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Original Research Article

Study of Uric Acid Levels and Lipid Profile Parameters in Psoriatic Patients and Their Relation with Severity of Disease.

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Abstract:
Background & Method: The aim of this study was to determine the total cholesterol, triglycerides, HDL-C, LDL-C, lipoprotein (a) and uric acid levels in psoriatic patients and age & gender matched healthy controls. Anthropometric indices including height and weight were taken while subjects were in the standing position and wearing light clothing without shoes. Body weight and height were measured in kilograms and in centimetres, respectively. Body mass index (BMI) was calculated as weight (kilo- grams) divided by height squared (in square meters).

Result: Comparison of biochemical parameters between control group and cases of psoriasis showed highly significant increased levels of total cholesterol and uric acid in psoriasis cases and significant increase in LDL—C,TC/HDL-C and LDL-C/HDL-C ratio in psoriasis cases compared to control group. The difference in other parameters was non-significant.

Conclusion: Patients of psoriasis are at increased risk of developing hyperuricemia and increased serum uric acid levels shows positive correlation with the severity of disease. Since lipids, Lp(a) and uric acid are involved in the immuno-inflammatory and oxidative stress processes, our study has explored the possible association of these parameters as markers of risk factor for development of cardiovascular disease in patients of psoriasis.

Keywords: psoriasis, total cholesterol, triglycerides, HDL-C, LDL-C, and uric acid.

Study Designed: Observational Study.

1. INTRODUCTION

Psoriasis is a persistent, non-irresistible, provocative auto-resistant condition characterized by erythematous layered plaques over extensor parts of the body [1]. It is portrayed by unusual keratinocyte hyper multiplication, bringing about thickening of the epidermis and of the corneal layer.

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Exemplary psoriasis is described by absconds in the typical pattern of epidermal improvement that lead to epidermal hyper multiplication, modified development of the skin, aggravation, and vascular changes. These four qualities are frequently detectable as areas of dry, thickened, scaling, gleaming white and blushed. [2] The psoriatic sores might damage, tingle, and drain. The degree of the sickness can go from a couple of little plaques to summed up injuries. Psoriatic injuries might be found anyplace on the body [3].

At present, it is recommended that psoriasis improvement relies upon skin penetration of T assistant (Th)1/Th17 cells that animate macrophages and dermal dendritic cells to deliver go between that support aggravation and cause unusual keratinocyte proliferation [4]. Interleukin (IL)- 23 can possibly enact Th17 cells, animating their endurance and multiplication and filling in as a key expert cytokine controller in psoriasis. Th17 cells discharge IL-17, IL-21 and IL-22, with the last option intervening IL-23 incited acanthosis and dermal aggravation. Consequently, the IL-23/Th17 pivot appear to assume a significant part in psoriasis and makes sense of the hyperplasia of psoriatic keratinocytes (by IL-22), and why neutrophils show up in a constant provocative sickness, like psoriasis (IL-8 creation prompted by IL-17). All the more as of late, useful communications between IL-33 and pole cells were additionally found to add to incendiary circumstances, Regardless, the immunologic objective atom that would permit ordering psoriasis as an immune system sickness, as well as, the occasions that trigger the provocative interaction, stays to be determined [5].

Psoriasis patients have increased cardiovascular morbidity. The exact mechanism though not known there are several factors considered to play role like systemic inflammation, dyslipidemia, and oxidative stress. [1] Various studies have shown significant dyslipidemia in psoriatic patients compared to control group. [1,6]. While few studies have failed to establish any positive relation between lipid levels and Psoriasis [7]. Disorders of lipid metabolism may have a role in pathogenesis of psoriasis[8].

2. MATERIAL & METHOD

The present study included 80 cases of psoriasis aged between 18 to 50 years attending clinics of Index Medical College Hospital & Research Centre, Indore & MGM Medical College, Indore and 80 apparently healthy controls matched for age and sex. Informed written consent was taken from all the subjects.

Total study subjects were divided into two groups, group A comprising 80 apparently healthy controls and group B comprising 80 patients of psoriasis, which is again divided into subgroups on the basis of severity of the disease, group C included mild cases of psoriasis and group D of moderate/ severe cases of psoriasis.

Anthropometric indices including height and weight were taken while subjects were in the standing position and wearing light clothing without shoes. Body weight and height were measured in kilograms and in centimetres, respectively. Body mass index (BMI) was calculated as weight (kilo- grams) divided by height squared (in square meters). Five ml of blood samples were collected in plain tubes with minimum of 12 hours of fasting in both the groups. Serum was separated from all the samples and Total cholesterol, HDL-C, LDL-C, triglycerides, Lipoprotein (a) and uric acid was estimated using standard methods in all samples. The mean values of all the biochemical parameters were calculated for both the groups and were compared with each other.

Exclusion Criteria:

Secondary hyperlipidemia

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Hypothyroidism
Nephrotic syndrome

3. RESULTS

Table 1: Gender based Distribution of the Subjects

Sex	Control	Psoriasis Cases
Male	38(47.5%)	42(52.5%)
Female	42(52.5%)	38(47.5%)
Total	80(100%)	80(100%)

This table shows that out of 80 control 47.5% were males and 52.5% were females whereas in cases 52.5% were females and 47.5% were males.

Table 2: Comparison of biochemical parameters between Control and Psoriasis Patients

Parameters (mg/dl)	Controls (Mean±S.D)	Psoriasis Cases (Mean±S.D)	P – Value
Total Cholesterol	168.4±31.89	193.9±42.67	***< 0.001***
Triglycerides	146.15±51.90	167.17±72.26	>0.05
LDL-C	92.21±27.16	112.26±36.60	***< 0.05***
HDL-C	46.06±4.83	46.58±8.30	>0.05
TC/HDL-C	3.81±0.95	4.94±1.41	***< 0.05***
LDL-C/HDL-C	2.08±0.39	2.93±2.11	***< 0.05***
Lipoprotein (a)	24.56±18.09	31.19±26.45	>0.05
Uric acid	5.24±0.67	5.79±1.03	***< 0.001***

Unpaired ‘t’ test applied. P value < 0.05 was taken as statistically

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significant. P value < 0.001 was taken as statistically highly significant. Above table shows comparison of biochemical parameters between control group and cases of psoriasis. It shows highly significant increased levels of total cholesterol and uric acid in Psoriasis cases as compared to control group and significant increase in LDL—C, TC/HDL-C and LDL-C/HDL-C ratio in cases than in control. The difference in all other parameters was non-significant.

Table 3: Comparison of Uric acid levels in control group and Psoriasis cases as per severity of disease

S. No.	Group	Uric acid (Mean±SD)	P value
1	Control (Group A)	5.21 ± 0.33	<0.05
	Total Psoriasis Cases (Group B)	5.97 ± 2.18	
	Controls	5.21 ± 0.33	
2	Mild Psoriasis (Group C)	5.47 ± 1.94	
	Controls	5.21 ± 0.33	
3	Moderate/Severe Psoriasis (Group D)	6.31 ± 0.46	
	Mild Psoriasis	5.47 ± 1.94	
4	Moderate/Severe Psoriasis	6.31 ± 0.46	

ANOVA and then POST HOC tests for multiple comparisons were applied; p-value< 0.05 was taken as statistically significant. Table no. 3 shows that difference in uric acid levels between all groups except between control and mild cases of psoriasis were highly significant statistically.

4. DISCUSSION

Uric acid is emerging as another marker for CVD, the urate redox transport: Uric corrosive go about as a cell reinforcement along with a favorable to oxidant. In the current review we additionally assessed the serum uric corrosive convergence of the psoriatic patients. We found that uric acid levels were significantly higher in psoriasis patients compared to control

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group and they were highest among the severe disease category patients. These findings are in concordance with study by Emrah Yilmaz et al and Paolo Gisondi et al [9, 10]
In study by Dreiher et al.[6] dyslipidemia was found in 57.1% psoriatic patients. In any case, conversely, studies done by Farshchian et al.[7] neglected to track down a predictable affiliation. Dyslipidemia was tracked down additional often in the patients with extreme psoriasis. Accordingly, recurrence of dyslipidemia expanded proportionately with the seriousness of illness. Javidi et al.[8] found that absolute cholesterol levels altogether expanded with sickness seriousness. LDL-C levels likewise expanded yet not essentially, while serum fatty substance and HDL had no connection with illness seriousness. In spite of this, noticed no huge relationship between sickness seriousness and lipid profile.
The mean upsides of all out cholesterol in bunch A , bunch B , bunch C and gathering D was 167.80 ±31.89 mg/dl , 192.100 ±42.67 mg/dl,178.44 ±30.59 and 214.86 ± 50.78 separately, the distinction being profoundly significant(p value< 0.001) between all gatherings. Dreiher et al[6] in their review noticed fundamentally higher complete cholesterol levels 200.3± 38.7 mg/dl versus 196.9± 40.1 mg/dl, p=0.001) when contrasted with controls.
The current review showed exceptionally critical expanded degrees of Cholesterol in psoriatic patients in contrast with controls. These discoveries are predictable with the outcomes gotten by Hashemi et al and Vanizor Kural B et al. [11,12]
Tekin et al.[13]and Pietrzak[14] et al as they generally tracked down critical expanded degree of cholesterol in psoriatic patients in contrast with controls and related decidedly with psoriasis seriousness, as exorbitant loss of cholesterol with scaling during dynamic illness might increment fundamentally the requirement for its blend. However, these discoveries were in conflict with the outcomes got found that psoriatic patients have low serum cholesterol level as broad scaling lead to checked loss of cholesterol through the skin and on the off chance that these was drawn out, it could at long last be reflected in the serum cholesterol.

5. CONCLUSION

Patients of psoriasis are at increased risk of developing hyperuricemia and increased serum uric acid levels shows positive correlation with the severity of disease. Since lipids, Lp(a) and uric acid are involved in the immuno-inflammatory and oxidative stress processes, our study has explored the possible association of these parameters as markers of risk factor for development of cardiovascular disease in patients of psoriasis.

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