

## Serum Lipid Levels in Psoriasis

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A predisposition to occlusive vascular diseases has been reported in patients with psoriasis and it has been suggested that some of these patients have some disorders of lipid metabolism. In this study, serum lipid levels were investigated in psoriatic patients to explore to the knowledge of this relationship. One hundred psoriatic patients and 100 non-psoriatic controls were included in the study. Total cholesterol, triglyceride, high-density lipoprotein-cholesterol (HDL-cholesterol), low-density lipoprotein-cholesterol (LDL-cholesterol), and very low-density lipoprotein-cholesterol (VLDL-cholesterol) levels were measured. In patients with psoriasis, total cholesterol and LDL-cholesterol levels were found to be significantly higher than those of controls. No significant differences were found in the other parameters. We concluded that psoriatic patients should be evaluated and followed up for the risk of hyperlipidemia and obstructive vascular diseases.

**Key Words:** Psoriasis, lipid, serum

### INTRODUCTION

Abnormalities in lipid metabolism have been considered to play an important role in the pathogenesis of psoriasis and patients with psoriasis may have increased risk of arterial and venous occlusive diseases. Although changes in plasma lipid composition in psoriatic patients have been suggested as being the cause of the increased risk of atherosclerosis in these patients, many of the results remain controversial.<sup>1-9</sup>

In the present study, we measured serum total cholesterol, triglyceride, HDL-cholesterol, LDL-

cholesterol, and VLDL-cholesterol levels in patients with psoriasis and compared the levels with those of healthy controls. We also reviewed the current literature.

### MATERIALS AND METHODS

One hundred patients with psoriasis of various degrees of severity and 100 age and gender-matched non-psoriatic patients selected as a control group were included in the study. All patients had apparent psoriatic lesions, but no erythroderma or generalized pustulosis. The percentage of the body surface with psoriasis was lower than 25% in all our patients. This percentage was determined by using the rule of nines. They were not on systemic regime for psoriasis or any other disease. Any subject who had a family history of atherosclerosis or hypertension and a body mass index higher than 30 kg/m<sup>2</sup>, smoker and alcohol user were not included in the study. Patients with diseases that can cause secondary hyperlipidemia such as hypothyroidism, diabetes mellitus, nephrotic syndrome, chronic renal insufficiency, obstructive liver disease and connective tissue disease, as well as patients on medications such as beta blockers, thiazides, corticosteroids, retinoids, cyclosporine and lipid lowering agents were excluded. After a 12-hour fasting period, venous blood was taken in the morning from all subjects. Serum total cholesterol, triglyceride, and HDL-cholesterol levels were measured by an enzymatic-colorimetric method with kits purchased from DiaSys Diagnostic Systems GmbH & Co. (Holzheim, Germany). VLDL-cholesterol and LDL-cholesterol

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values were calculated according to the formulas, VLDL-cholesterol=triglyceride/5 and LDL-cholesterol=cholesterol-(VLDL-cholesterol + HDL-cholesterol).<sup>10</sup>

Student's t test was used for statistical analyses.

## RESULTS

Forty-eight patients were male and 52 female (16 to 75 years, mean age  $\pm$  SD 45.1  $\pm$  16.4), while 54 controls were male and 46 female (18 to 74 years, mean age  $\pm$  SD 44.0  $\pm$  16.9) ( $p > 0.05$ ).

In the patient group, serum total cholesterol and LDL-cholesterol levels were significantly higher than those of controls ( $p < 0.001$ ). Triglyceride, HDL-cholesterol, and VLDL-cholesterol levels did not show any significant difference between the patients and controls ( $p > 0.05$ ).

All lipid values for the patients and controls are shown in Table 1.

## DISCUSSION

Among the many studies on serum lipid values in psoriasis, conflicting results have been reported. It is still controversial whether changes in lipid composition are primary events or secondary to psoriasis, or perhaps due to medications such as cyclosporine and retinoids.<sup>1-9,11</sup> In 1978, McDonald and Calabresi proposed a predisposition to occlusive vascular diseases in patients with psoriasis, especially in men.<sup>1</sup>

In studies on serum cholesterol levels in psoriasis, high,<sup>5,8</sup> low<sup>6</sup> and even normal<sup>2,3,7</sup> values have all been reported. In our study, we found significantly higher levels of total cholesterol values in psoriatic patients ( $p < 0.001$ ). As for serum triglyceride levels, high,<sup>5</sup> low<sup>6</sup> and normal<sup>2,7,8</sup> levels have also been reported in psoriasis. We did not find any significant difference between the study and control groups according to triglyceride levels.

The same controversy exists regarding HDL-cholesterol and VLDL-cholesterol values of patients with psoriasis. Normal<sup>3,7,8</sup> and low<sup>4,5</sup> serum levels of HDL-cholesterol and high<sup>4,5</sup> levels of VLDL-cholesterol have been detected. However, we could not find any significant differences in HDL-cholesterol and VLDL-cholesterol levels between the psoriatic group and controls.

LDL-cholesterol levels of psoriatic patients have also been reported to be high<sup>5</sup> or normal<sup>2,7</sup> in various studies. We found that LDL-cholesterol values in psoriasis were significantly higher than in controls ( $p < 0.001$ ).

A predisposition to occlusive vascular diseases has been reported in patients with psoriasis and it has been suggested that some patients with psoriasis have some disorders of lipid metabolism.<sup>1-5,8,9,11</sup> This predisposition seems to be related to the severity of psoriasis.<sup>2,4,5,7</sup> However the severity of our patients was not classified.

The reasons for the changes in lipid metabolism in psoriasis patients have not been satisfactorily explained in the literature. However, they may be related to some abnormalities of the digestive

**Table 1.** Serum Lipid Levels in Psoriatic Patients (n: 100) and Controls (n: 100)

		Mean $\pm$ SD	Min-Max	Comment
Total cholesterol (mg/dl)	Patients	198.90 $\pm$ 42.15	96 - 281	$p < 0.001$
	Controls	164.01 $\pm$ 43.97	87 - 272	
Triglyceride (mg/dl)	Patients	130.68 $\pm$ 67.59	49 - 328	$p > 0.05$
	Controls	111.65 $\pm$ 47.38	51 - 161	
HDL-cholesterol (mg/dl)	Patients	47.30 $\pm$ 10.68	29 - 80	$p > 0.05$
	Controls	48.80 $\pm$ 13.40	30 - 78	
LDL-cholesterol (mg/dl)	Patients	120.70 $\pm$ 36.27	53 - 215	$p < 0.001$
	Controls	93.41 $\pm$ 42.97	11 - 176	
VLDL (mg/dl)	Patients	26.32 $\pm$ 13.87	10 - 66	$p > 0.05$
	Controls	21.96 $\pm$ 9.48	10 - 52	

system. The digestive system takes part in the decomposition, modification and synthesis of many organic compounds, including lipids. In psoriatic patients, structural and functional abnormalities have been found in nearly all the segments of the digestive system.<sup>12</sup>

In conclusion, our data suggest that serum lipid levels, especially total cholesterol and LDL-cholesterol, should be closely monitored in psoriatic patients, during admission and throughout follow-up, to evaluate the risk of occlusive vascular events.

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