



ISSN NO. 2320-5407

Journal homepage: <http://www.journalijar.com>
Journal DOI: [10.21474/IJAR01](https://doi.org/10.21474/IJAR01)

INTERNATIONAL JOURNAL
OF ADVANCED RESEARCH

RESEARCH ARTICLE

TO ASSESS THE FREQUENCY OF RAISED SERUM URIC ACID LEVEL IN PATIENTS WITH PSORIASIS AND COMPARE IT WITH HEALTHY CONTROLS IN OUTPATIENT OF A TERTIARY CARE HOSPITAL.

Dr. Sadaf Ahmed Asim¹, Dr. Asim Hameed², Dr. Furquana niaz³, Dr. Ayesha Sarwat⁴.

1. MBBS, FCPS (DERMA) DIPLOMATE DERMA (RCPSG), Assistant Professor, department of Dermatology, Dow international medical college, DUH, DUHS.
2. MBBS, MS, Incharge Dept of Rehabilitation, CHK.
3. MBBS, FCPS (Derma), Assistant Professor, Dept of Dermatology, Sir Syed Medical College, Karachi.
4. MBBS, MCPS, FCPS, Assistant Professor, Department of Psychiatry, Dow medical college & CHK, DUHS.

Manuscript Info

Manuscript History:

Received: 14 April 2016
Final Accepted: 19 May 2016
Published Online: June 2016

Key words:

Hyperuricemia, Psoriasis, body surface area.

*Corresponding Author

Sadaf Ahmed Asim.

Abstract

Objective of the study:- To assess the frequency of raised serum Uric acid level in patients with psoriasis.
To compare the uric acid levels of patients with Psoriasis with control group.

Introduction:- Hyperuricemia is a strong predictor or risk factor for Psoriasis but not a characteristic of Psoriasis. Further there is agreement on the turnover of the skin cells which could contribute to uric acid elevations in psoriasis patients. The prevalence of hyperuricemia is remarkably greater in psoriatic patients than in age-, sex-, and weight-matched control patients, and is independent of coexisting metabolic disorders. Very limited number of studies has been conducted in Pakistan this will give an insight into the problem as Psoriasis is common in Pakistan.

Methods:- A case control study was conducted in OPD of a Dow University Hospital suffering from Psoriasis. During a year, by using non-probability convenient sampling only 100 subjects were eligible to enroll in the study after ensuring inclusion, exclusion criteria. Data Analysis was carried out by IBM SPSS statistics software 21.0. 100 healthy workers and subjects with no known association of uric acid metabolism and negative family history of Psoriasis enrolled as controls. A semi structured questionnaire was administered. Subjects with different psoriatic conditions enrolled to assess hyperuricemia while in control group subject with skin conditions other than Psoriasis or healthy people with different occupational background were enrolled. Data analysis was done by SPSS version 21.

Results:- Out of 100, 50% were females and 50% were males with psoriasis out of which and in control group 52% were males and 48% were females., time since subject has got psoriasis has variation but minimum recorded was 3 months and maximum was 18 years, 39 subjects reported positive family history, subjects enrolled in the study with different psoriatic conditions have different sites of involvement like scalp, nail, joints, abdomen, knees, elbows, limbs etc specifically 47 subjects reported Nail Involvement, 23 subject reported Joint Involvement and 54 subject reported Scalp Involvement, 51 reported mild and 49 reported moderate BSA involvement.

Conclusions:-Hyperuricemia is a common finding in psoriatic patients when it is being compared with healthy control. Its treatment might be clinically useful for the global treatment of patients. Patients with extensive involvement of the skin tended to have a higher incidence of hyperuricemia

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Introduction:-

Psoriasis is a complex, chronic, inflammatory and multifactorial disease and involvement of areas of the skin fold is common in patients with psoriasis although the exact incidence is unknown^(1, 2, 3). It is characterized by skin cells that multiply up to 10 times faster than normal. As underlying cells reach the skin's surface and die, their sheer volume causes raised, red plaques covered with white scales. Psoriasis typically occurs on the knees, elbows, and scalp and it can also affect the torso, palms, and soles of the feet. It involves hyper proliferation of the keratinocytes in the epidermis, with an increase in the epidermal cell turnover rate. Psoriasis can also be associated with psoriatic arthritis, which leads to pain and swelling in the joints. Several types of psoriasis exist include Plaque, Nail, Scalp, Guttate, Inverse, Pustular, Erythrodermic Psoriasis and Psoriatic arthritis. Psoriasis is not currently curable. However, it can go into remission and show no signs of disease. Fortunately, when it is active, many treatment options are available to manage psoriasis. Hyperuricemia is an excess of uric acid in the blood. It has been identified with or thought to be the same as gout, but uric acid has now been identified as a marker for a number of metabolic and hemodynamic abnormalities^(4, 5). Hyperuricemia is not a disease and may not cause problems, but it is a risk factor for many problems and if it continues for a long time and conditions in the body are right, crystals may form.

Normal Uric acid levels are 2.6-6.0 mg/dL (females) and 3.5-7.2 mg/dL (males).

The estimated worldwide disease burden of 120-180 million people and prevalence estimated between 0%-11.8% and including over 3% of Pakistan's total population^(6, 7, 8). Various studies^(9, 10) have been done so far to establish the association of hyperuricemia with psoriasis and to establish a causal link of epidermal hyperplasia and serum uric acid but no conclusive evidence has been yet achieved. Further support for this conclusion is provided by remarkable agreement of the turnover of the skin cells which could contribute to uric acid elevations in psoriasis patients. The prevalence of hyperuricemia is remarkably greater in psoriatic patients than in age-, sex-, and weight-matched control patients, and is independent of coexisting metabolic disorders But with regards to Pakistan, very few studies have been conducted in this domain. Thus this study will be helpful to establish or to reject a link between increased serum uric acid levels and psoriasis in our region.

Methods:-

A total of 100 subjects enroll in the study over a period of 1 year from January 2015 till December 2015. The inclusion criteria for the subjects were those consenting, both gender, with different variants of psoriasis. Subjects were with mild (< 30% BSA) to moderate (30-50% BSA) psoriasis according to rule of nine and on topical therapy. Exclusion criteria included children, pregnant women, lactating mothers patients with severe psoriasis (> 50% BSA) and on systemic therapy and those suffering from Osteoarthritis or gout or on medicines, with co morbid like Diabetes mellitus, Hypertension, Asthma, hypo/hyperthyroid, Chronic Liver Disease, Chronic Renal Failure or Ischemic Heart Disease. Healthy workers and subjects presenting in outpatient of dermatology with no known association of uric acid metabolism and negative family history of Psoriasis were enrolled as controls done. Controls were those attending the OPD with other minor skin rashes. Place of study was Outpatient dermatology department of a tertiary care hospital. Sampling technique was non-probability convenient sampling.

Data Procedure:-

A Case control study/cross sectional observational study conducted including 100 subjects identified and presented with different types of Psoriasis and 100 as control group presenting in OPD of a tertiary care hospital were enrolled. An informed consent and ethical principals were observed. They were explained about the study and the questionnaire. The semi structured Questionnaire with demographic details and physical illness was administered. Physical examination was performed by dermatologist. Data collection questionnaire included demographic

variables as well as age, gender, occupation, marital status, family history, disease duration, % of body surface, sites of involvement and more specifically scalp, nail and joint involvement. Co morbid conditions and any treatment taken for co morbidities, uric acid profile, any previous treatment for Psoriasis, Any addiction, History of smoking and any other habits.

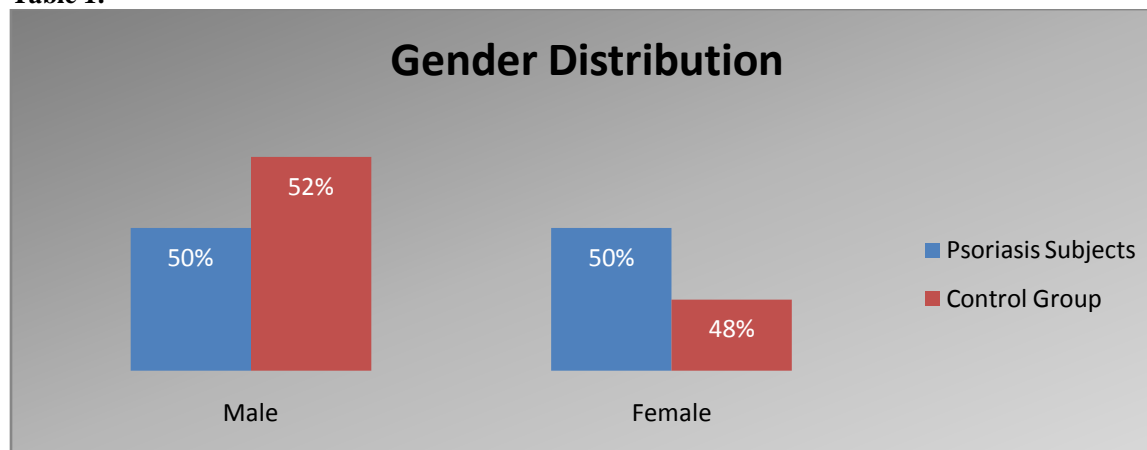
Patients were assessed as mild (<30% BSA), moderate (30-50% BSA), and severe (>50% BSA) according to rule of nine, method used in calculating body surface area involved in burns and psoriasis, whereby values of 9% or 18% of surface area are assigned to specific regions in the adult as follows: Head and neck, 9%; anterior thorax, 18%; posterior thorax, 18%; arms, 9% each; legs, 18% each; and perineum, 1%.⁽¹¹⁾

The results of uric acid levels of patients suffering from Psoriasis and control group were being compared.. The result was analyzed on IMB Statistical Software SPSS Version 21.

Results:-

Out of 100, 50% were males and 50% were females with different psoriatic condition and 48% were females and 52% were males in healthy controls (Table 1). The subjects enrolled in study assisted for the raised serum uric acid level in subjects with psoriasis and these levels are compared with healthy controls.

Table 1:-



Subject with different psoriatic conditions were enrolled in the study explained in Chart 1 and in Healthy controls subjects have different skin condition like acne, Eczema, corn and some are healthy workers explained in Chart 2.

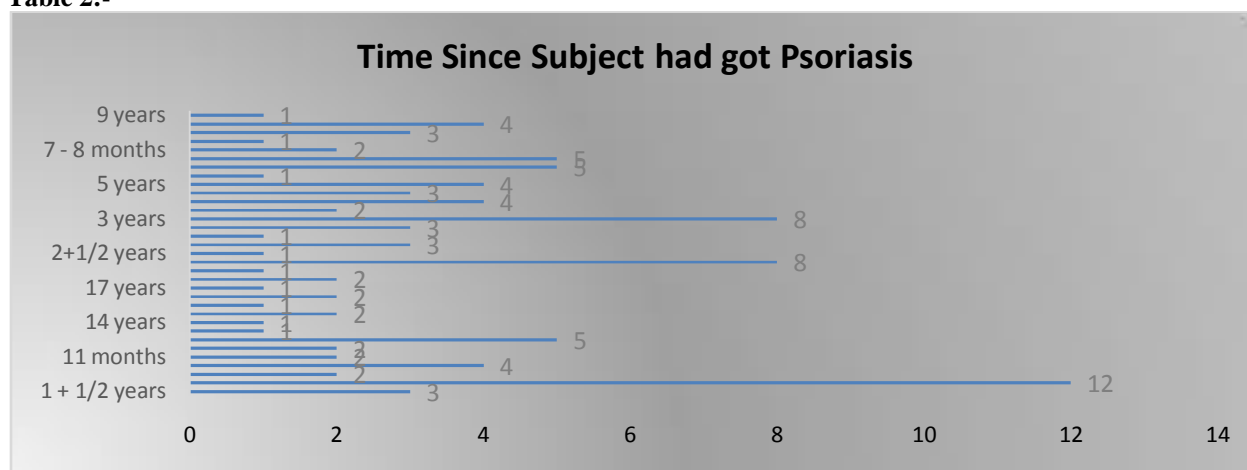
Chart 1 (Psoriasis)

Psoriatic Condition	No. of Subjects
Annular	4
Elephantine	6
Flexural	2
Guttate	9
Inverse	3
Inverse + Plaque	2
Palmoplantar	9
Palmoplantar + Plaque	4
PalmoplantarKeratoderma	2
Palmoplantar, pustular	2
Plaque	47
Pustular	3
Scalp	1
Sebo Psoriasis	6

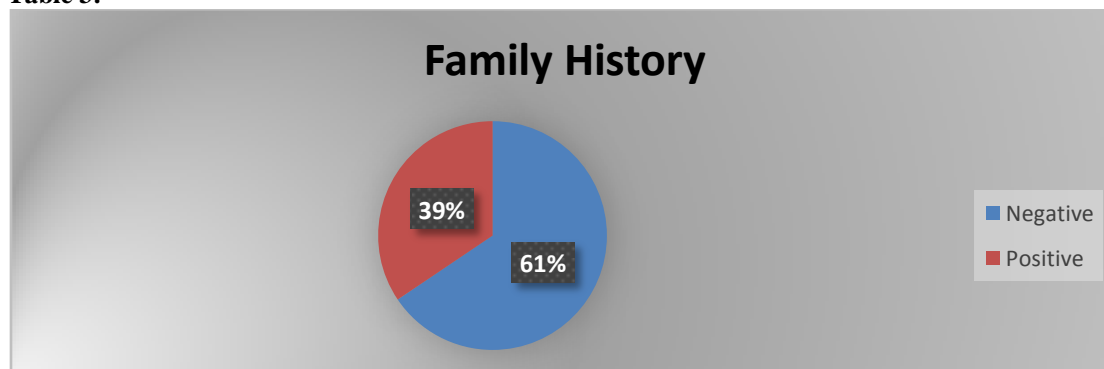
Chart 2 (Healthy Controls)

Health Control Conditions	No. of Contols
Acne	14
Alopecia areata	2
Androgenic Alopecia	5
Becker's nevus	2
Callus	2
Candidiasis	2
Eczema	18
Corn	6
Erythrasma	2
Folliculitis	5
Freckles	4
Healthy Student	2
Healthy Worker	13
Melasma	9
Nevus of OTA	2
Tinea	9
Shingles	1
Telogen Effusion	2

From the data of the Psoriatic subject time since subject has got Psoriasis recorded and the subjects had different time ranges for Psoriasis but minimum time recorded is 3 months and maximum is 18 years. (Table 2)

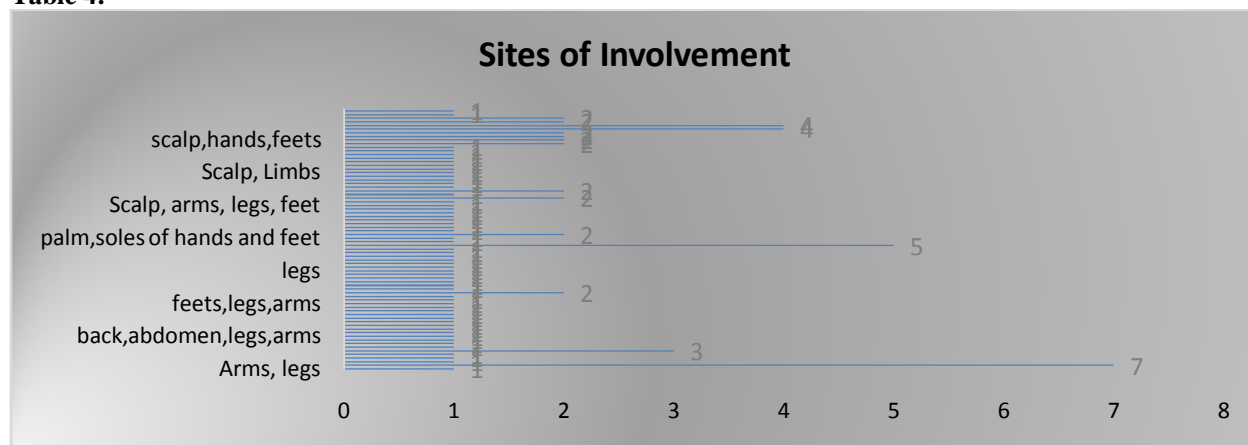
Table 2:-

Out of 100 subjects, 61 subjects have Negative Family History and 39 subjects have Positive Family History. (Table 3)

Table 3:-

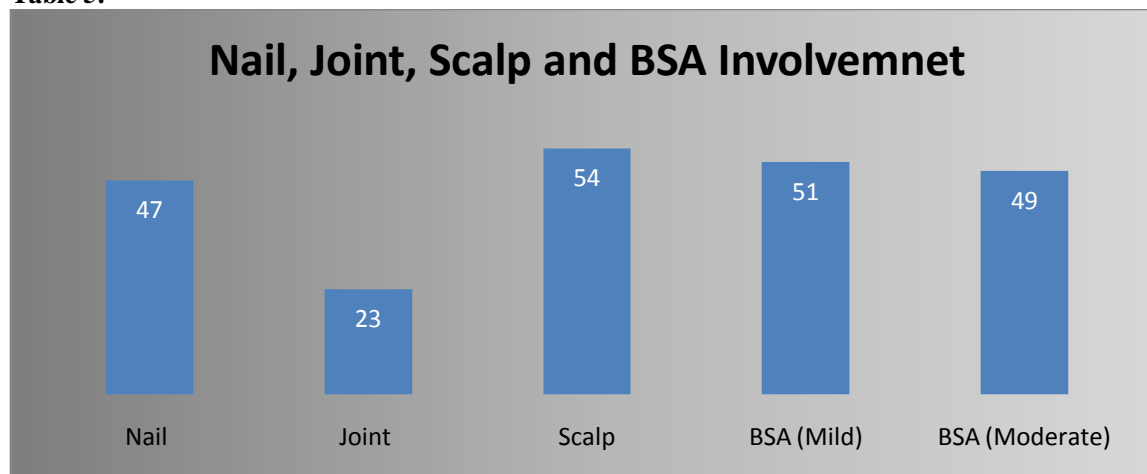
The control group different psoriatic conditions have different sites of involvement like scalp, nail, joints, abdomen, knees, elbows, limbs etc. some subjects had limited (mild) involvement while some had extensive (moderate) involvement in Psoriasis explained in (Table 4)

Table 4:-

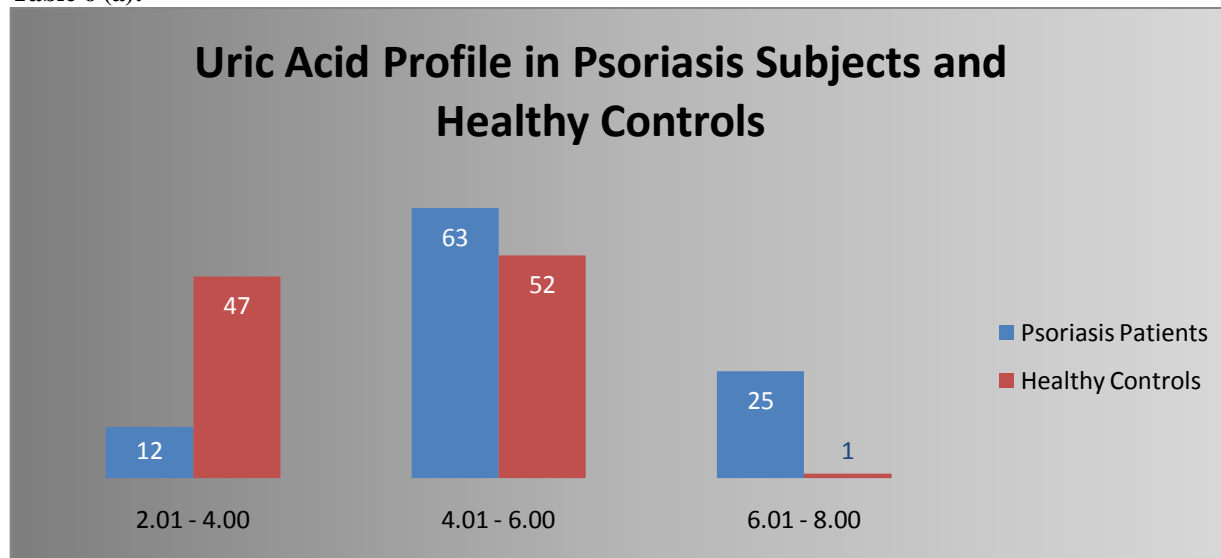
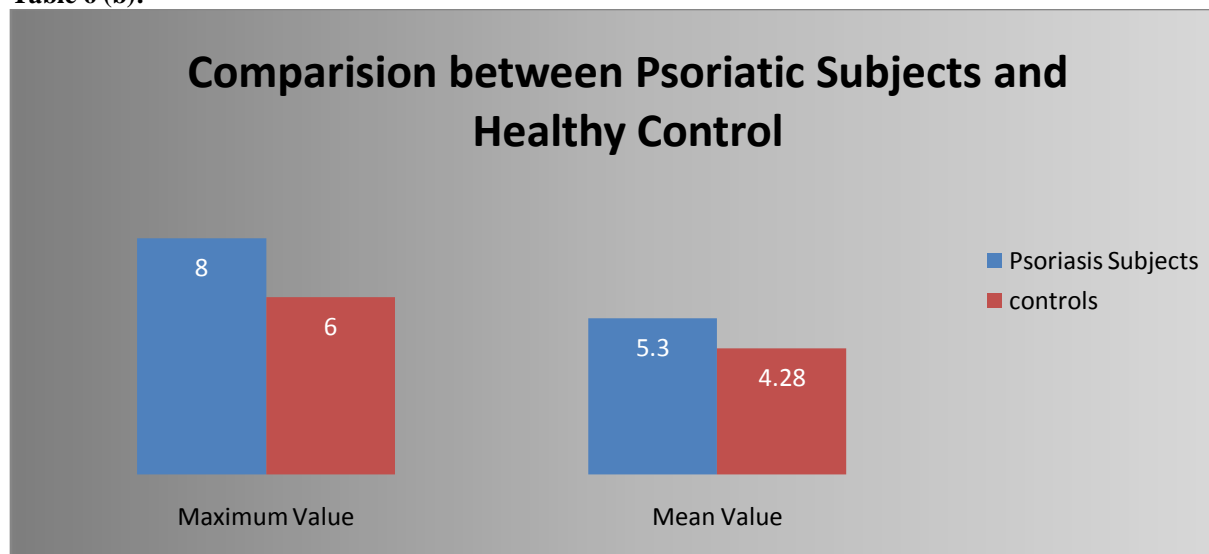


Out of 100 subjects, 47%subjects had Nail involvement, 23%subjects had Joint involvement, 54% subjects had Scalp involvement and 51 subjects had mild and 49 subjects had moderate body surface area involvement in Psoriasis. (Table 5)

Table 5:-

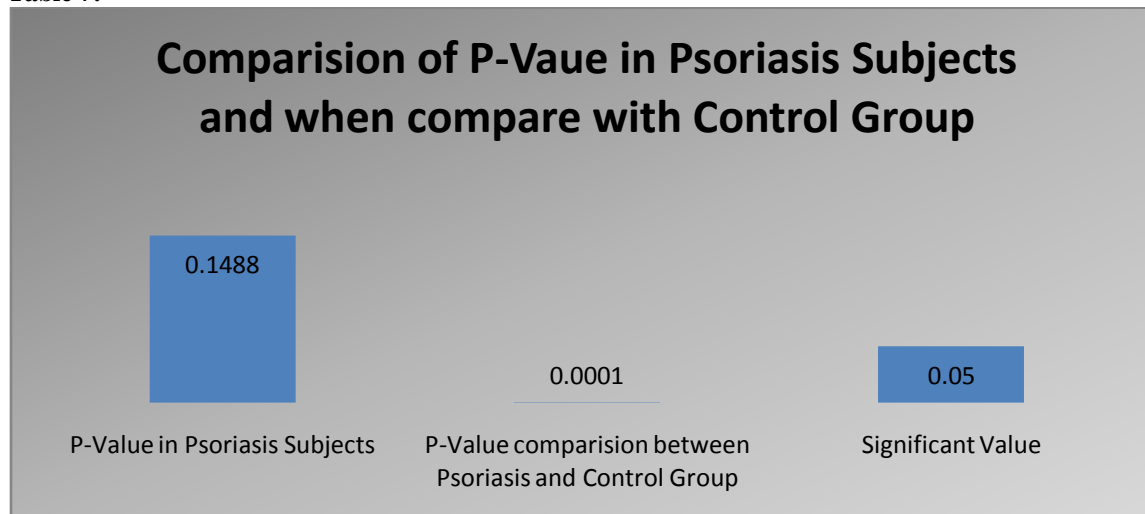


The Uric Acid Profile after the data analysis for the Psoriatic subjects was divided in categories and the results were found to be 12 subjects had uric acid in a range of 2.01 – 4.00 mg/dL, 63subjects had uric acid in a range of 4.01 – 6.00 mg/dL and 25subjects had uric acid in a range of 6.01 – 8.00 mg/dL and for healthy controls results were found to be 47subjects had uric acid in a range of 2.01 – 4.00 mg/dL, 52subjects had uric acid in a range of 4.01 – 6.00 mg/dL and only 1subject had uric acid in a range of 6.01 – 8.00 mg/dL and the minimum value recorded was 2.6 mg/dL and maximum value recorded was 8 mg/dL with a mean value of 5.30 mg/dL for the subjects with Psoriasis and in Healthy controls minimum value was 3 mg/dL and maximum value was 6 mg/dL with a mean value of 4.28 mg/dL. (Table 6)

Table 6 (a):-**Table 6 (b):-**

After running Chi-square test the P- value obtained was 0.1488 and the alpha (significant) value was 0.05 in subjects with Psoriasis, so the P value found to be greater than the alpha value which means that Psoriasis and Hyperuricemia are independent, but can be considered as risk factor.

When we compare Hyperuricemia between Psoriasis Subjects and Control group, the P- Value obtained was 0.0001 and the Alpha value was 0.05 which means that Hyperuricemic Profile is different in both group and Hyperuricemia was more closely found to be associated in Subjects with Psoriasis. (Table 7)

Table 7:-**Discussion:-**

Few studies have examined the association between elevated uric acid levels and psoriasis, and their results have been inconclusive because most of these studies did not take into account the confounding effects of coexisting features of the metabolic syndrome^(12, 13).

Individuals with psoriasis have been found to have increased blood levels of uric acid. However, there is no prospective data on the association between psoriasis and uric acid levels and subsequent development of gout. In this study, we examined the risk of Hyperuricemia among individuals with psoriasis and controls. Controls were patients newly diagnosed as having other dermatological conditions such as acne and melasma.

In this study we compared the prevalence of hyperuricemia between psoriatic patients and control individuals. Compared with control subjects, psoriatic subjects had higher Uric acid levels and a remarkably greater prevalence of asymptomatic hyperuricemia. Analysis revealed that psoriasis is a strong predictor of hyperuricemia which is similar to other studies^(10, 14, 15) and further this study the high uric acid level found was more elevated in Psoriasis rather than healthy controls, though there is an association but hyperuricemia is not a common characteristic of psoriatic subjects⁽¹⁶⁾.

As noted by Harman et al hyperuricemia has been noted to occur in approximately 30 to 40% of patients with psoriasis^(17, 18). In this study Hyperuricemia was associated with psoriasis at almost same rate seen at tertiary care hospital during the past 12 months. As expected, both men and women psoriatic had higher uric acid levels than did their counterparts in a control group. Subjects with psoriasis and hyperuricemia showed marked improvement in psoriasis when treated for their hyperuricemia because urate crystals may be responsible for cell proliferation that is a characteristic of Psoriatic Plaque in a study by Kuzel et al.⁽¹⁹⁾

The rate of occurrence of Psoriasis in male and female is same that's why we enrolled both regardless of Marital status both married and single were enrolled without any discrimination and to avoid any biasness in the study. It is possible that hyperuricemia of Psoriasis may reflect an increased nucleic acid turnover resulting from the marked acceleration of epidermal proliferation that occurs in this disease⁽²⁰⁾.

Family history consider as a strong risk factor for Psoriasis⁽²¹⁾ and in this study result of family history also reported because having a parent with psoriasis increases your risk of developing it, and having two parents with it increases your risk even more. A parent with the disease has about a 10 percent chance of passing it down to their child. If both parents have psoriasis, there's a 50 percent chance of passing down the trait⁽²²⁾.

Psoriasis tends to persist lifelong, fluctuating in extent and severity. In this study these factors were also recorded, there is variation since subject had got Psoriasis and the extent and site of skin involvement is also variable, ranging from a few localized plaques to generalized involvement as in this study subjects with different psoriatic conditions

have different extent and site of involvement more specifically Nail, Joint and Scalp involvement and another study was conducted in order to determine clinical-biochemical correlations and reporting five or more deformed joints with Psoriasis⁽²³⁾. Moderate to severe psoriasis (>50% of body surface area) is frequently associated with psoriatic arthritis and other metabolic diseases.

In this study different confounders like concomitant medications (NSAIDs, omeprazole, multivitamins) taken for comorbidities, comorbidities like gastritis, body aches or disorders not related with uric acid metabolism, previously taken treatment like topical treatment, UVB or other non-medical treatments, addiction habits like Smoking, Beetle were also recorded to see the effect of any confounders that may have association with hyperuricemia and Psoriasis as it is previously postulated that Non-pharmacological intervention such as diet, smoking cessation, and physical exercise could both improve the response to treatments for psoriasis and reduce the risk of other diseases⁽²⁴⁾.

Psoriasis was found to have an associated elevation of the serum uric acid. Subjects with extensive involvement of the skin tended to have a higher incidence of hyperuricemia. Uric acid profile tended to differ in subjects with psoriasis when compared with control group. On the basis of this result we can conclude that although subjects with psoriasis showed more increase in uric acid than control but hyperuricemia is not found to be a characteristic feature they can be associated in some instance. Hyperuricemia is found to be more in Psoriasis subjects than the subject with other skin conditions. More severe forms of uric acid diabolism lead to aggravated skin conditions (psoriatic erythroderma, pustular psoriasis), arthritis, occur in familial predisposition to psoriasis. Advanced psoriasis subjects are at risk to develop apparent gout.⁽²⁵⁾

Conclusions:-

Hyperuricemia is a common finding in psoriatic patients when it is being compared with healthy control. Its treatment might be clinically useful for the global treatment of patients. Patients with extensive involvement of the skin tended to have a higher incidence of hyperuricemia. Thus, hyperuricemia is a strong predictor or risk factor for Psoriasis but not a characteristic of Psoriasis.

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