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Case report

Cardiovascular risk in psoriatic arthritis- a new plot twist in an old story: a case report

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Abstract Only recently has modern medicine begun to recognize the impact of well-known rheumatological conditions on the cardiovascular system. Although the initial evidence was only related to rheumatoid arthritis, recent studies indicate that other rheumatological processes, including psoriatic arthritis, also have an impact on the initiation or acceleration of the atherosclerotic process through low-grade systemic inflammation of small blood vessels, classifying these diseases as independent risk factors for CVD. Correction of traditional cardiovascular risk factors in this group of patients does not reduce the risk of adverse cardiovascular events. As we will show in this case, the only adequate prevention of increased morbidity and mortality in these patients is routine screening for asymptomatic myocardial ischemia.

Key words psoriatic arthritis, non-traditional risk factor, asymptomatic myocardial ischemia

Introduction

Psoriatic arthritis (PsA) is a chronic inflammatory immune-mediated arthropathy that accompanies or precedes a psoriatic cutaneous manifestation. Approximately 30% of patients with psoriasis (PsO) suffer from PsA[1-3]. The annual incidence is diversified, ranging from 0.1 to 23.1 per 100,000, while the prevalence ranges from 1 to 420 per 100,000[1,4].

Clinical presentation of PsA is heterogeneous and includes diverse variants of joint and skin conditions in terms of disease progression and outcomes. Therefore, patients may present with limited disability over time due to relatively benign articular inflammation. A more severe form of PsA is associated with progressive erosive and deforming joint damage[5,6], with a prognosis similar to rheumatoid arthritis (RA)[7].

In addition to articular and cutaneous involvement, there is increasing evidence from numerous epidemiologic studies, meta-analyzes, and systematic reviews that patients with PsA are also at higher risk for subclinical and clinical cardiovascular and cardio-metabolic disease compared with the general population, primarily due to accelerated atherosclerosis[8,9]. In particular, patients with psoriatic arthritis have a three- to fourfold higher prevalence of coronary atherosclerosis[10]. Compared to other chronic inflammatory arthritic diseases such as rheumatoid arthritis (RA) and ankylosing spondylitis, this association is much stronger[11-13].

On the other hand, extensive literature data have shown that mortality rates are higher in PsA patients due to the increased incidence of traditional cardiovascular risk factors (TRFs), including hypertension, dyslipidemia, and type 2 diabetes mellitus, in addition to the ongoing chronic inflammation of the underlying PsA disease[13,14]. Therefore, patients with PsA might be in what amounts to be a double cardiovascular risk: TRFs at the one end, and an ongoing, body-wide inflammation, on the other. This imposes the question of whether PsA should be considered as an independent cardiovascular risk factor and whether better knowledge of the association between PsA and cardiovascular score risk may help to treat and modify risk factors early, minimizing the impact of cardiovascular comorbidities, thus improving patients' long-term outcome[15-16].

Case presentation

We present the case of a 70-year-old man who was diagnosed with psoriasis shortly after the first appearance of skin manifestations in 2014.

In August 2016, the patient was for the first time admitted to the Rheumatology Clinic of the Institute "Niška Banja" for examination and evaluation of pain and swelling of the wrist and small joints of the hands and feet. On admission, he reported arterial hypertension, diabetes on oral anti-diabetic therapy, and smoking, with no food or drug allergies in his personal history.

Based on clinical, laboratory, and additional diagnostic tests, he was diagnosed with psoriatic arthritis and started on methotrexate 15 mg per week as a treatment regimen.

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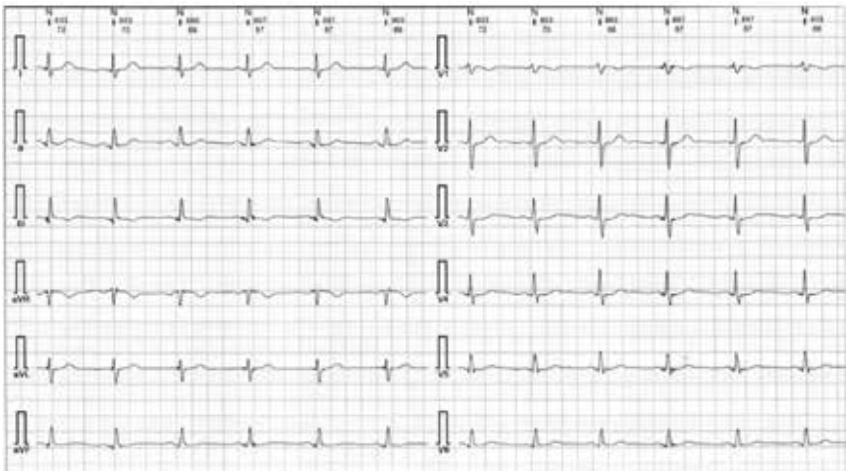

Figure 1. ECG before the start of the exercise treadmill test

Figure 2. Descending ST segment depression of 1.5 mm in leads V2-V5 ventricular extrasystoles with R- on-T phenomenon during ECG exercise treadmill test monitoring

At his regular checkup in November 2017, radiological findings included narrowing of the spaces between the metacarpophalangeal (MCP), proximal interphalangeal (PIP), and distal interphalangeal (DIP) joints, bone proliferates at the level of the PIP and DIP joints, and periostitis, with no recommended change in Methotrexate dosage.

In January 2018, he was enrolled in a balneophysical rehabilitation program at the Institute "Niška Banja". During hospitalization, a treadmill stress test was performed. Continuous electrocardiogram (ECG) monitoring recorded a descending ST segment depression of 1.5 mm in leads V2-V5 with premature ventricular contractions (PVCs) and PVCs with an "R-on-T phenomenon" (*Figure 1 and 2*), without chest pain.

Six months later, he underwent a stress echocardiography test. Finally, after the finding of segmental motion abnormalities of the apicomedial segment of the lateral wall and the apical part of the septum, an invasive examination of the coronary arteries was indicated.

Coronary angiography was performed in February 2019, and multivessel coronary artery disease was found (*Figure 3*). Percutaneous coronary intervention with implantation of 3 stents in the left circumflex artery was performed in May 2019.

In October 2020, he was again enrolled in the a specialized cardiovascular rehabilitation at the Institute "Niška Banja". On admission, he denied chest pain, shortness of breath, joint pain, swelling, and stiffness. Routine laboratory tests revealed normal lipid and glycemic levels. Inflammatory parameters indicated low activity of the underlying disease (PsA).

The patient performed treadmill stress, the patients didn't have chest pain but the ECG was susceptive of myocardial ischemia in lateral leads (*Figure 4*). His anti-anginal therapy was intensified, and he was again scheduled for coronography. In November 2021, repeated coronarography demonstrated the new stenosis in the second obtuse marginal artery (OM2), and further continuation of drug therapy was recommended.

Discussion

The association between inflammatory arthropathies and cardiovascular disease (CVD) is well established. Despite the abundant research on this relationship, representatives of this group, with the exception of RA (17, 18), are still not recognized as risk factors for the development of CVD in everyday clinical practice.

Although is PsA mostly considered to be a milder arthropathy than RA, CVD mortality is almost the same in these two groups[19,20].

Recent mortality studies suggest increased mortality in patients with PsA compared with the general population. The increased mortality in PsA patients is predominantly due to cardiovascular disease[13], with the risk ratio for a cardiovascular event in the PsA patient group exceeding 43%[15,16].

Cardiovascular morbidity between the general population and PsA patients resembles polarization-alike mortality rates in these two groups.

Available data on the increased prevalence of TRFs with at least one cardiovascular event-including angina, myocardial infarction, cardiomyopathy, and heart failure in PsA patients compared with the general population is consistent[21-23].

Moreover, there is a negative outcome correlation between the number of TRFs and disease activity in these patients[24], contributing not only to overt but also to subclinical CVD[25]. These findings are consistent with the personal history of our patient, who had diabetes and hypertension, was dyslipidemic, and smoked.

Of concern, an increased prevalence of cardiovascular mortality and morbidity in PSA patients remains significant even after medical treatment and correction of TRFs, as is our patient's case. In this particular case, the progression of coronary artery disease was demonstrated by new stenosis (*OM2 60%)* by coronagraphy.

This raises the question of why patients with the relatively benign musculoskeletal disease are almost as likely to have CVD morbidity and mortality in percentage terms as patients with RA, which is considered an independent cardiovascular risk factor in modern medicine[19,26].

In the work of Husted et al, it was pointed out that diseases associated with inflammatory properties, such as PsA, tend to accelerate atherosclerosis via endothelial dysfunction and vascular stiffness at the functional level. Holistically, inflammation itself could be apprehended as an independent CVD risk factor across the group of inflammatory arthropathies[18] and a precursor to higher CV risk that precedes overt cardiovascular events and mortality[22,26].

And although there is ample evidence, including Ari Polaček's observational study involving 32 973 patients with PsA[15,16,26,27], to suggest that PsA is an independent risk factor for cardiovascular disease, most clinicians do not recognize it as such.

This bivalent approach is of concern considering that, as Lihi points out[28], there may be failures to treat traditional factors, which on the one hand increases the burden on the hospital system and the resulting economic burden on society, while on the other reduces the quality of life of PsA patients.

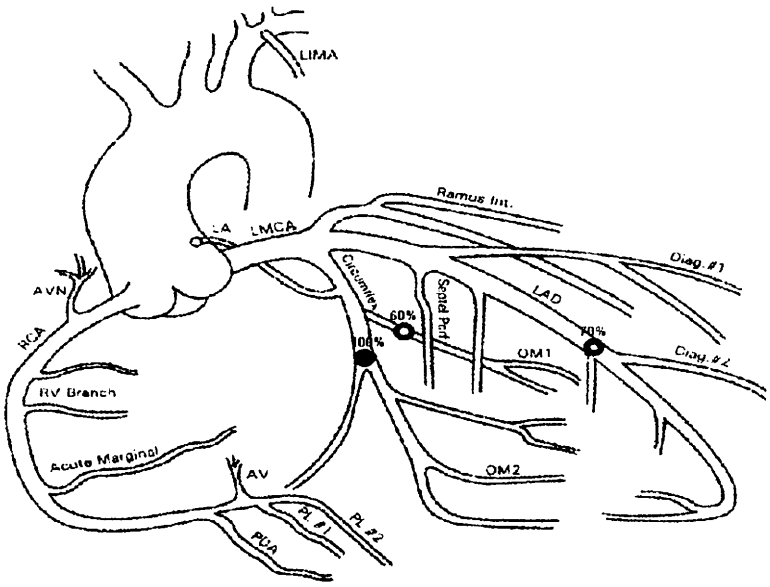

Figure 3. Coronarography findings (left main without stenosis, left anterior descending artery (LAD) medially stenosis 70%, left circumflex artery (LCx) medially occluded, first obtuse marginal artery (OM1) narrowed 60%), right coronary artery without stenosis

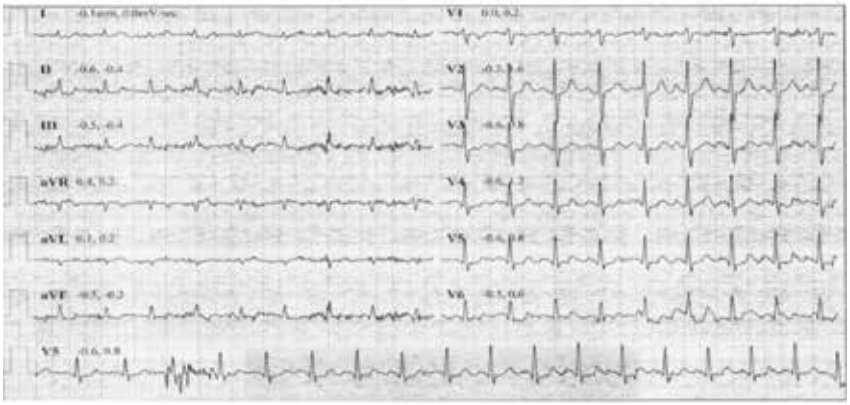

Figure 4. The susceptive mild ST changes in leads V5 and 6 during ECG treadmill stress test exercise treadmill test monitoring

Conclusion

We presented a case report of a PsA patient with asymptomatic coronary artery disease. PsA as an inflammatory autoimmune inflammatory disease represents an independent risk factor for CAD. Therefore, we believe that these patients should be routinely screened of CAD.

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Sažetak

Kardiovaskularni rizik u psorijaznom artritisu- novi obrt u staroj priči: prikaz slučaja

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Relativno od skora, moderna medicina je počela da prepoznaje uticaj dobro poznatih reumatoloških stanja na kardiovaskularni sistem. Iako se prvobitni dokazi odnose na reumatoidni arthritis, sve je više studija da I drugi reumatološki procesi među kojima je i psorijazni artritis, takođe imaju uticaja na inicijaciju i akceleraciju ateroskleroskog procesa preko sistemske inflamacije malih krvnih sudova niskog gradusa, svrastavajući ove bolesti u nezavisni faktor rizika za nastanak kardiovaskularnih bolesti. Korekcija tradicionalnih kardiovaskularnih faktora rizika u ovoj grupi bolesnika ne smanjuje rizik incidence nepovoljnog kardiovaskularnog događaja. Kao što ćemo prikazati u slučaju, jedina adekvatna prevencija povećanja morbiditeta I mortaliteta kod ovih bolesnika je rutinski skrining na asimptomatsku miokardnu ishemiju.

***Ključne reči**: psorijazni artritis, netradicionalni faktori rizika, asimptomatska miokardna ishemija*