Cardiovascular risk factors in psoriatic disease: psoriasis *versus* psoriatic arthritis

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Cardiovascular disease (CVD) is the main cause of mortality in patients with psoriatic disease. Traditional cardiovascular (CV) risk factors, such as arterial hypertension (HTA), type 2 diabetes (T2D), and dyslipidaemia are more prevalent in these patients compared with the general population.[1] Besides, the chronic inflammatory state induced by psoriatic disease contributes to subclinical atherosclerosis, making it possible to consider psoriatic disease as an independent CV risk factor.[2] In fact, accelerated atherosclerosis has been associated with both psoriasis and psoriatic arthritis (PsA), progression of which is responsible for the majority of CVD mortality in these patients.[3]

It is clearly recognized that CV risk is significantly increased in patients with psoriatic disease.[3] However, the latest studies regarding the prevalence of CV risk factors among patients with psoriasis and psoriatic arthritis are controversial.

Thus, the aim of this study was to compare the prevalence of several CV risk factors, including dyslipidemia, HTA, T2D, and hyperuricemia, between psoriatic and PsA patients.

A cross-sectional single center study was performed, in which 100 PsA and 100 psoriatic age-/sex-matched patients were included after obtaining approval from the ethics committee of the Reina Sofia Hospital from Cordoba (Spain). All patients provided written informed consent. Patients were recruited consecutively in daily clinical routine in a combined dermatology-rheumatology consult. Clinical, analytical, and demographic data were recorded. CV risk factors were collected by both patient's self-report (HTA and T2D) and routine clinical analyses (hyperuricemia and dyslipidemia).

Concerning the distribution of CV risk factors, PsA and psoriatic patients had similar rates of HTA (36% *versus* 31%), dyslipidemia (37% *versus* 32%), T2D (13% *versus* 14%), and hyperuricemia (32% *versus* 37%) (Table 1). Thus, in our cohort of PsA and psoriatic patients, no statistical differences among these CV risk factors were observed.

On the other hand, PsA patients showed a higher use of nonsteroidal anti-inflammatory drugs (NSAIDs) [71% *versus* 7% ($p < 0.01$)], biological therapy [34% *versus* 10% ($p < 0.01$)], as well as the combination of traditional and biological DMARDs [6% *versus* 0% ($p = 0.029$)] compared with those psoriatic patients (Table 1). Due to the imbalance of treatment between both groups, a stratified analysis to evaluate CV risk factors in patients with and without biological therapy, as well as in patients with and without NSAIDs treatment, was carried out. No significant differences between PsA and psoriatic patients concerning CV risk factors were found, meaning these rates remained similar irrespective of treatment.

Univariate logistic regression analysis revealed no differences between the two clinical groups in the prevalence of CVD risk factors. This analysis was also performed adjusted for age and sex to evaluate if these factors could influence CVD risk factors; however, no significant associations were detected.

The few studies that have directly compared the prevalence of CV risk factors among patients with psoriasis and PsA report controversial results. Thus, HTA has been described to be increased in PsA patients compared with psoriatic patients, after adjusting for sex and age.[1,3] A recent study

Table 1. Clinical characteristics of the population study.

	Total *n* = 200	PsA *n* = 100	Psoriasis *n* = 100	*p*-value
Sex, Male/Female	100/100	49/51	51/49	0.888
Age (years), mean ± SD	48.86 ± 12.14	49.60 ± 11.20	48.12 ± 13.03	0.390
Onset age (years), mean ± SD	33.11 ± 13.50	35.55 ± 12.91	30.68 ± 13.71	**0.010**
Family history, ***n*** (%)	90 (22.5)	45 (45)	45(45)	0.890
Mean duration of psoriasis (years), mean ± SD	11.78 ± 7.96	12.74 ± 7.88	11.37 ± 8.00	0.371
Nail lesion, ***n*** (%)	122 (61)	80 (80)	42(42)	**0.037**
Severity, mild-moderate/severe/very severe, ***n***	106/76/18	56/40/4	50/36/14	0.150
BSA, <10%/ ⩾10%, ***n*** (%)	18(9)/182(91)	10(10)/90(90)	8(8)/92(92)	0.840
Treatments				
DMARDs, ***n*** (%)	72 (36)	38 (38)	34 (34)	0.556
Biological therapy, ***n*** (%)	44 (22)	34 (34)	10 (10)	**0.001**
DMARDs + biologics, ***n*** (%)	6 (3)	6 (6)	0 (0)	**0.029**
No DMARDs + no biologics, ***n*** (%)	78 (39)	22 (22)	56 (56)	**0.001**
NSAIDs, ***n*** (%)	78 (39)	71 (71)	7 (7)	**0.001**
CV risk factors				
Hypertension, ***n*** (%)	67 (33.5)	36 (36)	31 (31)	0.454
Dyslipidemia, ***n*** (%)	69 (34.5)	37 (37)	32 (32)	0.457
T2D, ***n*** (%)	27 (13.5)	13 (13)	14 (14)	0.836
Hyperuricemia, ***n*** (%)	71 (35.5)	32 (32)	39 (39)	0.302

Values are means ± SD (quantitative variables) and absolute or relative frequencies (qualitative variables). Severity considered as mild-moderate <10% BSA, severe 10–25% BSA, and very severe >25% BSA. Chi-squared test (qualitative variables) or Student's *t* test (quantitative variables). Significant differences (p-value < 0.05).
BSA, body surface area; CV, cardiovascular; DMARDs, disease-modifying antirheumatic drugs; NSAIDs, nonsteroidal anti-inflammatory drugs; PsA, psoriatic arthritis; T2D, type 2 diabetes.

has shown that T2D incidence was significantly higher in patients with PsA than in patients with psoriasis alone, while the occurrence of CVD events was similar.[4] Another study reported that the prevalence of HTA, T2D, hyperlipidemia, and obesity was higher in PsA.[1] Likewise, it has been suggested that PsA patients have significantly higher frequencies of hyperuricemia, considered an independent risk factor for PsA in psoriatic patients.[5] In contrast, Ciocon and colleagues compared the prevalence of HTA, T2D, hypercholesterolemia, and coronary heart disease between both groups of patients, finding no statistically significant differences.[6] This is in accordance with our results, although in the later study the diagnosis was not clearly established, so a classification bias could have occurred. In our study, the patients were evaluated by both a dermatologist and a rheumatologist, with the diagnosis being clearly defined before being classified.

To date, there is compelling evidence for the increased prevalence of overall CV risk factors in PsA compared with psoriasis, suggesting that inflammatory joint disease may play a role in CV morbidity. However, these results remain

inconclusive due to the publication of a few studies reporting similar incidence of CV risk factors among these two diseases. In this sense, our study supports the concept of a similarity in the rates of several traditional CV risk factors and a nontraditional CV factor, hyperuricemia, in psoriatic and PsA patients, supporting the idea that more studies should be carried out to clearly define the degree of association between these two diseases and CVD.

The major limitation of the present study was the relative small number of patients at a single center, and that important factors such as body mass index were not controlled for, which precludes drawing definitive conclusions.

Author contributions

Authors Nuria Barbarroja, Iván Arias de la Rosa, Maria Dolores Lopez-Montilla, and Eduardo Collantes-Estevez contributed equally to this work.

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Conflict of interest statement

The author(s) declared that the submitted work was carried out in the absence of any personal, professional or financial relationships that could potentially be construed as a potential conflict of interest.

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