

# A Study of Serum C - Reactive Protein, Uric Acid and Lipid Profile in Patients with Psoriasis Visiting Dermatology Department, PBM Hospital, Bikaner

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**Abstract:** ***Introduction:** Psoriasis is an autoimmune proliferative skin condition characterized itchy skin rashes, red scalps on the skin. It is a chronic, painful, disfiguring and disabling disease for which there is no cure and with great negative impact on patients, it can occur at any age, and is most common in the age group 50 - 69 years. **Aim and Objective:** To analyse serum levels of Uric acid, C - Reactive Protein and Lipid Profile in Psoriasis Patients. **Material and Methods:** This was an Hospital base case - control study carried out in Department of Biochemistry, Department of Dermatology in collaboration with Department of Microbiology, Rajasthan. The 100 consecutive cases were included for the study. **Result:** The 10% subjects as normal control group belong to age 18 - 30 years, 30% subjects belong to 31 - 40 years, 24% subjects belong to 41 - 50 years, 16% subjects belong to 51 - 60 years, 20% subjects belong to 61 - 75 years. The serum CRP level varies from 0.3 to 1.0 mg/dl with a mean  $0.51 \pm 0.16$  mg/dl in normal control subjects. The mean serum uric acid level is found to be  $4.81 \pm 1.05$  mg/dl with a range of 2.5 to 6.8 mg/dl in control subjects. **Conclusion:** The results of present study showed that in psoriasis patients serum C - reactive protein, uric acid, cholesterol, triglycerides, LDL - cholesterol, VLDL - cholesterol was significantly increased and serum HDL - cholesterol level were significantly reduced. So, it gives us a clue regarding possible relation of above parameters in psoriasis patients.*

**Keywords:** CRP, Uric acid, Lipid Profile, Psoriasis

## 1. Introduction

Psoriasis is an autoimmune proliferative skin condition characterized itchy skin rashes, red scalps on the skin. It is a chronic, painful, disfiguring and disabling disease for which there is no cure and with great negative impact on patients, it can occur at any age, and is most common in the age group 50 - 69 years.<sup>1</sup> The etiology of psoriasis remains unclear, although there is evidence for genetic predisposition. Although there is a suggestion that psoriasis could be an autoimmune disease, no auto antigen that could be responsible has been defined yet. Psoriasis can also be provoked by external and internal triggers, including mild trauma, sunburn, infections, systemic drugs and stress.<sup>2</sup>

Psoriasis involves the skin and nails, and is associated with a number of comorbidities. Skin lesions are localized or generalized, mostly symmetrical, sharply demarcated, red papules and plaques, and usually covered with white or silver scales. Lesions cause itching, stinging and pain. Between 1.3% to 34.7% of individuals with psoriasis develop chronic, inflammatory arthritis (psoriatic arthritis) that leads to joint deformations and disability. Between 4.2% to 69% of all patients suffering from psoriasis develop nail changes.<sup>3</sup>

The intensity of inflammation and skin changes in psoriasis may not only indicate the severity of psoriasis but also that of other systemic pathologies. C - reactive protein (CRP), although nonspecific, is known to be the most sensitive indicator of inflammation, the magnitude of its increase correlating with the extent of tissue injury and inflammation severity.<sup>4</sup> Elevated serum uric acid levels are a frequent finding in psoriasis. It seems a convicting idea that the rapid epidermal turnover in psoriasis might lead to an increased purine breakdown and may thus influence the serum uric acid level. Patients with psoriasis may have an increased risk of

non - cutaneous diseases, including arterial and venous occlusive diseases. Changes in the plasma lipid composition may be the reason for increased risk of atherosclerosis in psoriasis.<sup>5</sup>

This study was designed to assess the clinical severity of serum C - Reactive Protein (CRP), Uric Acid and Lipid Profile level and to analyze their interrelationship in patients of psoriasis compare with control group.

## 2. Material and Methods

This was a hospital base case - control study carried out in Department of Biochemistry, Department of Dermatology in collaboration with Department of Microbiology, Rajasthan. The 100 consecutive cases were included for the study.

**Inclusion Criteria:** 1. All clinically diagnosed new cases of psoriasis in the age group of 18 - 75 years. Patients with all clinical forms of psoriasis such as plaque, hyperkeratotic, palmoplantar, nail, scalp and flexural psoriasis etc.

**Exclusion Criteria:** 1. Patients suffering from diabetes, hypertension, renal disease and hepatic disease. Patients not willing to take part in the study or unwilling to give their written consent for the study.

## 3. Result and Discussion

The present study was conducted on 100 subjects whether there are any changes in the levels of serum CRP, uric acid, total cholesterol, triglycerides, HDL - Cholesterol, LDL - Cholesterol and VLDL - Cholesterol in psoriasis patients compared to that of normal healthy subjects.

We found that 10% subjects as normal control group belong to age 18 - 30 years, 30% subjects belong to 31 - 40 years, 24% subjects belong to 41 - 50 years, 16% subjects belong to 51 - 60 years, 20% subjects belong to 61 - 75 years.

**Table 1:** Comparison of concentration of serum CRP (mg/dl) levels between Control group and Study group

CRP (mg/dl)	Control Group	Study Group
Mean	0.51	6.77
SD	0.16	6.14
Range	0.3 - 1.0	1.2 - 19.2
Df	98	
t - value	7.207	
p - value	0.0001***	

It is evident from Table - I that serum CRP level varies from 0.3 to 1.0 mg/dl with a mean 0.51±0.16 mg/dl in normal control subjects.

The mean serum CRP was increased to 6.77±6.14 mg/dl with a range of 1.0 to 19.2 mg/dl in psoriasis patients as shown in Table - IV. These results of control and psoriasis patients are in close resemblance with the results obtained in control and psoriasis patients by Kimbell (2009) et al.<sup>6</sup>

The data supported the hypothesis that serum CRP might be increased in psoriasis patients with increasing disease severity. The results of present study are similar to results

obtained by previous studies which suggested direct relationship between serum CRP levels and psoriasis.<sup>6,7</sup>

**Table 2:** Comparison of concentration of serum Uric Acid (mg/dl) levels between Control group and Study group

Uric Acid (mg/dl)	Control Group	Study Group
Mean	4.81	7.56
SD	1.05	0.84
Range	2.5 - 6.8	5.3 - 8.9
Df	98	
t - value	14.461	
p - value	0.0001***	

It is evident from Table - II that mean serum uric acid level is found to be 4.81±1.05 mg/dl with a range of 2.5 to 6.8 mg/dl in control subjects. We found that mean serum uric acid concentration is found to be 7.56±0.84 mg/dl with a range of 5.3 to 8.9 mg/dl in psoriasis patients. These increased results of serum uric acid show resemblance with control and psoriasis patients of H. H. Kown (2011) et al.<sup>8</sup>

The data supported the hypothesis that serum uric acid might be increased in psoriasis with increasing severity of disease. This suggests that subjects with increased serum uric acid level are at high risk of psoriasis. The results of present study are similar to results obtained by previous studies which suggest direct relationship between uric acid levels and psoriasis.<sup>9,10</sup>

**Table 3:** CRP (mg/dl), Uric (mg/dl) Acid (mg/dl), Chol. (mg/dl), TG (mg/dl), HDL (mg/dl), LDL (mg/dl) and VLDL (mg/dl) in Control Group and Study group

	Control Group						
	CRP (mg/dl)	Uric Acid (mg/dl)	Chol. (mg/dl)	TG (mg/dl)	HDL (mg/dl)	LDL (mg/dl)	VLDL (mg/dl)
Mean	0.51	4.81	164.34	107.36	52.24	91.28	20.94
SD	0.16	1.05	23.97	31.65	6.43	24.81	6.14
	Study Group						
	Mean	6.77	7.56	229.30	246.14	29.44	150.58
SD	6.14	0.84	28.22	39.10	6.21	26.94	7.72

The mean serum cholesterol is found to be 164.34±23.97 mg/dl with a range of 128 to 218 mg/dl in control subjects. The increased results of serum cholesterol show resemblance with finding of Mervate M (2010) et al.<sup>11</sup> The results of present study are similar to results obtained by previous studies which suggested direct relationship between cholesterol levels and psoriasis.<sup>11,12</sup>

The mean serum triglyceride level is found to be 107.36±31.65 mg/dl with a range of 50 - 170 mg/dl in control subjects. These increased results of serum triglyceride are in close resemblance with psoriasis patients of study group of Mervate M (2010) et al.<sup>11</sup> The results of present studies is similar to results obtained by previous studies which suggest inverse relationship between triglyceride level and psoriasis.<sup>13,9</sup>

The mean serum HDL cholesterol concentration is found to be 52.24±6.43 mg/dl with a range of 36 to 62 mg/dl in normal healthy control subjects. The results of serum HDL cholesterol in control and psoriasis patients are in close resemblance with control and psoriasis patients of Mervate M (2010) et al.<sup>11</sup>

The mean serum LDL cholesterol concentration is found to

be 91.28±24.81 mg/dl with a range of 50 to 146 mg/dl in normal healthy control subjects. The results of serum LDL cholesterol of control and psoriasis patients are in close resemblance with control and psoriasis patients of Amer (2015) et al.<sup>14</sup>

The mean serum VLDL cholesterol concentration is found to be 20.84±6.14 mg/dl with a range of 10 to 32 mg/dl in normal healthy control subjects. The results of serum VLDL cholesterol in control and psoriasis patients are close resemblance with control and psoriasis patients of Y. C. Nakhwa (2014) et al.<sup>15</sup>

#### 4. Conclusion

The results of present study showed that in psoriasis patients serum C - reactive protein, uric acid, cholesterol, triglycerides, LDL - cholesterol, VLDL - cholesterol was significantly increased and serum HDL - cholesterol level were significantly reduced. So, it gives us a clue regarding possible relation of above parameters in psoriasis patients. Hence, this study has been a step forward to find relation of serum C - reactive protein, uric acid and lipid profile raises a fundamental issue of need of further research in this direction which can help in better understanding of this disease and in

developing new therapeutic strategies in treatment of psoriasis patients.

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