

Clinico-Histopathological Correlation of Psoriasis with Serum Uric Acid and Calcium

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ABSTRACT

Background: Psoriasis is one of the most common dermatological conditions seen in the daily practice. There has been a lot of recent research on its consideration as a systemic disease with the researchers being of the view that the dermatological manifestations represent only a part of spectrum. This study was undertaken to study one such debatable association – association with abnormalities in the serum uric acid and calcium with severity of the disease.

Methods: The study was conducted at Index Medical college Hospital and Research Centre Indore. Sixty patients of newly diagnosed psoriasis who had not received any prior topical or systemic treatment were randomly selected for the study. Serum Calcium and Uric acid levels were estimated. Blood and skin biopsy samples were collected after obtaining proper consent from all cases and controls. Serum lipids were measured by enzymatic methods and Serum uric acid by and “calcium by methods of Caraway, Clark and Colip.

Results: No association of psoriasis with metabolic syndrome was found in our study. The age of onset of the disease, the duration of the disease and the severity of the disease were also not found to be associated with abnormalities in lipid profile. Serum uric acid levels were also not found to be correlating with the severity of the disease and there was no significant increase in uric acid levels in patients with psoriatic arthritis. Serum calcium in psoriatic found to be within normal limits in patients.

Conclusion: Although there have been plenty of studies from the west reporting an association of psoriasis with the metabolic syndrome, there are no large-scale Indian studies evaluating Asian patients. The present study was undertaken to elucidate this fact. Our study clearly refuted any association of psoriasis with metabolic syndrome. Moreover, there was no association of serum uric acid and calcium in relation to the severity of the psoriatic lesion.

Keywords: Psoriasis; Metabolic Syndrome; Psoriatic Arthritis; Lipid Profile, Serum Uric Acid and Calcium.

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INTRODUCTION

Psoriasis is a chronic recurrent papulosquamous disorder characterized by epidermal hyperplasia.¹ There is, increased mitotic activity of the basal cell layer which results in rapid epidermal cell turnover with the 28-day normal epidermal cell cycle reduced to 5 days. The mitotic activity in psoriasis also involves purine metabolism, the end product of which is uric acid in the basal cell layer of epidermis. Thus, a relationship between extent of skin involvement, severity of the disease, therefore reflects the levels of serum uric acid. The significance of total serum calcium is still under investigation and is yet to be established.

Hence this study is being conducted to know the status of serum uric acid and calcium in clinical manifestations of psoriasis and its histopathological correlation to the severity of the disease.²

OBJECTIVES

- To study various clinical presentations of psoriasis.
- To study the histomorphological features in various clinical forms of psoriasis.
- To study the levels of serum uric acid & calcium in psoriasis.
- To analyze the results to assess the utility of biochemical markers as an indicator for severity of psoriatic lesion.

MATERIALS AND METHODS

Serum sample of fifty biopsy proved psoriasis patients were selected, comprising of 40 males and 10 females varying in age from 10 to 75 years.

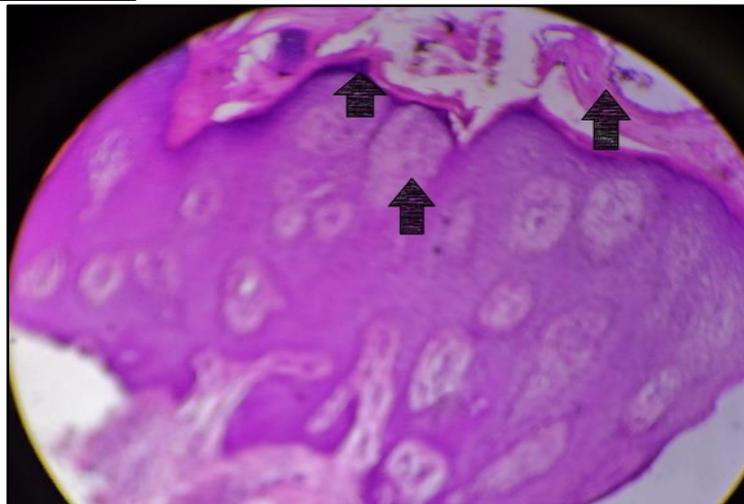
The cases were identified as nummular (88%), guttate (2%), erythrodermic (6%), flexural (2%) and generalised pustular (2%). The serum uric acid and calcium were determined by methods of Carraway, Clark and Collin and Fiskey and Subbarow, respectively. The results thus obtained were evaluated and

compared to that of 25 controls. The psoriasis area and severity index (PASI) were recorded in all the patients.

Exclusion Criteria

- Patients having impaired renal functions or pre-existing renal disease.
- Patients with acute uncontrolled bacterial, viral or fungal infection.
- Patients on concomitant use of hepatotoxic or nephrotoxic drugs for any other long-standing illness.

PATIENT WITH 75% OF SKIN INVOLVEMENT



Hyperkeratosis; Munros microabscess; Capillary loop dilatation

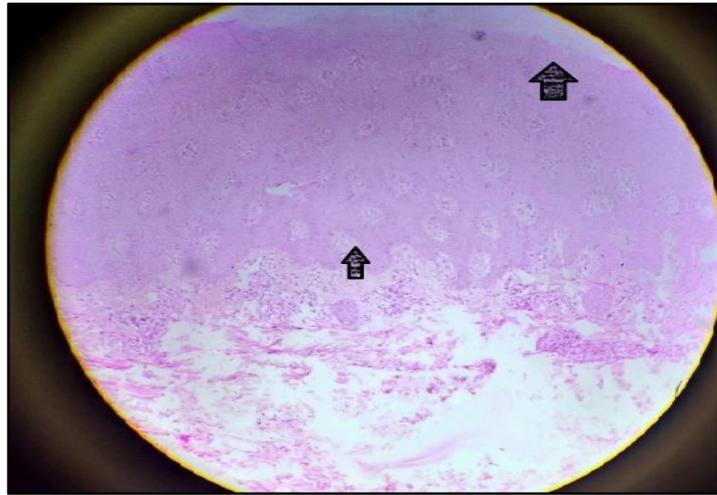
Type of psoriasis
Chronic plaque psoriasis

Serum uric acid level mg/dl
7.7

Serum calcium levels mg/dl
9.1

PATIENT WITH 50 TO 75% OF SKIN INVOLVEMENT





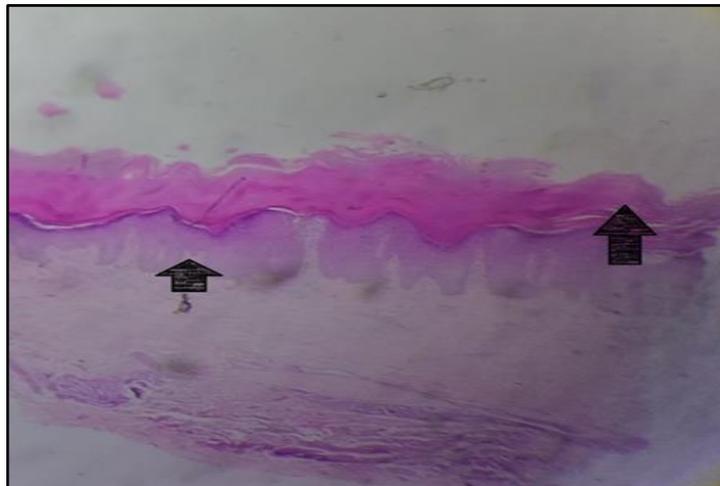
Hyperkeratosis; Capillary loop dilatation

Type of psoriasis
Chronic plaque psoriasis

Serum uric acid level mg/dl
7.4

Serum calcium level mg/dl
9.1

PATIENT WITH 25 TO 50% OF SKIN INVOLVEMENT



Types of psoriasis
Palmoplantar psoriasis

Serum uric acid mg/dl
7.6

Serum calcium mg/dl
9.2

Table 1: Comparison of psoriatic patients according to PASI score.

Gender	No of cases	PASI<10 in psoriatic patients	PASI>10 in psoriatic patients	Controls
Males	42	19	13	21
Females	7	5	4	4

Table 2: Mean serum uric acid level in 50 psoriatic patients and 25 controls.

Gender	Serum uric acid levels (mg/100ml) psoriatic patients	Uric acid levels (mg/100ml) controls	Normal serum uric acid levels
Males	6.8	5.4	3.4-7.0
Females	4.35	3.8	2.4-6.0

Table 3: Mean serum calcium levels in 50 psoriatic patients and 25 controls.

Cases	Total serum calcium (mg/100ml)	Total serum calcium (mg/100ml)	Normal serum calcium (mg/dl)
Male	9.6	9.2	9.0-10.6
Female	9.3	9.1	9.0-10.6

Table 4: Skin surface involved, serum uric acid and calcium levels.

Clinical	% of skin involved	Number of patients	Patient with elevated levels no	Serum uric acid mg/dl	Serum calcium mg/dl
Guttate psoriasis	<10-15%	4	0	6.3	9.2
Erythrodermic psoriasis	<25%	10	1	7.9	9.3
Palmoplantar psoriasis	25-50%	12	1	7.6	9.2
Chronic plaque psoriasis	50-75%	14	2	7.7	9.6
	More than 75%	10	1	7.4	9.1
Total		50			

RESULTS AND DISCUSSION

In the present study 50 patients 10 to 75 years of age were included in the study. 30 patients had PASI less than 10 (mild psoriasis) 20 patients had (moderate to severe psoriasis). A study by Bruce IN, Schentag on hyperuricaemia in psoriatic patients found that there was no association between PASI and serum uric acid levels.³⁻⁵ A study by Brenner W. et al also suggested that there is no correlation between PASI and serum uric acid levels.⁶ In present study also we found that there was no correlation between PASI and serum uric acid levels. Total serum calcium alterations have been varyingly reported. A study by Coperman PMW et al showed total serum calcium decreased by 4.9% and this was attributed to% severe episode of disease and associated steatorrhea.⁷ The present study revealed normal serum calcium in all 50 psoriatic patients. Hence, in our study we found that there was no correlation with serum uric acid and calcium with the severity of disease. Our study clearly refuted any association of psoriasis with serum calcium and uric acid levels.

CONCLUSION

Our results suggest that there is no direct relation of severity of psoriasis with serum uric acid and calcium levels. However, 5 patients had hyperuricemia with normal serum calcium levels without any relation to the extent of skin involvement. So, in our study we concluded that there is no association of serum uric acid and calcium with severity of psoriasis.

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