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COMORBIDITY BURDEN IN PATIENTS WITH PSORIATIC ARTHRITIS

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ABSTRACT

Introduction Psoriatic arthritis (PsA) is a chronic inflammatory disease affecting both the skin and musculoskeletal system, characterized by significant clinical heterogeneity and a substantial comorbidity burden. PsA is associated with increased cardiovascular, metabolic, and autoimmune conditions, yet regional data remain scarce. This study aims to assess the prevalence and impact of comorbidities in PsA patients compared to those with psoriasis alone (PsO).

Material and methods A prospective cohort study with retrospective components was conducted between 2017 and 2019, including 184 patients: 92 with PsA and 92 with PsO. Clinical, laboratory, and imaging data were analyzed. The prevalence of comorbidities was compared between groups using statistical tests, and logistic regression was applied to identify independent predictors.

Results Comorbidities were significantly more frequent in PsA (77.2%) than PsO (48.9%) ($p<0.05$). The prevalence of hypertension (38% vs. 19.6%), osteoarthritis (39.1% vs. 19.6%), type 2 diabetes (8.7% vs. 4.3%), and obesity (25% vs. 13%) was markedly higher in PsA. Increased rates of cardiovascular risk factors, metabolic syndrome, and autoimmune thyroiditis were also identified. This comorbidity burden may reflect a systemic inflammation, thus emphasizing the need for early intervention.

Conclusions PsA is a systemic disease with a substantial comorbid burden. A multidisciplinary approach integrating rheumatology, cardiology, and endocrinology is crucial to optimizing patient outcomes. Early recognition and proactive management of comorbid conditions are essential to mitigate long-term disease complications.

Keywords Psoriatic arthritis, comorbidities, cardiovascular disease, metabolic syndrome.

POVARA COMORBIDITĂȚILOR ÎN ARTRITA PSORIAZICĂ

Introducere Artrita psoriazică (APs) este o boală inflamatorie cronică care afectează pielea și sistemul musculo-scheletal, având o mare variabilitate clinică și un impact crescut al comorbidităților. APs este asociată cu afecțiuni cardiovasculare, metabolice și autoimune, însă datele regionale în cazul dat sunt limitate. Acest studiu evaluează prevalența și impactul comorbidităților la pacienții cu APs, comparativ cu cei cu psoriazis fără artrită (PsO).

Material și metode Au fost analizate date clinice, de laborator și imagistice. Studiu de cohortă prospectiv, având componente retrospective, realizat între 2017-2019, a inclus 184 de pacienți: 92 cu APs și 92 cu PsO. Prevalența comorbidităților a fost comparată între grupuri, utilizând teste statistice și regresia logistică.

Rezultate În cadrul studiului s-a constatat că, comorbiditățile au fost mai frecvente la APs (77,2%) decât la PsO (48,9%) ($p<0,05$); iar hipertensiunea (38% vs. 19,6%), osteoartrita (39,1% vs. 19,6%), diabetul zaharat tip 2 (8,7% vs. 4,3%) și obezitatea (25% vs. 13%) au fost semnificativ mai ridicate la APs, comparativ cu PsO. Factorii de risc cardiovasculari, metabolici și tiroidita autoimună au fost mai prevalenți, iar inflamația sistemică contribuie, probabil, la această povară a comorbidităților, impunând intervenții precoce.

Concluzii APs este o afecțiune sistemică cu un impact crescut al comorbidităților. Abordarea multidisciplinară, cu aspecte din reumatologie, cardiologie și endocrinologie, este esențială pentru optimizarea rezultatelor pacienților. Recunoașterea timpurie și gestionarea proactivă a comorbidităților sunt necesare pentru a preveni complicațiile pe termen lung.

Cuvinte-cheie Artrita psoriazică, comorbidități, boli cardiovasculare, sindromul metabolic.

INTRODUCTION

Psoriatic arthritis (PsA) is a complex inflammatory disease that affects both the skin and the musculoskeletal system, presenting significant clinical heterogeneity (1). The interplay between immune dysregulation, genetic predisposition, and environmental factors contributes to its pathogenesis, yet many aspects of the disease remain poorly understood (2). Epidemiological studies indicate that PsA affects approximately 6–39% of psoriasis (PsO) patients, with prevalence varying based on geographic and demographic factors (1). European data from the EuroPSO study suggest an association between PsO and arthritis in up to 30% of cases, while US studies report a lower prevalence of 11% (1,2). This variability highlights the need for region-specific research to elucidate the burden of PsA among different populations.

The chronic and progressive nature of PsA results in significant joint damage and disability, contributing to a higher morbidity and mortality rate (3). Structural joint damage, including erosive and deforming changes, occurs in 40–60% of patients, often leading to irreversible functional impairment (4). Moreover, the inflammatory burden in PsA extends beyond the musculoskeletal system, contributing to an increased prevalence of cardiovascular disease, metabolic syndrome, type 2 diabetes, obesity, osteoporosis, and mental health disorders such as depression and anxiety (5). The presence of these comorbidities not only worsens disease progression but also complicates therapeutic decision-making and reduces the overall quality of life of affected individuals (6).

The systemic inflammation characteristic of PsA plays a crucial role in driving metabolic and cardiovascular complications (7). Recent studies suggest that psoriasis as an independent risk factor for cardiovascular disease, with PsA patients exhibiting an even higher prevalence of hypertension, atherosclerosis, and insulin resistance (8). Compared to patients with rheumatoid arthritis or the general population, PsA patients tend to have a higher body mass index (BMI) and an increased prevalence of metabolic syndrome (9). The underlying immunological mechanisms linking PsA with these systemic conditions are still under investigation, though the role of pro-inflammatory cytokines such as tumor necrosis factor-alpha (TNF-α), interleukin-17 (IL-17), and interleukin-23 (IL-23) in mediating both joint and systemic inflammation is increasingly recognized (10).

Despite advancements in understanding the immunopathogenesis of PsO and PsA, significant knowledge gaps remain regarding the differential impact of comorbidities on disease severity and progression. Current studies suggest that PsA patients have a higher prevalence of neurological, hepatic, and gastrointestinal comorbidities compared to those with PsO alone. However, the exact mechanisms underlying these associations remain unclear, highlighting the need for further research into the inflammatory pathways involved (11, 12).

In Moldova, the prevalence and impact of comorbidities in patients with PsA have not been systematically assessed compared to those with PsO alone. Given the growing recognition of PsA as a multisystemic disease, there is an urgent need to evaluate its comorbid burden in local populations. A comprehensive understanding of the interplay between systemic inflammation and comorbid conditions will allow for improved disease stratification and the development of targeted, multidisciplinary management approaches.

Patients with PsA are hypothesized to exhibit a significantly higher prevalence and a broader range of comorbidities than those with PsO, with these comorbidities being closely associated with systemic inflammation and disease severity.

This study aims to bridge this knowledge gap by investigating the impact of comorbidities on clinical severity, inflammatory markers, and quality of life in PsA patients. The analysis will provide insights into how systemic inflammation, disease activity, and functional impairment correlate with the presence and severity of comorbid conditions, ultimately guiding the development of personalized therapeutic strategies and optimizing long-term patient outcomes.

MATERIAL AND METHODS

This study was a prospective cohort analysis with retrospective components, conducted between 2017 and 2019 at the Rheumatology and Arthrology Departments of MPHI Republican Clinical Hospital "Timofei Moșneaga" and MPHI Municipal Clinical Hospital "Sfânta Treime," as well as at the Republican Dermatovenerology Dispensary from Chișinău. The study included 184 patients, divided into two equal groups:

1. Psoriatic Arthritis Group (APs, n=92) – patients diagnosed with psoriatic arthritis (PsA) according to the CASPAR criteria (2006).
2. Psoriasis-only Group (PsO, n=92) – patients with confirmed PsO vulgaris, without clinical or imaging evidence of arthritis.

Informed consent was obtained from all participants prior to their inclusion in the study.

Eligibility for inclusion required an age between 18 and 65 years and a confirmed diagnosis of either psoriatic arthritis (PsA) or psoriasis (PsO) without arthritis. Exclusion criteria included the presence of other inflammatory or autoimmune rheumatic diseases, severe cardiovascular, hepatic, or renal comorbidities preceding the onset of PsA, and age outside the predefined range due to the higher incidence of age-related metabolic and degenerative disorders.

The PsA group had a mean age of 42.9±9.6 years (range 22–60), with 45.7% being male and 54.3% female. The median duration of PsA was 7 years (IQR 2–11.8), while PsO had been present for a median of 11 years (IQR 7–25.8). The severity of cutaneous involvement, as assessed by the PASI score, had a median value of 3.8 (IQR 1.2–9.6). Nail involvement was documented in 28.3% of cases. Metabolic parameters were characterized by a prevalence of obesity (BMI >30 kg/m^2) of 25%. Anthropometric measurements revealed median waist and hip circumferences of 95 cm (IQR 82.8–104) and 102.5 cm (IQR 95.3–109.8), respectively. A positive family history of PsO was reported in 33.7% of patients. Axial involvement was documented in 32.6% of patients, with sacroiliitis in 30% and spondylitis in 25%.

The PsO-only group had a comparable mean age of 43.2±9.3 years (range 21–60), with 47.8% male and 52.2% female. The median duration of PsO was 11 years (IQR 7–24.5), with a median PASI score of 3.7 (IQR 1.1–9.2). Obesity was present in 13% of patients, with median waist and hip circumferences of 93 cm (IQR 81.5–102) and 101 cm (IQR 94–108), respectively. A positive family history of PsO was recorded in 28.2% of cases. Unlike the PsA group, none of these patients exhibited axial involvement or clinical arthritis. Comorbidities were identified in 48.9% of the cohort, with hypertension and osteoarthritis being the most prevalent, each occurring in 19.6% of cases.

Clinical assessment included the evaluation of joint and entheseal involvement, with tender and swollen joint counts being documented. Inflammatory

markers such as high-sensitivity C-reactive protein (hs-CRP) and erythrocyte sedimentation rate (ESR) were measured. Metabolic parameters, including fasting glucose, lipid profile, and HbA1c, were analyzed. Cardiovascular status was assessed through blood pressure measurements, electrocardiography (ECG), and echocardiography in selected cases.

Comorbidities were evaluated based on patient history, medical records, and laboratory findings. The frequency and distribution of hypertension, diabetes mellitus, cardiovascular disease, metabolic syndrome, and other relevant conditions were compared between the two groups. Functional status was assessed using validated instruments measuring joint mobility, pain, and quality of life.

Statistical analyses included descriptive methods for summarizing data, with continuous variables reported as mean ± standard deviation or median (IQR), and categorical data as percentages. Continuous variables were compared using the Mann-Whitney U test, whereas categorical data were analyzed with the chi-square test. To identify independent predictors of comorbidities in PsA patients, logistic regression models were employed. This approach enabled a comprehensive assessment of the comorbidity burden and its impact on disease severity through a direct comparison of PsA and PsO-only patient cohorts.

RESULTS

Comorbid conditions are frequently encountered in both psoriatic arthritis (PsA) and cutaneous psoriasis (PsO), though their prevalence and type vary significantly between these two groups. This comparative study analyzed comorbidity profiles in two cohorts of 92 patients each, highlighting differences in disease burden and estimating an incidence and prevalence approximately 1.5–2 times lower in the PsO group. The presence of comorbidities was markedly more frequent in the PsA cohort, affecting 77.2% of patients. Among these, hypertension (38.0%) and osteoarthritis (39.1%) were the most commonly identified conditions.

Comorbidity structure in patients with PsO

Among the 92 PsO patients, comorbidities were significantly less frequent, with 48.9% (45 patients) having at least one comorbidity and 32.6% (30 patients) presenting multiple comorbid conditions. Musculoskeletal and connective tissue disorders included osteoarthritis (OA) in 19.6% (18 patients) and gout in only 1.1% (1 patient). Cardiovascular comorbidities were less frequent, with hypertension (HTN) diagnosed in 19.6% (18 patients), chronic heart failure (CHF) in 3.3% (3 patients), angina pectoris in 2.2% (2 patients), and post-infarction cardiosclerosis in 1.1% (1 patient). Gastrointestinal diseases were less common in PsO than in PsA, with upper gastrointestinal disorders and hepatic pathology both observed in 7.6% (7 patients). Type 2 diabetes mellitus (T2DM) was diagnosed in 4.3% (4 patients), while thyroid disorders affected 6.5% (6 patients), including autoimmune thyroiditis in 3.3% (3 patients). Obesity (BMI >30) was present in 13% (12 patients). Uveitis was rare, occurring in only 1.1% (1 patient), and Crohn's disease was absent.

Comorbidity structure in patients with PsA

In contrast, PsA patients exhibited a significantly higher prevalence of comorbidities ($p<0.01$) compared with PsO patients, with notable differences in cardiovascular, musculoskeletal, and endocrine disorders. Systemic inflammation in PsA Is likely to increase the risk of comorbid conditions, emphasizing the need for comprehensive medical monitoring in this population.

Table 1 summarizes the comparative distribution of comorbidities between PsA and PsO patients. The overall comorbidity prevalence in PsA was 77.2%, compared with 48.9% in PsO, showing a prevalence ratio of 1.58. This suggests that PsA patients have a 58% higher incidence of comorbidities than PsO patients.

Table 1. Prevalence of Comorbidities in PsA and PsO Patients.

Comorbidity	PsA (n=92)	PsO (n=92)	Prevalence Ratio (PsA/PsO)	p-value
Total comorbidities	77.2%	48.9%	1.58	<0.05
Osteoarthritis	39.1%	19.6%	1.99	<0.05
Gout	3.3%	1.1%	3.00	<0.01
Hypertension	38%	19.6%	1.94	<0.05
Chronic heart failure	6.5%	3.3%	1.97	<0.05
Type 2 diabetes mellitus	8.7%	4.3%	2.02	<0.01
Autoimmune thyroiditis	5.4%	3.3%	1.64	<0.05
Obesity	25%	13%	1.92	<0.05

Comorbidity burden and clinical implications

Osteoarthritis was diagnosed in 39.1% of PsA patients compared with 19.6% of PsO patients (prevalence ratio: 1.99), indicating that PsA patients were nearly twice as likely to develop OA. Chronic inflammation in PsA likely contributes to joint degeneration and increased susceptibility to OA. Similarly, gout was three times more common in PsA (3.3%) than in PsO (1.1%) ($p<0.01$), reflecting a greater predisposition to metabolic dysregulation and hyperuricemia in PsA.

Hypertension was significantly more prevalent in PsA (38%) than in PsO (19.6%), with a prevalence ratio of 1.94. Chronic inflammation in PsA is a known contributor to endothelial dysfunction and vascular stiffness, exacerbating the risk of hypertension. The prevalence of chronic heart failure was also higher, nearly doubling from 3.3% in PsO to 6.5% in PsA (prevalence ratio: 1.97). This discrepancy may be explained by the concomitant effects of systemic inflammation and cardiovascular risk factors.

Endocrine and metabolic disorders were also found to be more prevalent among patients with PsA. Type 2 diabetes mellitus was diagnosed in 8.7% of PsA patients versus 4.3% of PsO patients (prevalence ratio: 2.02). This increased risk is likely attributable to chronic inflammation and associated insulin resistance. Autoimmune thyroiditis affected 5.4% of PsA patients and 3.3% of PsO patients, with a prevalence ratio of 1.64, suggesting a stronger predisposition for autoimmune disorders in PsA.

Obesity was significantly more common in PsA (25%) compared with PsO (13%) (prevalence ratio: 1.92). The relationship between chronic inflammation and increased adiposity is well-documented, as inflammatory cytokines such as TNF-α and IL-6 promote metabolic dysregulation and fat accumulation, which in turn exacerbate systemic inflammation.

Graphical representation of comorbidity distribution

Figure 1 illustrates the proportional burden of comorbidities in PsA relative to PsO, with a prevalence ratio scale highlighting the increased risk in PsA.

- A ratio of 1.0 indicates an equivalent prevalence in both groups.
- Ratios greater than 1 indicate a higher prevalence in PsA, demonstrating the disproportionate comorbidity burden in this group.
- The highest prevalence ratio (3.00) was observed for gout, emphasizing the strong metabolic component of PsA.

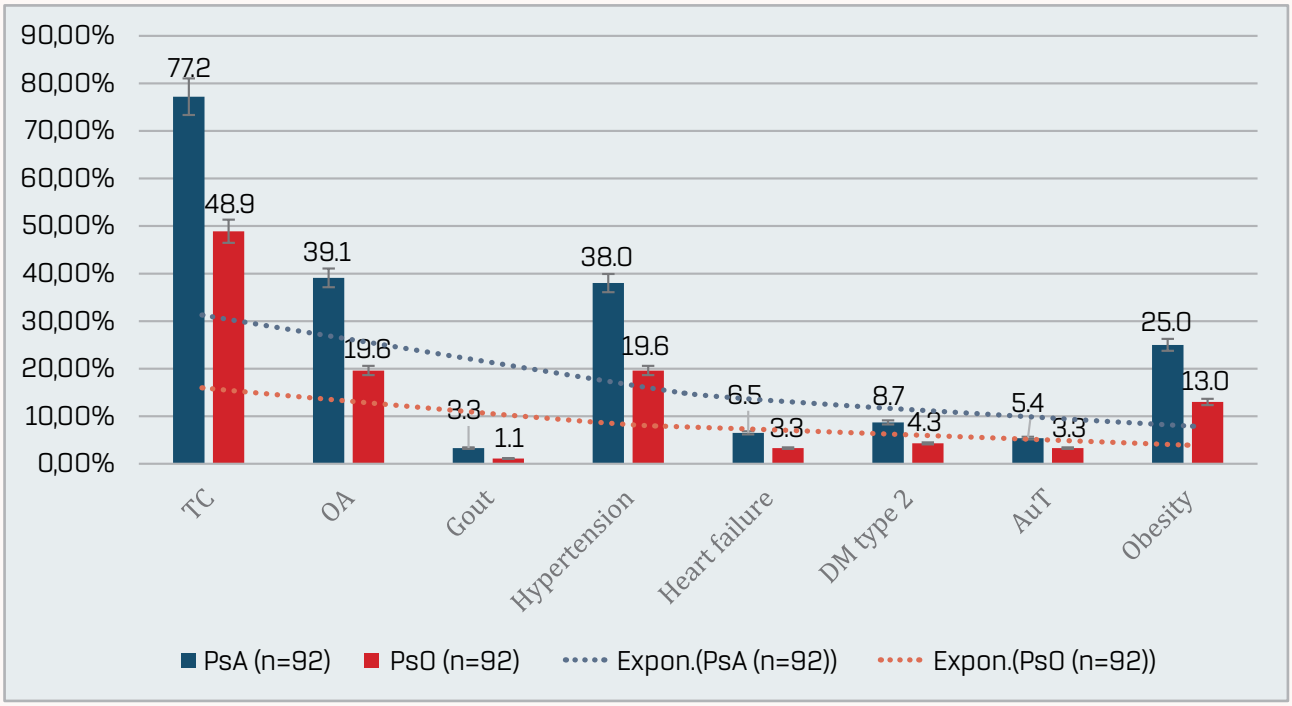

Figure 1. Relative burden of comorbidities in PsA vs. PsO patients, %.

Note: A radar plot comparing the prevalence ratios of comorbidities in PsA relative to PsO. TC – total comorbidities; OA – osteoarthritis; DM – diabetes mellitus; AuT – autoimmune thyroiditis

Clinical Implications and Multidisciplinary Management

These findings emphasize the significantly higher burden of comorbidities in PsA compared with PsO, particularly in cardiovascular, metabolic, and autoimmune conditions. The chronic inflammatory state in PsA likely contributes to these associations, necessitating a multidisciplinary approach for comprehensive patient management.

- Cardiovascular risk: Hypertension, heart failure, and metabolic syndrome require early screening and intervention.
- Musculoskeletal impact: Higher prevalence of OA and gout suggests an increased need for musculoskeletal monitoring and joint protection strategies.
- Metabolic and endocrine considerations: Given the higher rates of T2DM and obesity, lifestyle modifications and metabolic risk management should be integrated into PsA treatment plans.

DISCUSSIONS

The findings of this study emphasize the significantly higher burden of comorbidities in PsA compared with PsO-only patients, supporting the concept that PsA is a systemic inflammatory disease with multi-organ involvement (13). The results indicate that PsA patients are at an increased risk of developing cardiovascular, metabolic, musculoskeletal, and autoimmune conditions, highlighting the importance of early screening and comprehensive management strategies (10, 13).

The prevalence of comorbidities was markedly higher in the PsA cohort (77.2%) compared with the PsO group (48.9%), with a relative risk increase of 58%. Among the most prevalent conditions, hypertension was diagnosed in 38% of PsA patients, nearly twice the prevalence observed in PsO patients (19.6%). The chronic inflammatory state associated with PsA is a well-recognized contributor to endothelial dysfunction, arterial stiffness, and atherosclerosis, increasing the risk of cardiovascular complications (14). These findings align with previous reports that suggest a direct association between systemic inflammation and an increased cardiovascular disease risk in PsA patients.

Osteoarthritis (OA) was another significant comorbidity, affecting 39.1% of PsA patients compared with 19.6% of those with PsO (prevalence ratio: 1.99). The higher prevalence of OA in PsA patients may be attributed to the chronic inflammatory environment, which accelerates joint degeneration. Similarly, gout was three times more common in PsA patients (3.3%) compared with PsO patients (1.1%), suggesting a metabolic component contributing to hyperuricemia and crystal deposition (3, 15).

Endocrine and metabolic disturbances were also more prevalent among PsA patients, with type 2 diabetes mellitus (T2DM) diagnosed in 8.7% of cases compared with 4.3% in PsO patients (15). The relative risk of diabetes was twice as high in PsA, likely due to the combined effects of systemic inflammation, insulin resistance, and metabolic syndrome. These findings underscore the importance of integrating metabolic monitoring into PsA patient management to prevent long-term complications. Furthermore, obesity (BMI >30) was identified in 25% of PsA patients, significantly higher than the 13% observed in PsO patients. The interplay between adipose tissue and inflammatory cytokines, particularly tumor necrosis factor-alpha (TNF-α) and interleukin-6 (IL-6), is known to exacerbate both disease severity and metabolic dysfunction in PsA.

Autoimmune thyroiditis was another notable comorbidity, with a prevalence of 5.4% in PsA patients compared with 3.3% in PsO patients (prevalence ratio: 1.64). This association may reflect a shared underlying immunopathogenic mechanism, as PsA is increasingly recognized as an autoimmune disease with complex genetic and immunological factors contributing to its pathogenesis (15, 16). Additionally, chronic heart failure (CHF) was diagnosed in 6.5% of PsA patients compared with 3.3% of PsO patients, further reinforcing the need for cardiovascular risk stratification in this population.

The higher prevalence of comorbidities in PsA has critical implications for clinical practice. Given that systemic inflammation plays a central role in the pathogenesis of both PsA and its associated comorbidities, a multidisciplinary approach to patient management is essential (6, 8, 12). Cardiovascular risk assessment should be integrated into routine PsA care, accompanied by regular monitoring of blood pressure, lipid profiles, and glucose metabolism. Lifestyle modifications, including dietary interventions and physical activity, should be encouraged to mitigate metabolic risks. Rheumatologists should also collaborate closely with endocrinologists, cardiologists, and dermatologists to optimize patient outcomes (15).

Another crucial consideration is the impact of comorbidities on treatment decisions (10, 12, 16). The presence of metabolic syndrome, diabetes, and cardiovascular disease may influence the choice of disease-modifying antirheumatic drugs (DMARDs) and biologic therapies. For example, TNF-α inhibitors have been associated with both beneficial and adverse effects on cardiovascular health, necessitating individualized treatment strategies (10). Similarly, newer therapeutic agents targeting the IL-17 and IL-23 pathways may offer additional benefits in controlling both joint and systemic inflammation.

While this study provides valuable insights into the comorbidity burden in PsA patients, however, several limitations should be considered (17, 18, 19). As the study was conducted within a single geographic region, its findings may not be generalized to other populations. Additionally, the study design was observational, which prevents establishing causal relationships between PsA and comorbid conditions. Future longitudinal studies with larger sample sizes are needed to further elucidate the mechanisms driving comorbidity development in PsA patients and to assess the long-term impact of systemic inflammation on multi-organ health.

This study further supports the concept of PsA as a systemic disease with a high prevalence of comorbid conditions, particularly in the cardiovascular, metabolic, and autoimmune domains. The findings highlight the necessity of a comprehensive, patient-centered approach that includes early screening, risk stratification, and multidisciplinary care to optimize disease management and improve patient outcomes. Further research is required to develop targeted interventions that can effectively mitigate the long-term consequences of comorbidities in PsA patients.

CONCLUSIONS

1. This study confirms that psoriatic arthritis is a systemic inflammatory disease with a substantially higher comorbidity burden compared to psoriasis-only. Cardiovascular conditions (especially hypertension), metabolic disorders (type 2 diabetes, obesity), musculoskeletal complications (osteoarthritis, gout), and autoimmune thyroiditis were significantly more frequent in psoriatic arthritis.
2. These findings emphasize the need for routine screening, early recognition, and proactive multidisciplinary management integrating rheumatology, cardiology, and endocrinology. Tailored therapeutic strategies and lifestyle interventions are crucial to reducing long-term complications and improving patient outcomes.

CONFLICT OF INTEREST

The authors of the article deny the existence of any conflict of interest in the publication of this material.

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ETHICAL APPROVAL

The study was approved by the Research Ethics Committee of the State University of Medicine and Pharmacy "Nicolae Testemițanu" (Decision no. 82 of 19.06.2018).

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