TG \div 5)$ The results were expressed as mean \pm standard deviation. A $p < 0.05$ or $P < 0.01$ was considered statistically significant. Statistical analysis was performed using Z-test.

RESULTS

As shown in Table no. 1, mean serum total cholesterol, triglyceride, VLDL-C & LDL-C are significantly increased while HDL-C is significantly decreased ($P < 0.01$) in plain psoriasis (Group IIA) than in controls (Group I), while in Group IIB serum total cholesterol and LDL-C are highly significantly increased ($P < 0.001$) and triglyceride

and VLDL-C are significantly increased and serum HDL-C is significantly decreased ($P<0.01$) than in controls.

Value of lipid profile in two psoriasis groups showed that serum total cholesterol and LDL-C are significantly increased ($P<0.01$) in Group II B as compared to Group IIA while no statistical differences were found in other studied lipid parameters.

Table no. 1: Comparison of lipid profile between controls/plain psoriasis (Group II A) & controls/psoriasis with mixed complications (Group II B).

(Values are expressed as Mean \pm SD)

Parameters	Controls (Group I) n=200	Plain psoriasis (Group IIA) n=200	Psoriasis with mixed complications (Group IIB) n=100
Total Cholesterol mg/dl	177 \pm 30	210 \pm 28.9*	241 \pm 49.9**
HDL-C mg/dl	47 \pm 11.1	43.2 \pm 8.5*	40.7 \pm 8.7*
Triglyceride mg/dl	95 \pm 24	124 \pm 42.3*	124 \pm 30.8*
VLDL-C mg/dl	19 \pm 5	24.8 \pm 8.5*	24.8 \pm 6.1*
LDL-C mg/dl	111 \pm 14	142 \pm 12*	175.5 \pm 35.1**

* $P<0.01$, ** $P<0.001$

DISCUSSION

Psoriasis is a chronic inflammatory skin disease characterized by pathological skin lesions due to various exogenous and endogenous factors and is associated with a number of biochemical and immunological disturbances. Psoriasis is considered

to be an (auto) immune disorder, probably initiated by the overactive skin innate immune system, and maintained by immigrating activated type 1 T cells and abnormally proliferating and differentiating keratinocytes. A complex network of cytokines and chemokines mediates the pathological reaction, whereas the abnormal function of psoriatic regulatory T cells is likely responsible for the chronic nature of psoriasis^[6].

Although there have been extensive studies in lipid metabolism in psoriasis, their importance in the etiology or in the enhancement of the disease remains conflicting^{[2],[7],[8]}.

Rocha-Pereira reported increased serum total cholesterol, VLDL-cholesterol, LDL-cholesterol and a decrease HDL-cholesterol levels^[2]. Piskin in his study showed serum total and LDL-cholesterol was significantly higher in psoriasis group than the control group^[9]. Several mechanisms including an unhealthy lifestyle, activation of type 1 helper T cells, autoantibodies recognizing oxidized LDL and some medications used to treat psoriasis such as oral retinoids and cyclosporine may induce dyslipidemia in psoriatic patients^[8]. Collectively in various studies, serum total cholesterol level of psoriatic patient as high^{[2],[10]}, low^[11], and normal^[12] levels are reported. Serum LDL-C levels of psoriasis patients has also been reported to be high^{[2],[9]}, or normal^[13] in different studies. Serum triglyceride level has been reported to be high^[2], low^[11] in different sources, yet serum TG level of our patients shows no significant difference between two groups of psoriasis. The same controversy exists regarding HDL-C as normal^[12] and low^[2] levels in psoriasis groups.

With regard to these controversial results our study showed that serum total cholesterol and serum LDL-C were significantly increased ($P < 0.01$) in Group II B as compared to Group II A psoriasis patients, while no statistical significant difference were found in other studied parameters between two groups of psoriasis.

CONCLUSION

These findings suggest that worsening of the disease may be associated with the more pronounced risk modifications in lipid profile to lead in an enhancement of the atherogenic risk. Thus, our results support the findings that psoriatic patients are associated with an increased mortality and morbidity from cardiovascular events^{[2],[14]} and we suggest early screening with serum lipid profile assay in psoriatic patients at the time of presentation and follow-up for evaluating risk and treatment of hyperlipidemia to modify and prevent the risk of cardiovascular diseases.

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