# The correlation between psoriasis and uric acid serum level

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**Dear Editor,**

As a chronic, immune-mediated skin disorder, psoriasis affects approximately 2-4% of people [1]. Pustular, erythrodermic, guttate psoriasis, and psoriasis vulgaris comprise frequent forms of the disease, while psoriatic arthritis has been described as a rare form. Patients might suffer from itchy and/or painful lesions and although its exact pathogenesis is not well established, abnormal differentiation and hyperproliferation of keratinocytes, increased epidermal cell turnover, and infiltration of inflammatory cells have been suggested as its characteristics, with inflammatory cytokines also having been implicated to be involved in psoriatic lesions [2]. Greater risks of cardiovascular disease (CVD) [3], metabolic syndrome (MetS) [4], dyslipidemia, type 2 diabetes mellitus (T2DM), obesity, and hypertension are associated with psoriasis [5].

For the first time in 1958, Walkerin reported that hyperuricemia may be associated with psoriasis [6]. Since then, conflicting results have been reported by several studies investigating serum uric acid (UA) levels and psoriasis. Hyperuricemia has frequently been reported in psoriasis patients. It also seems to be associated with a higher prevalence of CVD and MetS [7]. Moreover, hyperuricemia can lead to adverse cardiovascular outcomes and, more specifically, sudden cardiac death [8]. It has been demonstrated that the UA level can mediate inflammatory pathways via the secretion of proinflammatory chemokines; however, its potentially antioxidant roles have also been suggested in psoriasis patients [9].

In the present study, we aimed to evaluate the association of serum UA levels and psoriasis in a case-control study. In this case-control study, 52 psoriasis patients and 52 psoriasis-free individuals who were matched in terms of sex, age, and BMI were enrolled during Jul 2016 - Feb 2017 in Taleghani Hospital, Urmia. The written questionnaire was obtained from each individual and after disease confirmation by a specialist, demographic data were obtained. The Psoriasis Area and Severity Index (PASI) is an international index that is used in most psoriasis studies to determine disease severity. It combines the assessment of the severity of lesions and the area affected into a single score. In the present study, scores lower than 10 were considered as mild psoriasis and more than 10 were considered as severe psoriasis. Individuals who were using medication affecting serum UA levels and anti-psoriasis systemic medications were excluded. Individuals with myeloproliferative, lymphoproliferative, and hemolytic disorders, chronic kidney disease, hypothyroidism, hyperaldosteronism, and those who had undergone chemotherapy were also excluded from further steps.

Of all 104 individuals involved in this study, 52 were psoriasis patients as the case group and 52 were psoriasis-free individuals as the control group (Figure 1). 47 (45.2%) were male and 57 (54.8%) were female. The mean age, BMI, and serum UA levels were 40.12 ± 13.96 (range: 14 to 84) years, 28.26 ± 4.75 (range: 18.82 to 34.52) kg/m$^2$, and 5.45 ± 1.45 (range: 2.1 to 9.5) mg/dl, respectively. Of 52 psoriasis patients, 48 (92.3%) had psoriasis vulgaris, 2 (3.8%) had guttate psoriasis, 1 (1.9%) had erythrodermic psoriasis, 1 (1.9%) had pustular psoriasis and none had flexural psoriasis. Figure 2 indicates this data.

Considering the PASI, the mean disease severity was 32.86 ± 14.45 (range: 8.4 to 61.6). Two patients were categorized as having mild disease (PASI < 10), while 50 patients were considered to have severe disease (PASI > 10). Among the analyzed patients, the mean disease duration was 12.07 ± 11.08 years ranging from 3 months to 48 years. The mean range of serum UA levels in the case and control groups were 5.57 ± 1.36 mg/dl and 5.33 ± 1.53 mg/dl, respectively. The difference between these levels was not statistically significant ($P$ = 0.390). Regarding disease severity, UA serum levels among patients with mild form were 5.49 ± 1.97 mg/dl, whereas this level for patients with the

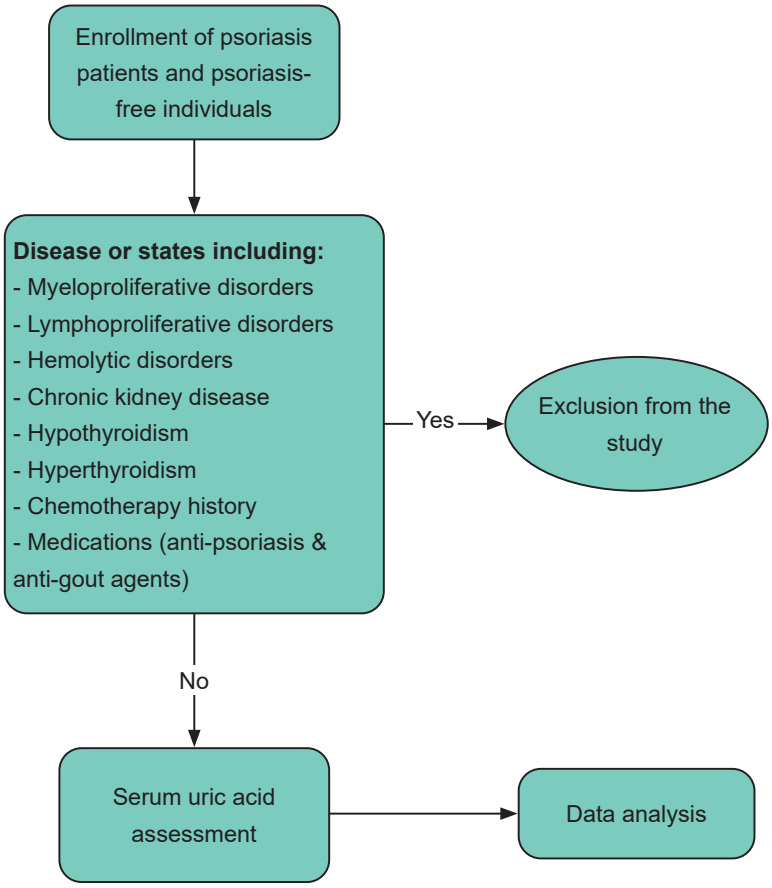


**Figure 1.** Flowchart of material and methods.

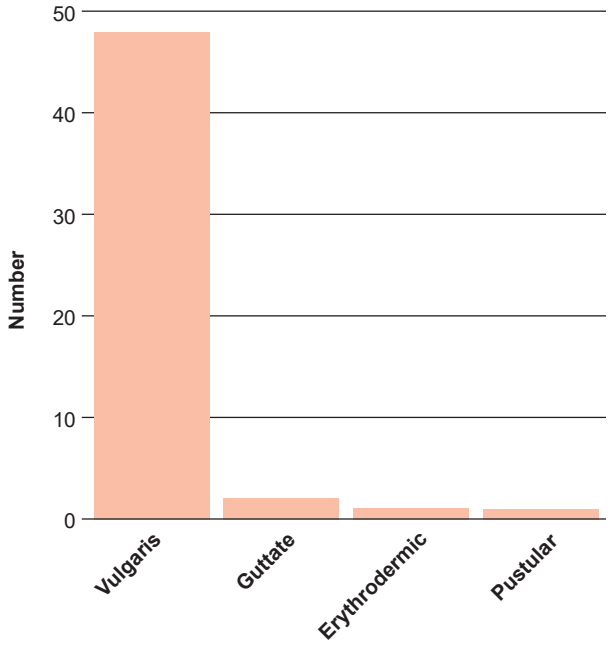


**Figure 2.** Distribution of different psoriasis types.

severe form of the disease was 5.56 ± 1.36 mg/dl. The difference between these two groups was not statistically significant ($P = 0.662$). Categorizing patients into different forms of psoriasis, there was no significant difference in UA levels between various forms of the disease (Table 1). There also was no correlation between serum UA levels and patients' gender. For males and females, UA levels were 5.75 ± 1.09 and 5.2 ± 1.66 mg/dl, respectively. There was no significant association between UA levels and disease duration ($P = 0.289$). However, a significant, positive association between BMI and UA levels was found ($P < 0.05$).

The present study suggests no significant association between serum UA levels and psoriasis disease and, similarly, between disease severity and disease duration. Therefore, this index seems not to be helpful in determining the prognosis of psoriasis patients. Different ethnicities and higher sample volumes should be assessed in future studies to address current disagreements.

**Table 1.** Clinicopathological variables and serum uric acid levels

| Variables | Serum uric acid levels (mg/dl) Mean ± SD | | *P*-value |
|---|---|---|---|
| | Case group | Control group | |
| Overall | 5.57 ± 1.36 | 5.33 ± 1.53 | 0.390 |
| Disease severity | | | |
| Mild | 5.49 ± 1.97 | - | 0.662 |
| Severe | 5.56 ± 1.36 | - | |
| Disease form | | | |
| Vulgaris | 5.57 ± 1.37 | - | 0.645 |
| Guttate | 5.95 ± 1.76 | - | |
| Pustular | 6.6 | - | |
| Erythrodermic | 4.2 | - | |
| Sex | | | |
| Male | 5.75 ± 1.09 | - | 0.046 |
| Female | 5.2 ± 1.66 | - | |

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**Conflict of Interest:** None declared.

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