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CLINICAL PRESENTATION OF PSORIATIC ARTHRITIS AND RHEUMATOID ARTHRITIS IN EARLY STAGES - SIMILARITIES AND DIFFERENCES IN DIAGNOSIS

Eugeniu Russu[1], Liliana Groppa[1,2], Lia Chișlari[1], Alesea Nistor[1], Lucia Dutca[1], Liudmila Gonța[3]

[1] Discipline of Internal Medicine, Department of rheumatology and nephrology, "Nicolae Testemitanu" State University of Medicine and Pharmacy, Chișinău, Republic of Moldova
[2] "Timofei Moșneaga" Rheumatology laboratory, Republican Clinical Hospital, Chișinău, Republic of Moldova
[3] Rheumatologist, Republican Diagnostic Center, Chișinău, Republic of Moldova

Summary
Introduction. Psoriatic arthritis, as well as rheumatoid arthritis are presented by a heterogeneity of clinical manifestations in the early stages.
Objective. Improvement of early diagnosis of psoriatic arthritis based on clinical data, laboratory and instrumental research methods.
Material and methods. The study was carried out between 2019 and 2022 at the Rheumatology and Nephrology Discipline, in the arthology and rheumatology departments of the "Timofei Moşneaga" Clinical Republican Hospital. To accomplish the tasks set out in the study, 110 patients were examined, including 55 patients with psoriatic arthritis and 55 patients with rheumatoid arthritis.
Results. The onset of rheumatoid arthritis had a classic variant, of polyarthritis type – 76.4%, the onset being through – radiocarpal joints (41.8%), proximal interphalangeal (47.3%) and metacarpophalangeal (58.2%) joints, the lesion was symmetrical. In those with psoriatic arthritis, the mono-oligoarthritic version of the onset prevailed – 63,6%, mainly the joints of the lower extremities, mainly with asymmetrical character.
Conclusions. Sensitivity study of the diagnostic criteria of rheumatoid arthritis and psoriatic arthritis showed insufficient reliability for early-stage detection. Arthralgias were the most common early symptoms of rheumatoid arthritis and psoriatic arthritis, which occurred even in the prenosological period of disease. The number of swollen joints in early rheumatoid arthritis were higher ($p<0.05$) than in the group of patients with psoriatic arthritis. Signs of osteopenia were detected similarly in early rheumatoid arthritis and psoriatic arthritis.
Keywords: psoriatic arthritis, rheumatoid arthritis, early clinical manifestations

Introduction

Rheumatic diseases, at the present stage, present themselves as chronic diseases, imposing themselves as being quite important among the diseases with immune component due to the complex problems that raise them in connection with their clinical-biological individuality [1, 2]. They have come to have a profound socio-economic impact, being responsible for 50% of absenteeism from work and about 60% of the rate of permanent incapacity for work, as they mostly affect people in full functional capacity. At European level, the treatment of these diseases accounts for a quarter of the total annual expenditure on health (EUR 240 billion). Also, the economic losses caused by absenteeism in the workplace amount to EUR 650 million per year. Moreover, rheumatic and musculoskeletal diseases can be disabled and often lead to early retirement of patients [1-4].

Psoriatic arthritis (PsA), as well as rheumatoid arthritis (RA) are presented by a heterogeneity of clinical manifestations in the early stages. In some cases, the recognition of joint diseases is extremely difficult in atypical developments, especially with mono- or oligo-arthritis [5, 6].

Researchers and practitioners in the vast majority use the ARA Criteria (1989) for the diagnosis of RA, which, according to the literature data, are characterized by high sensitivity (91-94%) and marked specificity (89%) [2, 4, 7]. However, an opinion has recently been expressed about their insolvency at an early stage of the RA [1-3], with the EULAR criteria being more sensitive (2010). As for PsA, to date there are no unanimous criteria for the early diagnosis and classification of PsA [4-6]. This creates difficulties in establishing a diagnosis at an early stage, especially with non-obvious changes in skin psoriasis.

Recently, increased attention has been paid to the problem of juxtaarticular osteoporosis (OP). This is explained by the wide prevalence of both primary and secondary OP, which is detected in PsA and RA and is one of the diagnostic criteria for RA (ARA, 1989). But there is no consensus among scholars in determining the reliability of OP development according to the duration of PsA and RA [1, 2, 7, 8]. This confirms relevance in identifying this trait at an early stage of PsA and RA. Thus, the polymorphism of clinical forms of PsA and RA, the lack of criteria and methods of early diagnosis create difficulties in recognizing the early stages of PsA and RA.

Objective

Improvement of early diagnosis of psoriatic arthritis

based on clinical data, laboratory and instrumental research methods.

Material and methods

The study was carried out between 2019 and 2022 at the Rheumatology and Nephrology Discipline, in the arthology and rheumatology departments of the "Timofei Moşneaga" Clinical Republican Hospital – according to the WMA Declaration of Helsinki with Favorable opinion of the Research Ethics Committee at no.21 of 21.12.2019. To accomplish the tasks set out in the study, 110 patients were examined, including 55 patients with PsA (group I) – expressed by peripheral forms of psoriatic arthritis and 55 patients with RA (group II). The reliability of the diagnosis of RA was established by the criteria of ARA (1989), PsA (peripheral forms of psoriatic arthritis) was established by the CASPAR classification criteria (2006) [1-3].

The age of patients at enrollment in the study ranged from 18 to 64 years (average 42.69 ± 1.09 years), of them women were 82 patients (74.5%) and men 28 (25.5%). The duration of the disease at the time of observation was: less than one-year (on average 5.91 ± 0.38 months) – 85 (77.3%) patients, from 1.1 years to 3 years (on average 26.33 ± 2.84 months) – 3 (2.7%) and over 3 years (on average 157.5 ± 18.43 months) – 22 (20%) patients. Statistical processing of the results was carried out in Statistics Software Package 9.0.

Results

The sensitivity of the diagnostic criteria of ARA (1989) has been studied in 55 patients with RA (Table 1). As can be seen from Table 1, the most important common clinical signs in the early stage of RA are arthritis of the joints of the hands, polyarthritis, symmetric arthritis and morning redness for more than 1 hour. The sensitivity of criteria 5, 6 and 7 was lower in the early stages. In general, the sensitivity of ARA criteria (1989) in the early stage of RA was: up to 3 months

Table 1

The sensitivity of the diagnostic criteria of RA (ARA, 1987) in the first year of illness

Criteria	Detection frequency, %		
	3 months	6 months	12 months
1. Morning stiffness more than 1 hour	41.9	68.1	71.5
2. Arthritis of 3 or more joints	62.5	76.5	81.3
3. Arthritis of the joints of the hands	67.3	76.3	82.7
4. Symmetric arthritis	64.7	74.5	81.5
5. Rheumatoid nodules	2.1	11.5	-
6. Rheumatoid factor	31.8	41.3	55.9
7. Radiological changes	17.5	38.5	58.5

Table 2

Sensitivity of CASPAR classification criteria in the first year of the disease in patients with PsA

Criteria	Detection frequency, %		
	3 months	6 months	12 months
1. The presence of psoriasis	88.8	100	86.7
2. Arthritis of DIP joints	11.1	0	20
3. Axial lesion of the fingers	11.1	0	0
4. Multidirectional subluxations of the fingers	022.2	0	0
5. Chronic asymmetric arthritis	0	66.7	46.7
6. Cyanosis of the skin in the affected joints	33.3	16.7	20
7. Dactilitis in plants	22.2	0	20
8. Parallelism in the course of cutaneous and articular syndromes	11.1	66.7	33.3
9. Pain and morning stiffness in any part of the spine, which persists for at least 3 months	88.9	33.3	46.7
10. Seronegativity in rheumatoid factor	0	83.3	86.7
11. Acral osteolysis	0	0	0
12. Ankylosis of DIP and/or MTP joints	33.3	0	0
13. Radiological signs of sacroiliitis	33.3	55.6	86.7
14. Sidnesmophyte or paravertebral ossification	88.8	0	6.7

***Note**: DIP – distal interphalangeal joint, MTP – metatarso-phalangeal joint*

– 44.3%, up to 6 months – 55.9%, up to 12 months – 61.8%.

Therefore, we can say about the lack of increased sensitivity of ARA criteria at an early stage of the disease. This gives reason to consider them insufficiently sensitive for the early diagnosis of RA.

The sensitivity of CASPAR classification criteria for PsA in 30 patients with early arthritis was studied. The data are presented in Table 2.

The most sensitive criteria in the early stage of PsA were clinical signs such as cutaneous manifestations of psoriasis, asymmetric arthritis, dactylitis, the presence of radiological signs of sacroiliitis and seronegativity in rheumatoid factor (RF). Criteria 2, 3, 6 and 9 were less sensitive. And the criteria 4, 11, 12, 14 had no diagnostic significance at the early stage of PsA. In general, the sensitivity of these criteria for PsA was: 23% with a duration of up to 3 months, 30.2% – up to 6 months and 32.4% – up to 12 months. This leads to the conclusion that the PsA criteria as a whole are not sensitive enough for diagnosing PsA at an early stage.

The data obtained reflects the difficulties of early recognition of PsA and RA and provokes the need for an additional study of the initial manifestation of PsA and RA, and the improvement of objective research methods.

Likewise, differences occur in the localization of dorsalgia and stiffness of the spine. In the group of patients with early RA, the cervical region was more often affected (38,2%), in the group with early PsA – the lumbo-sacral region (36,4%). Symptoms such as thalalgia (18.2%), dactylates in plants (12.7%), purple-cyanotic staining of the skin above the affected joints (16.4%) prevailed significantly in group 2 ($p<0.05$). Rheumatoid nodules (7,3%), hypotrophy of the interosseous muscles of the hands (14,5%), lymphadenitis (7,3%), decrease in body mass for 6 months (25,5%) in the group of 1 patient ($p<0,05$).

Table 3

Features of joint syndrome in the early stages of PsA and RA

Character of joint syndrome		Total		Men		Women	
		Absolute values	%	Absolute values	%	Absolute values	%
RA	Mono-arthritis	4	7.3	1	1.8	3	5.5
	Oligo-arthritis	9	16.4	2	3.6	7	12.7
	Poly-arthritis	42	76.4	8	14.5	34	61.8
PsA	Mono-arthritis	16	29.1	7	12.7	9	16.4
	Oligo-arthritis	19	34.5	6	10.9	13	23.6
	Poly-arthritis	15	27.3	3	5.5	12	21.8
	Axial lesion	5	9.1	2	3.6	3	5.5

Analysis of early manifestations of joint syndrome in both groups of patients, their comparison in female and male individuals, revealed the features of joint syndrome at the beginning of the disease (Table 3).

As can be seen from Table 3, the mono-oligoarthritic variant of the onset predominated in the group of patients with PsA – 63.6%, mainly the joints of the lower extremities (knees (27.3%), ankles (21.8%), leg joints (38.2%)) were predominantly asymmetrical. For patients with RA, the joints of the hands were more affected (34,5%), their lesion was symmetrical. At the same time, axial lesion in the group of patients with PsA was observed at 9.1%, which was not found in the group examined with RA.

The onset of RA in most of the cases in our study had a classical variant, in patients with RA joint damage was predominated by arthritis – 76,4%, which was more often detected in women (61,8%). The disease began with lesions of the joints of the hands – radiocarpal joints (41.8%), proximal interphalangeal (47.3%) and metacarpo-phalangeal (58.2%) joints, the lesion was symmetrical. The joints of the knee (34.5%) and ankles (25.5%) were often involved in the process, and the injury was asymmetrical in 24.2% of patients. However, in 23.6% of RA patients atypically started with mono-oligoarthritis and these cases showed the greatest difficulties in establishing the diagnosis, but this form was not stable and turned into polyarthritis during the first year of the disease.

In the first year of the disease in the group of patients with RA, the indicators of the number of inflamed joints (10.4 ± 0.8), the Ritchie articular index (11.05 ± 0.69) and the Lee functional test (11.8 ± 0.82) were significantly higher ($p<0.05$) than in the group of patients with PsA (2.88 ± 0.36, 6.71 ± 0.82, 7.16 ± 0.86, correspondingly), especially they are distinguished by the number of inflamed joints. In any case, over time and as PsA progresses, these indicators become similar to the characteristics of RA.

Statistically significant differences in the groups of patients with early RA and PsA were detected by haemoglobin (113.6 ± 1.8 g/l, 120.6 ± 2.5 g/l), erythrocyte sedimentation rate (ESR) (34.9 ± 2.1 mm/h, 22.0 ± 2.4 mm/h), rheumatoid factor (RF) (2.46 ± 0.07 and 1.56 ± 0.09) and immune circulating complexes (88.6 ± 5.2 and 68.3 ± 6.1). In the group of patients with PsA with a duration of the disease of more than 3 years, the indicators of ESR, RF and immune circulating complexes increase and correspond to the group of patients with RA.

The Bone Mineral Density (BMD) study at an early stage of RA and PsA demonstrated that the frequency of detection of osteopenia at the onset of diseases is the same, 30% and 31.6%, respectively. Osteoporosis was not detected in groups with RA and early PsA.

In the group of patients with RA with a duration of the disease of more than 3 years, the incidence of osteopenia increases (45.5% of patients) and osteoporosis is detected in 9.1% of patients.

Bone tissue analysis showed that the decrease in BMD was uneven in different parts of the skeleton, most often in patients with early osteopenia in PsA and RA, which was detected in the lumbar spine and distal forearm, respectively, 23.3% - 20% and 15.8% - 31.6%. At the same time, the T-score of Bone Mineral Density (BMD) in the distal forearm was higher in patients with RA (-1.91 ± 0.39) than in PsA (-1.83 ± 0.06) in both groups, these were women whose average age was 38.7 ± 4.21 and 36.2 ± 4.37 years, respectively, and in men (-1.95 ± 0.15) whose average age was 33.8 ± 5.2 years, while in the RA group they were women. A decrease in BMD in the Ward zone occurs only in patients with RA (-2.18 ± 0.19), women whose average age was 34.4 ± 4.94 years.

Discussions

In our study, the most common symptoms in the prenosological period, as early stage of persistent joint syndrome in both groups, were arthralgia (RA – 69.1%, PsA – 38.2%), an increase in body temperature (RA – 36.4%, PsA – 29.1%), a decrease in body weight (RA – 25.5%, PsA – 5.5%). Weight loss was significantly more common in patients with RA ($p<0.05$), which may indirectly indicate a more systemic nature of the inflammatory process in RA.

Arthralgias were the most common symptom preceding persistent joint syndrome in PsA and RA, however, joint pain was significantly more common in the group of RA patients than in the group with PsA ($p<0,05$). At the same time, in the group of patients with RA, the pain was more often localized in the joints of the upper extremities and most often in the shoulder (38.2%). In the group of patients with PsA, the joints of the lower extremities were the most common localization of pain, while the knee joints were in first place in terms of frequency of occurrence (25.5%). Pain in the lumbo-sacral region was found only in the II group of patients, being one of the causes of inflammatory low back pain (in 9.5% of patients). Talalgia was isolated as a separate element and was significantly more frequent ($p<0,05$) in the group of patients with PsA (25,5%) than in patients with RA (5,5%). The duration of arthralgia in the batches of patients was different. In the group of RA patients, the duration of arthralgia was significantly shorter and on average its duration was 4.62 ± 0.76 months. In the group of patients with PsA was more prolonged, its duration on average was 10.91 ± 2.21 months ($p<0.05$).

To identify the clinical features of the early stage of PsA and RA, we conducted a comparative analysis of the frequency of symptoms in both groups of patients. Arthralgia was present in all patients in both groups and was the main accusation of the patients. When comparing the intensity of pain, it was more pronounced in the group of patients with RA ($p<0.05$), with an average of 6.9 ± 0.18 cm according to the visual analogue scale (VAS) assessment and 4.82 ± 0.25 cm for PsA.

The symptom of morning stiffness was detected in all patients with early RA, and on average its duration was 210 ± 27.7 minutes, which was significantly higher ($p<0.05$) than in patients with PsA. At early PsA, this symptom appeared in 45% of patients and had an average of 63.2 ± 15.4 minutes. We studied the BMD values in different parts of the skeleton in patients with early RA and PsA, depending on clinical indicators such as the duration of the disease (up to 6 months, from 6 to 12 months and over 3 years) and the degree of activity of the inflammatory process.

The analysis of the data showed that although there were no significant differences in dependence on the BMD values and clinical parameters in patients with RA and PsA, the following pattern was nevertheless observed - a decrease in BMD depending on the activity of the inflammatory process and the duration of the disease in both groups. The BMD values after the T-score in patients with RA and early PsA are higher in the II - III degree of disease activity and a longer period of the course of the disease compared with patients with grade 0 and I of inflammatory activity and a short period of disease. BMD indicators in patients with early RA was higher than in the group of patients with early PsA. Functional insufficiency of the joints did not affect the BMD indicators in both groups. This model is confirmed by correlative analysis between BMD indicators and some immunological indicators in patients with early RA and PsA. There were significant connections between CD38+, a2-globulins and BMD values of the lumbar region of the spine ($r=0.27$, $r=0.39$), CD19+, CIC and BMD of the distal forearm ($r=23$, $r=0.17$), the degree of correlation was slightly higher in the group of patients with early RA. The correlation analysis revealed the dependence of the BMD values with the indices of the activity of the inflammatory process. Thus, the study of BMD conducted by the Dual Energy X Ray Absorptiometry (DXA) method in patients with early RA and PsA, suggests a decrease in bone mass, manifested in the form of osteopenia already at an early stage of the disease. At the same time, the decrease in BMD is uneven in different parts of the skeleton and correlates with the activity of the inflammatory process.

Conclusions

1. Sensitivity study of the diagnostic criteria of RA (ARA, 1989) and PsA - peripheral forms of psoriatic arthritis (CASPAR) showed insufficient reliability for early-stage detection.

2. Arthralgias were the most common early symptoms of RA and PsA, which occurred even in the prenosological period of disease. The arthralgic stage of PsA was significantly longer than in RA ($p<0.05$).

3. The algic syndrome in intensity is more pronounced in the group of patients with early RA than in PsA ($p <0.05$). The symptom of morning stiffness was detected in 100% of patients with early RA, 45% of patients with early PsA and was more prolonged in RA than in patients with PsA ($p<0.05$).

4. The number of inflamed joints in the first year in early RA, the Ritchie articular index and the Lee functional test were significantly higher ($p<0.05$) than in the group of patients with PsA. Over time, as PsA progresses, these

indicators become close in value and the clinical picture acquiring the characteristics of RA.

5. Signs of osteopenia in the form of a decrease in BMD were detected in 30% of patients with RA and 31% of patients with PsA in the early stages of diseases.

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Corresponding author: Eugeniu Russu, e-mail: eugeniu.russu@usmf.md
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