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Research Article

LIPID PROFILE IN PSORIASIS: A CASE CONTROL STUDY

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Abstract: Psoriasis is associated with an atherogenic lipid profile but longitudinal changes in lipids around disease onset are unknown. The purpose of our study is to examine the effect of psoriasis onset on serum lipid profiles. We compared changes in lipid profiles in a population based 94 patients with psoriasis vulgaris and 103 non-psoriasis subjects. The total cholesterol and low-density lipoprotein and high-density lipoprotein cholesterol levels were significantly higher in psoriatic patients ($P < 0.05$). Serum triglyceride levels were almost similar in both groups. This study, like other previous studies, shows that high serum lipid level is significantly more common in psoriasis. This fact may be responsible for higher prevalence of cardiovascular accident in psoriatic patients. It may be useful to do early screening and treatment of hyperlipidemia in psoriasis to prevent the atherosclerosis and its complications. These changes are unlikely to be caused by lipid profile treatment alone and require further exploration.

Keywords: Psoriasis, Lipid Profile, Cholesterol

INTRODUCTION

Psoriasis is a common inflammatory skin disease affecting approximately 2% of the population of the world [1]. In psoriasis, immune cells move from the dermis to the epidermis, where they stimulate skin cells (keratinocytes) to proliferate [2]. This disease is affected by geographical location and race difference and it is more prevalent in northern cloudy regions and in winter (Scandinavia 4.8% and India 0.2%). This disease is prevalent at the age of 15-20 years old and 55-60 years old. There is no absolute treatment for this disease. Sometimes the symptoms are disappeared automatically and they are not occurred again until a neural and stressful condition does not stimulate it [3].

The lymphocytes accumulation has a significant role in the progress of skin inflammatory diseases. In such conditions, T-cells activated of lymph system enter blood and link to endothelium of skin vein and then migrate to the skin. Different kinds of adhesive molecules are necessary for linking, penetration and migration of leukocytes from the blood to inflammation site. In some studies, high expression of adhesive molecules in the skin veins of the psoriatic patients was shown [4]. Psoriasis is a kind of autoimmune disease being characterized by increasing proliferation of keratinocytes and secretion of inflammatory cells (e.g. T lymphocytes and neutrophils) in dermis and epidermis.

Changes in plasma lipid and lipoprotein composition in patients with psoriasis may be the reason for the increased risk of atherosclerosis in these patients [5]. Several reports suggest that persons with psoriasis have a proatherogenic lipoprotein profile, including hypertriglyceridemia, raised plasma concentrations of low-density lipoprotein cholesterol (LDL), very low-density lipoprotein cholesterol (VLDL), and a lowered high-density lipoprotein cholesterol (HDL) concentration [6-8]. Furthermore, both chronic inflammation, a main feature of psoriasis, and psoriasis treatment are associated with hyperlipidemia [9-11]. Psoriasis is still forming the most fertilized field in dermatology for research and interest for scientists over the world, the present study tried to find out if there was an association between serum lipid profile and psoriasis.

MATERIALS AND METHODS

This study was designed and conducted as a case–control study with 94 psoriasis vulgaris plaque type patients and 103 healthy controls during 2011 to 2013. Cases of erythrodermic psoriasis, pustular psoriasis, and guttate type psoriasis were excluded from the study. Other criterion for exclusion were: Diabetes, obesity (body mass index higher than 30Kg/m^2), family history of hyperlipidemia, renal and liver failure, hypothyroidism, taking systemic drugs especially lipids lowering agents, smoking and drinking spirits (alcoholic beverages) in order to eliminate damaging factors on serum lipids level of the patients.

After a 12-hour fasting period, venous blood was taken in morning from all subjects. A Blood sample of 5ml was collected of psoriasis patients and healthy

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people fasting for 10-12 hours. Then, it was centrifuged and isolated of blood serum and was kept at -20°C until the test day. Serum total cholesterol (TC), triglyceride (TG) and HDL-cholesterol levels were measured by an enzymatic-colorimetric method. The LDL cholesterol has been calculated out from the value of triglyceride, total cholesterol and HDL, which was described above

LDL cholesterol (mg/dl) = TC (mg/dl) - HDL cholesterol (mg/dl)- TG/5(mg/dl).

All the rest parameters like SGPT, SGOT, Creatinine, total protein and total Bilirubin were also measured. After the data collection, the data were analyzed by statistical package for social sciences (IBM-SPSS 20.0). The results of patients and control groups were evaluated by t-test. A significance level of 0.05 was set for all statistical analyses in this study.

RESULT

The mean age of patient and control group was 41.25±24.22 and 42.15±26.20 years, respectively. The mean duration of disease was 84.14 ± 15.45 months, and the mean body surface area of involvement was 12.19% ± 9.17%. Eleven patients (8.7%) reported a positive family history of psoriasis. All patients have been treated only with topical agents, such as corticosteroids, vitamin D analogues, tar or dithranol, during the 6-month period. None of them have received any systemic treatment in this era.

The serum total cholesterol, HDL and LDL levels were significantly higher than those of controls (Table 1) however triglyceride levels did not show any significant difference between the patients and controls (P = 0.901).

Other parameters such as SGPT, SGOT, S. Creatinine values were similar in both groups. Although S. Bilirubin levels were within the normal range in both the groups yet it is significantly lower in patients as compared to patients. Serum protein levels were found significant lower in psoriatic patients.

DISCUSSION

The association between psoriasis and dyslipidemia is a matter of debate, with inconsistent findings. Serum lipids levels were examined in many different groups of psoriatic patients in comparison to relevant healthy controls. The blood lipid results are considerably dependent on group matching (age, gender, and BMI). Both psoriasis and dyslipidemia are risk factors for cardiovascular disease in patients with psoriasis. To examine this relationship, we performed this prospective study of lipid profiles during the period surrounding psoriasis incidence in a population-based of patients with psoriasis and a comparison of non-psoriasis subjects.

Table 1: Age and biochemical Parameter in psoriasis and patients

Parameter	Control	Patients	*p-value*
Age (Years)	42.15±26.20	41.25±24.22	
Total Cholesterol (mg/dl)	153.02±42.51	183.10±42.52	0.000
HDL (mg/dl)	37.88±9.88	48.14±16.32	0.000
LDL (mg/dl)	89.63±31.96	110.56±31.49	0.000
Triglyceride (mg/dl)	143.99±81.48	142.31±68.88	0.901
Creatinine	1.02±1.06	1.12±1.03	0.487
SGPT (IU/L)	35.24±28.9	40.61±21.3	0.166
SGOT (IU/L)	40.16±57.25	28.62±10.4	0.062
Total Bilirubin (mg/dl)	0.799±0.599	0.410±0.46	0.000
S. Protein (g/dl)	6.77±0.79	3.88±3.70	0.000

There is conflicting information about how lipid profiles might be affected by psoriasis. Similar to our study higher levels of cholesterol, LDL and HDL levels were noted in psoriasis patients in some studies [12, 13] while no significant difference between patients and controls were reported in some other studies [14-16]. It is also unknown whether the observed lipid changes are primary or secondary to the chronic inflammatory process or its treatment [17, 18].

There is an emerging consensus as to the role of the chronic inflammatory state in diseases like systemic lupus erythematous and rheumatoid arthritis and the accompanying proinflammatory milieu in promoting development and progression of dyslipidemia and atherosclerosis. It is likely that psoriasis, a chronic immune mediated inflammatory skin disease, may predispose individuals to dyslipidemia [19]. This association is demonstrably stronger for severe psoriasis and psoriatic arthritis [12, 19]. Psoriasis has also been shown to be an independent risk factor for cardiovascular mortality [20, 21]. In addition, there appears to be a significant association between psoriasis and traditional risk factors for atherosclerosis and heart disease in the general population such as diabetes mellitus type II, coronary artery disease, peripheral vascular disease and hypertensive heart disease [19-23].

The result of this assay, similar to many previous one, showed that the lipid profile in psoriatic patients undergoes some considerable changes especially in the level of atherogenic component (cholesterol and LDL). Thus, it would be better to remember the importance of serum lipid profile assay in psoriatic patients to prevent further atherosclerosis and cardiovascular accident as psoriasis may accelerate the atherosclerosis with these modifications in lipid profile. The cause and implications of the apparent changes in

lipid profile before psoriasis incidence require further exploration.

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