

## Original Research Article

# Lipid profile: a conduit in the progression from psoriasis to cardiovascular disease

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## ABSTRACT

**Background:** Psoriasis although a disease of the skin has been reported to be associated with metabolic syndrome. Metabolic syndrome in turn is associated with dyslipidemia which is an independent risk factor for cardiovascular diseases. Our study therefore aims to assess lipid profile in patients with psoriasis with an objective to observe and report any significant deviations in the same as compared to healthy controls.

**Methods:** 25 patients with psoriasis and 25 age, sex matched healthy controls were recruited in this study and lipid profile was estimated using commercially available reagent kit which employs the CHOD-PAP method.

**Results:** Significant elevation in levels of total cholesterol, triglycerides, VLDL and cholesterol/HDL ratio was observed. Elevated although was observed in case of LDL and HDL levels, but it was statistically insignificant.

**Conclusions:** Dyslipidemia was found to be prevalent in psoriasis patients. Dyslipidemia is an independent risk factor for development of cardiovascular disease. Dyslipidemia in psoriasis therefore clearly suggests an inherent predisposition of psoriasis patients to suffer from cardiovascular diseases. A lipid profile estimation in these patients therefore might serve as an important tool for risk assessment for cardiovascular disease, thereby aiding a timely intervention.

**Keywords:** Dyslipidemia, Lipid profile, Psoriasis

## INTRODUCTION

Psoriasis is a very common dermatological disease with about 1 % of the world's total population affected by it.<sup>1</sup> An estimated 125 million people in this world are affected by psoriasis. Psoriasis has been reported to be associated with multi organ system involvement and is being hence believed to be a systemic disorder rather than just being a dermatological illness.<sup>2</sup> A disturbance in lipid dynamics resulting in a consequent dyslipidemic status has been reported by several researchers of being associated with psoriasis.<sup>3</sup> It has also been reported by several researchers that the disturbance in lipid metabolism in psoriasis is possibly genetically determined.<sup>3</sup> Alteration in the lipid dynamics and

consequent elevated plasma lipid concentrations increase the risk of atherosclerosis and consequent cardiovascular diseases.<sup>4</sup> Psoriasis has been reported to be associated with metabolic syndrome which in turn is associated with dyslipidemic status.<sup>4</sup> Hence we proposed to carry out a study directed towards observation of various lipid levels in blood and flag significant deviations if any in patients with psoriasis when compared to age and sex matched healthy controls.

## METHODS

The study was carried out at Institute of Medical Sciences and Sum Hospital, Bhubaneswar during the period spanning from March 2016 to July 2016. The study

proposal was presented before the Institutional ethical committee at IMS and SUM Hospital which follows the Helsinki guidelines of human research and an ethical clearance was obtained before initiating the study. A total of 25 patients with psoriasis who presented to the dermatology OPD at IMS and SUM Hospital during the aforesaid period were recruited in the study that did not have a history of cardiovascular disease, diabetes or any other major illness. Smokers, alcoholics and subjects already on lipid lowering agents were excluded from the study. 25 age and sex matched healthy controls were recruited in the study who presented to the general medicine OPD for general health check-up. A written informed consent was obtained from each subject as a proof of their willingness to participate in the study.

5ml of venous blood was collected with complete aseptic precautions in sterile vacutainers. The samples were subjected to centrifugation at 2000 rpm to obtain a supernatant serum which in turn was used for assessing lipid profile which includes a total cholesterol, triglyceride, LDL, HDL, VLDL estimation. A commercially available kit was used to estimate lipid profile supplied by roche diagnostics. Data thus collected was tabulated using Microsoft Excel 2007 and was analyzed using SPSS v17.0.

## RESULTS

Our study has revealed higher levels of cholesterol, triglycerides, VLDL and LDL levels in patients with psoriasis as compared to the healthy controls. HDL levels although were grossly diminished (Table 1). Hypercholesterolemia was quite evident in the patients with psoriasis, with the study group exhibiting a mean of 207.09 mg% which was substantially higher than the control group standing at 132.02 mg%.

**Table:-Lipid profile in psoriasis patients and controls.**

Parameters	Group 1 (patients)	Group 2 (controls)
Cholesterol (mg%)	207.09±15.4	132.02±18.09
Triglyceride (mg%)	223.12±16.55	131.4±16.35
VLDL (mg%)	44.51±3.51	26.71±3.23
LDL (mg%)	134.27±9.81	66.89±11.98
HDL (mg%)	39.32±4.68	48.43±4.32

Serum triglyceride levels were also found elevated in psoriasis patients with mean serum triglyceride levels in the study group being 223.12 mg%. The control group on the other hand exhibited a mean serum triglyceride levels of 131.4 mg%. Mean VLDL and LDL levels were 44.51 and 134.27 mg% respectively in the psoriasis patients. This was substantially more as compared to that of the controls who exhibited a mean VLDL level of 26.71 mg% and mean LDL level of 66.89 mg%. Mean HDL levels in the study group though was found to be less

(39.32 mg%) as compared to that of the controls (48.43 mg%). Thus a gross dyslipidemic status was quite evident in patients with psoriasis which itself is an independent risk factor for development of ischemic heart disease.

## DISCUSSION

These findings of ours are similar to what Akhyani et al reported.<sup>4</sup> However some studies have also reported conflicting findings which do not corroborate with our findings.<sup>5,6</sup> Although the various changes in lipid metabolism in psoriasis is not well understood but some researchers have proposed a few hypothesis which might be the best explanation for the possible derangement in lipid metabolism. Probably structural and functional abnormalities in nearly all segments of the gastrointestinal tract lead to an abnormal decomposition, modification and synthesis of lipids which eventually contribute to the defective metabolism as has been suggested by Pietrzak et al.<sup>7</sup> Lipid abnormalities have a profound effect on the immune system and inflammatory response in patients with psoriasis due to T cell cytokines which is characteristics of T helper cell response.<sup>8</sup> The changes in lipid composition are whether primary or secondary is still a matter of controversy. The lipid abnormalities in psoriasis are prevalent from the very onset of the disease, progressing thereby to altered metabolism of lipids and a consequent increased cardiovascular morbidity.<sup>9</sup> Autoantibodies that recognize oxidized LDL has been reported and their titer correlates with the disease severity.<sup>10</sup>

## CONCLUSION

As is evident from our study dyslipidemia seems to be an integral part of psoriasis. Dyslipidemia being an independent risk factor for cardiovascular disease, therefore demonstrates a very high predisposition of these patients to suffer from atherosclerosis and subsequent ischaemic heart disease. We therefore propose that lipid profile assessment should be taken up as a routine investigation for patients diagnosed with psoriasis. This might in turn aid in a timely screening of the patients at high risk for cardiovascular diseases and hence a timely intervention can be instituted.

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