Section: Dermatology

Original Research Article

EVALUATION OF LEVEL OF INFLAMMATORY MARKERS IN PSORIASIS PATIENTS

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Received : 15/03/2020
Received in revised form : 19/04/2020
Accepted : 02/05/2020
Available Online : 05/06/2020

Keywords:
C-reactive protein, Psoriasis Area and Severity Index, Psoriasis.

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DOI: http://dx.doi.org/10.29228/jamp.42893

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2020; 2 (2); 192-195

Abstract

Background: To evaluate level of inflammatory markers in psoriasis patients**.** **Materials and Methods:** Sixty- five psoriasis patients (Group I) and age and sex matched healthy subjects (group II) were enrolled in the study. In all patients, PASI score was calculated and patients were divided according to PASI score into three sub groups as mild (PASI <10), moderate (PASI- 10-15) and severe (PASI >15). Measurement of level of SUA, ADA and hsCRP and ESR were done. **Results:** There were 12 (18.4%) patients with mild, 18 (27.6%) with moderate and 35 (53.8%) with severe form of psoriasis. On statistical analysis, a significant difference was observed (P< 0.05). The mean ADA level was 22.4 U/L in group I subjects and 10.3 U/L in group II subjects. The mean hsCRP level was 56.2 ng/ml in group I and 10.1 ng/ml in group II. The mean SUA level was 6.8 mg/dl in group I and 3.2 mg/dl in group II. The mean ESR level was 30.6 mm/h in group I and 14.5 mm/h in group II. The difference was significant (P< 0.05). There was no significant correlation between PASI score and ADA, hsCRP, SUA, and ESR (P> 0.05). **Conclusion:** It was found that serum ADA, hsCRP, SUA, and ESR showed higher levels among psoriatic patients than healthy subjects. Therefore, these markers should be regularly measured in psoriais patients.

INTRODUCTION

Psoriasis is a chronic autoimmune condition that primarily affects the skin. About 2%–3% of the world's population suffers from psoriasis. It is a chronic systemic illness that is characterised by T-cell-mediated hyperproliferation of keratinocytes.[1] It can affect both men and women, although women tend to get it earlier and are more likely to have a family history of it. Its age of onset displays a bimodal distribution, peaking 10 years earlier in women and at 30-39 and 60-69 years old in males, respectively. There are numerous ways that psoriasis can appear, including plaque, flexural, guttate, pustular, or erythrodermic psoriasis. Plaque psoriasis is the most prevalent type and affects the scalp, trunk, and extensor surfaces (particularly the elbows and knees), presenting as well-defined salmon pink plaques with silvery-white scale.[2]

An essential laboratory indicator of tissue injury, infection, and inflammation is C-reactive protein (CRP). Compared to the usual CRP measurement, high-sensitive CRP (hsCRP) can pick up CRP at lower concentrations.[3] Many skin conditions, such as psoriasis, mycosis fungoides, hidradenitis suppurativa, and allergic contact dermatitis, are associated with elevated hsCRP levels. Active arthritis, psoriasis area severity index (PASI) score, and elevated CRP were all associated with psoriatic individuals.[4] The erythrocyte sedimentation rate (ESR), which highlights the chronic inflammatory aspect of psoriasis, rises with the severity of the condition. It was discovered to be a highly reliable predictor of psoriatic arthritis (PsA). The Psoriasis Area and Severity Index (PASI) score is a widely used tool to measure the severity of psoriasis and monitor the effectiveness of treatments.[5] It evaluates the extent and intensity of psoriatic lesions on four body regions: the head (scalp), trunk, upper extremities (arms), and lower extremities (legs). The PASI score takes into account the redness, thickness, and scaling of the lesions, as well as the area of involvement on each body region.[6] Considering this, we performed this study to evaluate level of inflammatory markers in psoriasis patients.

MATERIALS AND METHODS

The present prospective, observational study comprised of sixty- five psoriasis patients of either gender. All selected patients gave their written consent to participate in the study. Ethical committee of institute approved the study.

Demographic data such as name, age, gender etc. was recorded. Two groups were made. Group I comprised of psoriasis patients and group II comprised of age and sex matched healthy subjects

ISSN (O): 2687-5365; ISSN (P): 2753-6556

(control). In all patients, PASI score was calculated and patients were divided according to PASI score into three sub groups as mild (PASI <10), moderate (PASI- 10-15) and severe (PASI >15).

8 ml venous blood sample was withdrawn in a test tube. For complete blood count (CBC) estimation, 1 milliliter was added to tube containing K2EDTA and for ESR determination, 1.6 ml blood was added to sodium citrated tube. The rest of the blood sample was allowed to clot for 15 minutes, centrifuged, and the serum was separated into two aliquots; one used for determination of SUA, and the other was stored at −20°C for assay of both ADA and hsCRP. Correlations of ADA, hsCRP, SUA, and ESR with PASI scores were done. Results of the study was compiled and statistically analysed. P value < 0.05 was considered significant.

RESULTS

Table 1: Distribution of patients based on PASI

PASI	Number (%)	P value
Mild	12 (18.4%)	0.05
Moderate	18 (27.6%)	
Severe	35 (53.8%)	

There were 12 (18.4%) patients with mild, 18 (27.6%) with moderate and 35 (53.8%) with severe form of psoriasis. On statistical analysis, a significant difference was observed (P< 0.05) (Table 1).

Table 2: Evaluation of inflammatory markers

Markers	Group I	Group II	P value
ADA (U/L)	22.4	10.3	0.01
hsCRP (ng/ml)	56.2	10.1	0.001
SUA (mg/dl)	6.8	3.2	0.05
ESR (mm/h)	30.6	14.5	0.03

The mean ADA level was 22.4 U/L in group I subjects and 10.3 U/L in group II subjects. The mean hsCRP level was 56.2 ng/ml in group I and 10.1 ng/ml in group II. The mean SUA level was 6.8 mg/dl in group I and 3.2 mg/dl in group II. The mean ESR level was 30.6 mm/h in group I and 14.5 mm/h in group II. The difference was significant (P< 0.05) (Table 2, Graph 1).

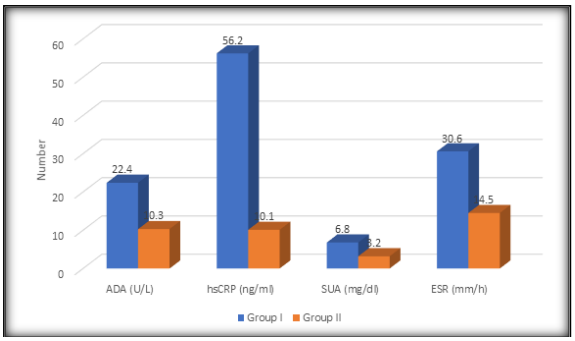

Figure 1:

Table 3: Assessment of correlations of psoriasis area severity index score with inflammatory markers

Markers	Variables	Mild	Moderate	Severe
ADA	R	0.20	0.13	0.14
	p	0.44	0.51	0.56
hsCRP	R	0.17	-0.23	-0.13
	p	0.48	0.36	0.64
SUA	R	-0.05	0.19	-0.07
	p	0.82	0.47	0.72
ESR	R	0.36	0.21	0.04
	p	0.11	0.42	0.82

There was no significant correlation between PASI score and ADA, hsCRP, SUA, and ESR (P> 0.05) (Table 3).

DISCUSSION

Plaque psoriasis makes up more than 80% of all cases of psoriasis, making it the most prevalent type.[7] Plaque psoriasis is distinguished by erythematous, scaly patches or plaques that typically appear on extensor surfaces, but it can also affect the intertriginous regions, palms, soles, and nails.[8] Both men and women can have psoriasis, and adults are more likely to develop it than children. Flexural psoriasis can affect the axillae, sub-mammary, and vaginal areas and manifests without much scaling.[9] Typically, but not always, streptococcal infection precedes the abrupt symmetrical eruption of drop-like papules or plaques that characterises guttate psoriasis, which primarily affects the trunk and limbs.[10]

Plaque psoriasis can later appear in patients with guttate psoriasis. The broad erythematous rash (erythroderma) caused by severe untreated psoriasis

ISSN (O): 2687-5365; ISSN (P): 2753-6556

is life-threatening due to potential sequelae include hypothermia, infection risk, acute renal injury, and high-output heart failure.[11] The occurrence of psoriasis in traumatised skin areas is known as the Koebner phenomenon. Body surface area (BSA) and the severity of erythema, induration, and scaling are used to determine the extent of psoriasis.[12,13] We performed this study to evaluate level of inflammatory markers in psoriasis patients.

In our study, there were 12 (18.4%) patients with mild, 18 (27.6%) with moderate and 35 (53.8%) with severe form of psoriasis. The importance of serum ADA activity in psoriasis and its relationship to disease activity were evaluated by Bukulmez et al.[14] An enzymatic technique was used to measure ADA activity in 25 psoriasis patients and 15 healthy individuals. The PASI scoring system was used to measure disease activity. Patients with psoriasis had significantly higher serum ADA levels than healthy participants. The same individuals' ADA levels were significantly lower after therapy when compared to pre-treatment values (p 0.05). The ADA levels and PASI scores did not correlate. These findings confirm the evidence that psoriasis aetiology involves T cell activation and that ADA may be valuable in the assessment of disease activity in psoriasis.

Our results showed that the the mean ADA level was 22.4 U/L in group I subjects and 10.3 U/L in group II subjects. The mean hsCRP level was 56.2 ng/ml in group I and 10.1 ng/ml in group II. The mean SUA level was 6.8 mg/dl in group I and 3.2 mg/dl in group II. The mean ESR level was 30.6 mm/h in group I and 14.5 mm/h in group II. Isha et al15 in their study, twenty-five psoriasis patients had their serum CRP and uric acid levels assessed before and after 12 weeks of treatment. The results were contrasted with those of a group of 25 healthy individuals and a group of 25 individuals with varied skin conditions other than psoriatic lesions. Patients with psoriasis had a mean CRP value that was discovered to have elevated by more than 20 folds, which was then reduced to approximately 50% of the initial value following 12 weeks of treatment. Hyperuricemia was also present in some patients. Nearly 25% of these patients had arthritis as well. Thus, it is advised that people with psoriasis should have their CRP and uric acid levels checked regularly.

In this study, there was no significant correlation between PASI score and ADA, hsCRP, SUA, and ESR. Moustafa et al.[16] evaluated serum ADA, hsCRP, SUA, and ESR in 60 psoriatic patients and their correlation with PASI score. ADA, hsCRP, SUA, and ESR showed a significant increase in psoriatic patients compared with that of the controls and no correlations with PASI score (P>0.05). The frequency of joint affection increased with increasing severity of psoriasis (5%, 10%, and 25% in mild, moderate, and severe psoriasis, respectively).

Kwon et al.[17] in their study found that for both sexes, the average uric acid concentration of psoriasis patients was not substantially different from the healthy group (P > 0.05). In psoriasis patients, there was a significant positive connection between SUAC and the Psoriasis Area and Severity Index (PASI) and BMI (P< 0.05). In both gender, there was no correlation between the age of disease beginning, psoriasis in the family history, or other laboratory results (P > 0.05). While there was no significant correlation between the activity of specific lesions and uric acid concentration (P > 0.05), the degree of body surface involvement was connected with uric acid concentration. In hyperuricaemic patients compared to normouricaemic patients, the mean PASI and degree of psoriasis were higher (P< 0.05).

CONCLUSION

It was found that serum ADA, hsCRP, SUA, and ESR showed higher levels among psoriatic patients than healthy subjects. Therefore, these markers should be regularly measured in psoriasis patients.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556

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ISSN (O): 2687-5365; ISSN (P): 2753-6556