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Study of Correlation of Clinical and Biochemical parameters in Psoriasis Patients

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Abstract: *Introduction: Psoriasis is one of the chronic skin disease in which many biochemical alterations occur during the course of disease. The aim of our study is to correlate the biochemical and Clinical parameters*
Materials and Methods: This is to study biochemical changes during the disease. Sixty patients who were proved positive clinicopathologically were considered during enrollment and completion of treatment.
Result: Hyperuricemia, hypoalbuminemia, Hypocalcemia, increased s.globulin,AST,ALT,s.bilirubin levels were observed in patients.
Conclusion: *With improvement in patient's disease, the abnormal biochemical values started shifting towards normal range.*

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I. Introduction

Psoriasis is a disease influenced by genetic, environmental, viral, immunological factors. It is a systemic disorder with multi- organ dysfunction.it is a recurrent papulo-squamous disorder with keratinization of skin(14). In this the normal cell cycle is reduced from 28 days to 5 days cycle. Psoriasis is dermatological mystery,with theincrease of cell maturation and keratinization by 6-9 fold leads to profuse scaling of skin clinically ,thickened epidermis with increased mitotic activity histologically andnucleated cells under themicroscope(15).Biochemically Psoriasis leads to increased synthesis and degradation of nucleoproteins, it is also associated with changes in blood biochemistry too.

Aim:

1. To know the range of different biochemical parameters and to correlate them clinicotherapeutically
2. To find out various triggering factors in psoriasis

Inclusion Criteria:

Patients who are diagnosed with psoriasis between the age group of 18 to 70 were included and consent was taken.

S.No	Age	No.of patients	Percentage (%)
1	18-20	3	5
2	20-30	17	28
3	30-40	15	25
4	40-50	10	17
5	50-60	8	13
6	60-70	7	12
	TOTAL	60	100

Table I. Age distribution of psoriasis patients

Mean deviation : 4.653

Standard deviation : 6.079

Mean Age : 39.433+6.079

Exclusion Criteria:

1. Patients who are known diabetic, hypertensive and having cardiac, renal and hepatic diseases.
2. Patients with primary gout.
3. Patients with uncontrolled viral and bacterial infections.
4. Patients on anti-malignant therapy.

II. Materials And Methods

Sixty Psoriatic patients were considered from Dermatology Department. Prior approval of hospital ethics committee, consent of the patients were taken. Patients were subjected to clinical examination,routine and Histopathologic investigations.

Biochemical investigations like serum uric acid,S.calcium ,S..albumin ,s.globulin ,s.bilirubin,AST,ALT levels were estimated prior to initiation of therapy and during regression phase.

Uric Acid was estimated by enzymatic method, through Semi-Auto Analyzer, S.Calcium was estimated by Flamephotometery through Flame photometer, AST,ALT were estimated through semi-auto analyzer, S.Bilirubin(total)was estimated by chemical method Diazomethod throughspectrophotometer and S.Albumin & S.Globulin were estimated by Immunoturbidometery. The data was compiled and analyzed using chi-square test.

	Triggering factors for psoriasis	No.of cases	Percentage (%)
1	Stress	30	50
2	Trauma	7	12
3	Sore throat	7	12
4	Alcoholism	6	10
5	Drug intake	2	3
7.	Seasonal variation	8	13

Table II.Triggering factors of psoriasis

Mean deviation : 6.667

Standard deviation : 10.02

III. Biochemical Parameters In Psoriasis

Table 3 shows that after the treatment s.uric acid levels of all the patients were within normal limits,which is stastistically significant($p>0.05$).Beforetreatmenthyperuricemia was seen in 22(13%) of patients ,hypocalcemia was seen in 10(17%) of patients and after the treatment s.calcium levels of all the patients are normal,which was found to be statistically significant($p>0.05$).and hypoalbuminemia is seen in 15(25%) of patients and increased levels of s.globulin is seen in 28(46%) of patients and raise in ALT33(55%) of patients,AST 24(40%)

Sr no.	Biochemical parameters	Start of treatment		End of treatment		P value
		No.of patients with Normal value	No.of patients with Abnormal value	No.of patients with Normal value	No.of patients with Abnormal value	
1	S.uric acid values	47(78%)	13(22%)	60(100%)	0	>0.05
2	S.calcium values	50(83%)	10(17%)	60(100%)	0	>0.05
3	S.Albumin	45(75%)	15(25%)	60(100%)	0	>0.05
4	S.Globulin	32(53%)	28(46%)	58(96%)	2(4%)	>0.05
5	S.bilirubin	55(91%)	5(9%)	58(96%)	2(4%)	>0.05
6	ALT	27(45%)	33(55%)	56(93%)	4(6%)	>0.05
7	AST	36(60%)	24(40%)	55(92%)	5(8%)	>0.05

Table III. Biochemical parameters before and after treatment(Topical steroids and UVBradiation)

IV. Discussion

There were significant changes in the biochemical values in patients before and after treatment,the treatment being topical steroids and UVB radiation (18). During the course of treatment there was shift of values from abnormal range to the normal range .While analyzing triggering factors stress was the most common factor which is seen in 50% of the patients. psoriasis is said to be psychosomatic disease ,emotional stress conditions can aggravate the disease(6).

The other common triggering factor was seasonal variation ,which is seen in 13% of patients.

Trauma is the triggering factor in 12 % of cases ,which may appear in traumatized areas due to Koebner's phenomenon.(9)

Sorethroat was the next commonest cause in 12% cases,on throat swab streptococcus was positive .(7)

Alcohol is also the triggering factor in 10% cases, alcohol consumption is usually discouragedin psoriatic patients.as alcoholconsumption can prevent the patients from receiving systemic therapy(8).

Drug intake was also one of cause in 3% of people ,which occurs mostly due to steroid withdrawal,usage of lithium in bipolar disorder and also medicines like beta-blockers,anti-malarial drugs and iodides(7)

Hyperuricemia was seen in 22% of patients ,this is due to purine biosynthesis which is a multistep process that forms IMP. AmidoPRT (amido phospho ribosyltransferase determines the rate of purine biosynthesis and urate production ,which combines with PRPP(phosphoribosylpyrophosphate)and glutamine .the second regulatory pathway ,is the salvage pathway of purine bases by hypoxanthine phosphoribosyl transferase. serum urate levels are related to the denovo purine synthesis.the increased levels of PRPP and HPRT(hypoxanthinephosphoribosyltransferase)are associated with the overproduction of purines, hyperuricemia and hyperuricaciduria.But the frequency of hyperuricemia and the extent of psoriasis is not known.As Hyperuricemia sometimes remain unchanged in certain psoriatic patients even after successful treatment,this could be because of Genetic predisposition(13).

And the calcium levels have been varying showing normal and lower levels,the low levels of hypocalcemia is inter-related to hypoalbunimia due to idiopathic hypoparathyrooidism. Hypoalbuminemia can also be caused by increased endogenous catabolism of endogenous albumin.Marked improvement was seen in the PASI score (Psoriasis Area and Severity Index) was seen.PASI is the most widely used tool for measurement of severity of lesions and the area affected into a single score in the range 0 to 72. 75% reduction in the PASI score was seen .

Calculation of PASI score is done by dividing the body into 4 sections such as head(10% of persons skin),arms(20%),trunk(30%),legs(40%).In each section ,the percent of area of skin involved,is estimated and then transformed into a grade from 0 to 6.

0.0% of involved area
1.<10% of involved area
2.10-29% of involved area
3.30-49% of involved area
4.50-69% of involved area
5.70-89% of involved area
6.90-100% of involved area

Depending upon the clinical signs the severity is estimated. Severity of parameters are measured on scale of 0 to 4. Sum of all 3 severe parameters is then calculated for each section of skin,multiplied by the area score for that area and multiplied by weight of respective section.(4,5).

s.globulin,s.bilirubin,ALT and AST were raised before the start of treatment with topical steroids and UVB radiation due to NAFLD and the levels were shifted to normal range, which is significant.

V. Conclusion

Marked change was seen in the biochemistry of the patients during the course of study ,before and after treatment. Improvement in PASI score was also observed during the course of the treatment and after it. Biochemical changes are important to know the pathogenesis of psoriasis and its exacerbation .In addition, recognition of triggering factors also helps us to prevent disease exacerbation and its better management.

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