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Original article

A study of dyslipidemia in patients of psoriasis

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Abstract

Introduction: Psoriasis is a chronic, disfiguring, inflammatory and proliferative condition of the skin.

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.

Methods: Lipid profile was estimated in 35 patients of psoriasis and age and sex matched 35 healthy subjects. It was then compared between the two groups.

Observation and Results : There was significant elevation of total cholesterol, LDL and triacylglycerol in patients of psoriasis when compared with the control group whereas serum HDL was significantly reduced in the psoriasis group than the healthy controls.

Conclusion: Psoriatic patients should be screened for dyslipidemias and early intervention should be instituted which may prevent further development of coronary artery disease (CAD)

Key words- Psoriasis, lipid profile, dyslipidemia, coronary artery disease

Introduction

Psoriasis is a chronic inflammatory skin disorder affecting 1–3% of the population. It is associated with impairment in health related quality of life even in mild cases, and excess mortality in severe cases. Psoriasis is characterized by epidermal hyperproliferation, abnormal keratinocyte differentiation, angiogenesis with blood vessel dilatation, and excess Th-1 and Th-17 inflammation [1]

Psoriasis primarily affects the skin, nails, and occasionally the joints. The most characteristic lesions consist of red, scaly sharply demarcated, indurated plaques, present particularly over extensor surfaces and scalp. It is a noncontagious skin disorder and caused mainly by anomalies of protein expression in skin cells, which can be abnormal keratinocyte differentiation, hyperproliferation of the keratinocyte, and infiltration of inflammatory elements [2]

The cause of psoriasis is unknown, and its pathogenesis is not fully understood.[3] Psoriasis has a complex genetic predisposition with a complex inheritance pattern,[4] plus an environmental component[5].

Both genetic and environmental factors play a role in expression of the disease. The factors which may trigger or aggravate psoriasis include streptococcal infections, stress, trauma to the skin (Koebner phenomenon), drugs (particularly lithium), alcohol, obesity, smoking and climate. Although the disease has a low attributable mortality, it can cause considerable morbidity due to associated systemic diseases[2]

Dyslipidemia is one of the important risk factor for cardiovascular disease and very few studies have been carried out to find the lipid profile in patients with psoriasis [6]

Most health care providers do not associate psoriasis with an unfavourable cardiovascular risk profile, but more and more evidence is emerging that this might be the case. The higher prevalence of classic

cardiovascular risk factors, like smoking, hypertension and obesity contribute to atherogenesis in psoriasis patients, but psoriasis itself and its systemic treatment may also stimulate premature atherogenesis, increasing the cardiovascular risk.[7]

Other co-morbid factors increasing the risk of dyslipidemia in psoriatic patients, include higher body mass index (BMI) >30kg/m2, family history of dyslipidemia, sedentary life style, high fat diet, and patients taking retinoids or cyclosporine for the disease. The chronic inflammatory nature of psoriasis and dyslipidemia have been suggested to be contributing risk factors for the development of co-morbidities like atherosclerosis, coronary artery disease and myocardial infarction resulting in increased cardiovascular mortality.[8,9,10]

Though literature suggests a definitive association of lipid derangements with psoriasis, the available data is contradictory and fails to provide a definite conclusion. Hence this study was designed to assess the lipid profile in patients of psoriasis.

Aims and Objectives:

Aim- To study if dyslipidemia is associated with patients of psoriasis when compared with the controls.

Objectives- To estimate the serum total cholesterol, triacylglycerol, low density lipoprotein(LDL) , and high density lipoprotein (HDL) in patients of psoriasis and healthy controls and compare them.

Material and Methods

Study design - Case Control study

► **Study population** - Sample for lipid profile of psoriatic patients attending the OPD of Dermatology Department.

► **Place of study** - Bhausaheb Sardesai Talegaon Rural Hospital, Talegaon Dabhade.

► **Plan of study** - Considering prevalence of cardiovascular disease in psoriatic patient as 23% (reported by other studies - investigative report- Psoriasis and metabolic syndrome. ACTA Dermatology, venerology 2007;87:506-509) with95% confidence interval & 80% power of test with 2% allowable errors the estimated sample was 35 patients of psoriasis.

► The subjects were categorized into two groups

1) Control - 35 healthy age & sex matched subjects

2) Cases - 35 patients of psoriasis

► Criteria for dyslipidemia: (according to Adult treatment panel lll guidelines) [11]

_ Serum total cholesterol : >200mg/dl

_ Serum total LDL : >100mg/dl

_ Serum total HDL : <40mg/dl

_ Serum triacylglycerol : >150mg/dl

► If one or more of the above parameter is observed the individual will be considered as dyslipidemic.

► **Inclusion criteria :**

Patients exclusively having psoriasis with no other major illness like diabetes mellitus, hypertension,CAD etc.

► **Exclusion criteria :**

Patients with known major illness like Hypertension, Ishemic heart disease, Diabetes mellitus, inflammatory disorders like SLE, rheumatoid arthritis & hypotension, and other hormonal disorders.

Lipid profile will be estimated by

i. Cholesterol :- Cholesterol oxidase method[12]

ii. Serum Triacylglycerol:- Trinder's method [13]

iii. Serum LDL:- Direct LDL kit method[14]

iv. Serum HDL:- Direct HDL kit method [14]

Statistical Analysis-

The values were expressed as mean ± SD. The statistical data is evaluated by using students unpaired't'test.

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Observation and Results-

Table 1: Comparison of serum lipid profile parameters (mg/dl) in patients of psoriasis and controls

		Total Cholesterol	HDL	LDL	TG
Cases		205.14	35.31	148.2	175.48
Controls		170.14	45.74	128.7	139.57
P values		<0.001	<0.001	<0.001	<0.001

Graph 1:- Comparison of levels of serum lipid profile in psoriatic patients and controls

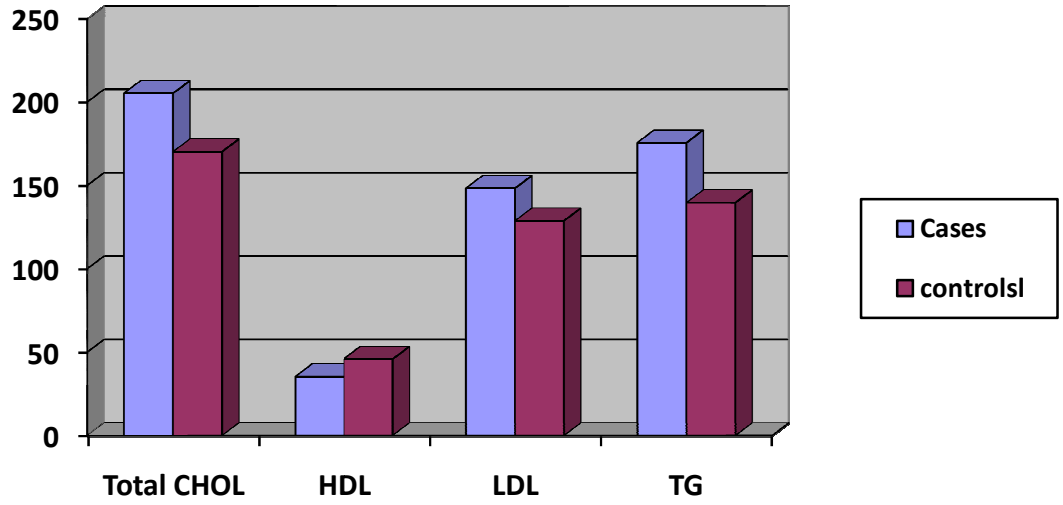

Table1,and Graph1 shows the levels of serum total cholesterol, LDL cholesterol, Triacylglycerol were increased significantly($p<0.001$) as compared with the age and sex matched controls. Serum HDL cholesterol level was significantly decreased in the psoriasis patients as compared to the control group.

Discussion

Psoriasis is a chronic recurrent inflammatory genetic disease and the outcome is determined by the environmental and various other factors.[15]

Many researchers have extensively studied the lipid metabolism in psoriatic patients but its importance in etiology or in the enhancement of the disease remains conflicting. Whether changes in lipid composition are primary events or secondary to psoriasis or perhaps due to medications, such as cyclosporins and retinoids still remains controversial.[16-18]

Several genetic, hormonal and environmental risk factors are known to influence the development of atherosclerosis. Much research has been performed which consistently points to a raised prevalence of lipid abnormalities in individuals diagnosed with psoriasis.

However, to date all accumulated knowledge has not taken care over causes such as obesity, high alcohol intake, heavy smoking, peripheral occlusive disease, latent diabetes mellitus, hypertension, thyroid, renal, hepatic or connective tissue disorder and the use of

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drugs which may have effects on lipid metabolism were not excluded.[17,19]

In the present study, the total cholesterol , triacylglycerol and LDL levels were increased significantly in psoriatic patients as compared to healthy controls whereas the levels of HDL was significantly decreased in the patients of psoriasis when compared with the controls.(Table 1)(Graph 1).Thus significant dyslipidemia has been found in psoriatic patients as compared to controls. This is in concurrence with other studies.[6,,20]

Dietary factors and socioeconomic status could account for it. The lipid abnormalities seen in psoriasis might facilitate and maintain the inflammatory reaction in the skin [21]

Cholesterol ester transfer protein (CETP) could play a plausible role in increased LDL and decreased HDL levels. It transfers the esterified cholesterol from HDL (HDL 2) to VLDL and LDL and replaces it with triacylglycerol. LDL, so altered, is a potential substrate for hepatic lipase. The enzyme plays a major role in lipoprotein metabolism as a lipolytic enzyme and hydrolyzes triglycerides and phospholipids in chylomicron remnants, IDL and HDL[22]

It is not clear whether these changes in lipid profile are primary events resulting in the disease pathogenesis or secondary to psoriasis or treatment of psoriasis [23]. These changes in lipid metabolism in psoriasis may be due to alterations in gastrointestinal system [24]. Whether the dyslipidemia is primary or secondary event, psoriasis patients are at increased risk for development of cardiovascular disease. Vanizor Kural B *et al.* concluded that psoriasis patients to be considered as high risk group for atherosclerosis

because of increased oxidative stress, decreased antioxidant status and susceptibility in lipids and lipoproteins [25].

The present study echoes similar findings. A further larger study with all the different types of cases of psoriasis should be evaluated to establish the etiopathogenesis of the disease.

Conclusion

Psoriasis patients should be considered as high risk group for development of atherosclerosis and cardiovascular disease. Treatment of dyslipidemias by lifestyle and dietary modification and supplementation of antioxidants should be considered in the management of psoriasis to reduce the morbidity and mortality from cardiovascular events.

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