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SHORT COMMUNICATION

Underdiagnosis of Cardiovascular Risk Factors in Outpatients with Psoriasis Followed at Hospital Dermatology Offices: The PSO-RISK Study

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Psoriasis is associated with a higher prevalence of cardiovascular risk factors (CVRF) (1, 2) and an increased risk of cardiovascular events (2, 3). Undiagnosed and undertreated CVRF have also been reported in patients with psoriasis (4). Thus, an active search for CVRF during a psoriasis patient's regular dermatology appointment can contribute to better detection of CVRF. In the PSO-RISK (Psoriasis and Cardiovascular Risk) study, we assessed the prevalence of CVRF in patients with psoriasis from outpatient hospital clinics in Spain (5). The aim of the current study was to investigate the presence of undiagnosed CVRF, i.e. CVRF not known previously, which were diagnosed by the dermatologists during the study visit.

METHODS

PSO-RISK was a cross-sectional, multicentre, single-visit study of patients aged ≥ 18 years with psoriasis on systemic therapy from 33 hospital dermatology offices from Spain. Data were collected through direct interview, review of clinical history, physical examination, blood pressure (BP) measurement and fasting blood analysis (5).

To determine the percentage of patients who presented previously unknown CVRF and were diagnosed during the study visit, patients were considered to have unknown arterial hypertension, hypercholesterolaemia or diabetes, respectively, if they had: (*i*) systolic BP ≥ 140 mmHg and/or diastolic BP ≥ 90 mmHg with neither prior diagnosis of arterial hypertension nor antihypertensive treatment; (*ii*) total cholesterol > 250 mg/dl (6.45 mmol/l) or > 200 mg/dl (5.17 mmol/l) in the case of cardiovascular disease or diabetes with neither prior diagnosis of hypercholesterolaemia nor lipid-lowering treatment; or (*iii*) fasting blood glucose ≥ 126 mg/dl (7.0 mmol/l) or HbA1c ≥ 6.5% with neither diagnosis of diabetes nor glucose-lowering treatment (oral glucose tolerance test was not performed). Estimation of the 10-year risk of fatal cardiovascular disease and 10-year risk of coronary events were calculated with the SCORE scale for low-risk European populations (6) and the REGICOR scale (Girona Heart Registry, Framingham equation adapted for the Spanish population) (7).

Statistical analysis

Quantitative variables were described as mean and standard deviation or median and interquartile range, and qualitative variables as number and frequencies, with confidence intervals when needed. The comparison of 2 averages was based on parametric (Student *t*-test) and non-parametric (Mann-Whitney *U* test) statistical tests, and the χ^2 distribution or Fisher's χ^2 approximation was used to compare percentages.

RESULTS

The sample included 368 patients; mean age 48.4 years; 36.1% women; median duration of psoriasis 18 years, 95.9% with plaque psoriasis, 4.1% with other forms (guttate, pustular or inverted) and 22.8% with psoriatic arthritis.

At least one previously unknown CVRF (arterial hypertension, hypercholesterolaemia, or diabetes) was detected in 101 patients (27.5%, 95% confidence interval (CI) 23.1–32.2%). The percentage was similar by sex (men 29.8%, women 23.3%, $p = 0.181$), or age group, in those with/without psoriatic arthritis (29.8% and 26.8%, $p = 0.588$) or with/without cardiovascular disease (30.3% and 26.7%, $p = 0.537$). Previously unknown CVRF were found in 35.3% of obese patients, 25.5% in overweight ($p = 0.077$) and 20.7% in normal weight patients ($p = 0.020$).

Unknown hypertension was detected in 59 patients (16.0% of the study population (95% CI 12.6–20.1%) or 21.6% of patients without prior diagnosis of hypertension (95% CI 17.1–26.9%)). There were 32 new cases of hypercholesterolaemia (8.7% (95% CI 6.2–12.0%) or 13.1% of patients without prior diagnosis of hypercholesterolaemia (95% CI 9.4–17.9%)). Finally, 20 patients had unknown diabetes (5.4% (95% CI 3.5–8.2%) or 6.1% of patients without known diabetes (95% CI 4.0–9.3%)). There were no differences among patients with/without psoriatic arthritis.

Patients with unknown CVRF had a similar prevalence of other metabolic alterations and cardiovascular disease to those with already-diagnosed CVRF (Table I). Likewise, the SCORE and REGICOR scales yielded similar percentages of patients in risk categories among those with newly-detected CVRF compared with those with already-diagnosed CVRF (Table I).

DISCUSSION

The increased prevalence of CVRF in psoriasis is well documented (1, 2). The current study adds considerable value examining the prevalence of previously unknown CVRF diagnosed by the dermatologist. By measuring BP and conducting simple fasting blood tests, new CVRF were detected in 27.5% of the patients. In addi-

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Table I. *Characteristics of patients with previously unknown (A) vs. known (B) cardiovascular risk factors*

	A ($n=101$)	B ($n=136$)	p
Age, years, mean (SD)	48.3 (13.3)	54.7 (13.1)	<0.001
Sex, men/women, %	69.3/30.7	66.2 / 33.8	0.547
Duration of psoriasis, median (IQR 25–75)	16 (10–25)	18 (11–27)	0.175
Psoriatic arthritis, %	24.8	24.3	0.734
Smokers, %	27.7	27.9	0.888
Obesity, %	41.6	42.6	0.870
High triglycerides, %	44.6	44.1	0.738
Low HDL cholesterol, %	26.8	37.7	0.082
Metabolic syndrome, %	51.5	53.1	0.685
Established cardiovascular disease, %	22.8	32.4	0.101
10-year fatal cardiovascular risk (SCORE), %			
Very high	32.0	44.9	0.133
High	5.0	2.2	
Moderate	39.0	36.0	
Low	24.0	16.9	
10-year coronary risk (REGICOR), %			
Very high	24.0	33.3	
High	6.3	3.0	
Moderate	16.7	22.0	
Low	53.1	41.7	0.135

Note: the group without cardiovascular risk factors (CVRF) ($n=131$) is not depicted in the Table.
Group A: patients with unknown CVRF diagnosed at study visit; Group B: patients with already-diagnosed CVRF.
HDL: high-density lipoprotein; IQR: interquartile range.

tion, these patients showed 10-year cardiovascular risk similar to those with known CVRF, suggesting that the actual cardiovascular risk of that group is higher than perceived and lack of detection (and therefore of treatment) of such CVRF increases the risk further. Studies indicate that risk scores underestimate cardiovascular risk in psoriasis (8, 9) and that psoriasis can confer an extra 6.2% increase in 10-year risk (9).

These findings suggest the convenience of implementing simple screening protocols in dermatology practices to identify CVRF. This might be expected to improve cardiovascular risk for a relevant proportion of patients with psoriasis. Chronic inflammatory diseases, including psoriasis, have recently been included as independent cardiovascular risk factors in clinical guidelines (6), and thus the role of dermatologist will be increasingly important in the prevention of cardiovascular risk.

In conclusion, the presence of unknown CVRF in patients with psoriasis from dermatology hospital clinics in Spain is frequent (27.5%), but these patients have similar cardiovascular risk to those with known CVRF. Consequently, dermatologists can contribute in a decisive manner to the early detection of CVRF in this high-risk population.

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REFERENCES

1. Neimann AL, Shin DB, Wang X, Margolis DJ, Troxel AB, Gelfand JM. Prevalence of cardiovascular risk factors in patients with psoriasis. J Am Acad Dermatol 2006; 55: 829–835.
2. Kimball AB, Robinson DJr, Wu Y, Guzzo C, Yeilding N, Paramore C, et al. Cardiovascular disease and risk factors among psoriasis patients in two US healthcare databases, 2001–2002. Dermatology 2008; 217: 27–37.
3. Svedbom A, Dalén J, Mamolo C, Cappelleri JC, Mallbris L, Petersson IF, et al. Increased cause-specific mortality in patients with mild and severe psoriasis: a population-based Swedish register study. Acta Derm Venereol 2015; 95: 809–815.
4. Kimball AB, Szapary P, Mrowietz U, Reich K, Langley RG, You Y, et al. Underdiagnosis and undertreatment of cardiovascular risk factors in patients with moderate to severe psoriasis. J Am Acad Dermatol 2012; 67: 7–85.
5. Vanaclocha F, Belinchón I, Sánchez-Carazo JL, Rivera R, Carrascosa JM, Cea-Calvo L, et al. Cardiovascular risk factors and cardiovascular diseases in patients with moderate to severe psoriasis under systemic treatment. PSO-RISK, descriptive study. Eur J Dermatol 2014; 24: 662–669.
6. Perk J, De Backer G, Gohlke H, Graham I, Reiner Z, Verschuren M, et al. European Guidelines on cardiovascular disease prevention in clinical practice (version 2012). Eur Heart J 2012; 33: 1635–1701.
7. Marrugat J, Sala J, Ribalta A, Sanz F. Ten-year survival of a cohort of 736 patients with a first myocardial infarction. Sex-related differences? Rev Esp Cardiol 1991; 44: 297–305.
8. Gisondi P, Farina S, Giordano MV, Girolomoni G. Usefulness of the Framingham risk score in patients with chronic psoriasis. Am J Cardiol 2010; 106: 1754–1757.
9. Mehta NN, Krishnamoorthy P, Yu Y, Khan O, Raper A, Van Voorhees A, et al. The impact of psoriasis on 10-year Framingham risk. J Am Acad Dermatol 2012; 67: 796–798.