THE NEW ARMENIAN MEDICAL JOURNAL
Vol.15 (2021), No 1, p.95-99

FEATURES OF PSORIATIC SKIN LESIONS IN CHILDREN WITH JUVENILE PSORIATIC ARTHRITIS

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Received 15.11.2020; accepted for printing 15.12.2020

Abstract

Juvenile psoriatic arthritis is a chronic inflammatory disorder that accounts for 4-9% of all juvenile arthritis. Psoriatic arthritis is a chronic inflammatory joint disease that develops in about a third of patients with psoriasis. The clinical picture of juvenile psoriatic arthritis is diverse and heterogeneous. Most patients with juvenile psoriatic arthritis do not have a chronological relationship between skin and joint damage. There are no specific laboratory tests. Instrumental methods reflect only the presence and severity of the inflammatory process. juvenile psoriatic arthritis is an interdisciplinary problem and requires the joint supervision of rheumatologists and dermatologists.

Objective: *to identify the clinical features of psoriatic arthritis in children.*

Methods: *open-label, single-center, prospective, observational (1989-2018) cohort clinical study included 83 patients (3-17.0 y/o) who met Vancouver and I/E criteria.*

Conclusion*: The features of skin and articular syndromes in children with juvenile psoriatic arthritis were revealed. In most patients with psoriatic arthritis, the disease began at the age of 6.6 years. In childhood, arthritis is usually preceded by psoriasis. The most common clinical form of psoriasis is plaque psoriasis. Much less often than in the described literature, an isolated lesion of the nail plates was found. At the onset of the disease, symmetric oligoarthritis predominates. During the disease, transformation of the joint syndrome with a predominance of rheumatoid arthritis is noted. All joint groups in juvenile psoriatic arthritis may be involved in the pathological process. However, knee joints, ankles, and interphalangeal joints are more often affected. Two peaks of morbidity at an early age and adolescence described in the literature are not traced by us. All observed patients showed pronounced osteoporosis, which is not characteristic of juvenile psoriatic arthritis.*

Keywords: *. Vancouver diagnostic criteria, psoriasis, juvenile psoriatic arthritis, juvenile idiopathic arthritis*

Introduction

Psoriatic arthritis (PsA) is a chronic inflammatory joint disease that develops in about a third of patients with psoriasis [*Veale DJ, Fearon U, 2018*]. Juvenile Psoriatic Arthritis (JPsA) is presented in 4 - 9% of children with juvenile arthritis [*Sevostyanov VK et al., 2017; Prakken BJ et al., 2018*].

The criteria for the International League of Associations for Rheumatology (ILAR, 2001) and the Vancouver Criteria (1989) are used to diagnose JPsA [*Southwood TR et al., 1989; Petty R et al., 2004*].

According to the ILAR criteria, Definite JPsA was defined as arthritis associated with psoriasis, or arthritis and at least 2 of the following: dactylitis, nail pitting or onycholysis, psoriasis in a first-degree relative. Exclusions criteria: arthritis in an HLA-B27 positive male beginning after the 6th birthday; ankylosing spondylitis, enthesitis related arthritis, sacroiliitis with inflammatory bowel disease, Reiter's syndrome, or acute anterior uveitis, or a history of one of these disorders in a first-degree relative; the presence of IgM rheumatoid factor on at least 2 occasions at least 3 months apart; the presence of systemic JIA in the patient [*Petty R, 2004*].

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Therefore, in pediatric rheumatological practice, the Vancouver criteria are more often used [*Southwood TR, 1989*]. According to Vancouver criteria Definite JPsA is defined as arthritis associated, but not necessarily coincident, with a typical psoriatic rash, or arthritis plus at least 3 of 4 minor criteria: dactylitis, nail pitting, psoriasis-like rash, or family history of psoriasis. Probable JPsA is defined as arthritis plus 2 of the minor criteria.

The clinical picture of JPsA is diverse and heterogeneous. There are no specific laboratory tests. Instrumental methods reflect only the presence and severity of the inflammatory process. JPsA is an interdisciplinary problem and requires the joint supervision of rheumatologists and dermatologists.

This study aimed to identify the clinical features of psoriatic arthritis in children.

MATERIAL AND METHODS

Open-label, single-center, prospective, observational (1989-2018) cohort clinical study included 83 patients (3-17.0 y/o) who met Vancouver and I/E criteria.

RESULTS

we observed 83 patients with JPsA aged from 3 to 17 years. Fifty-nine (71%) patients had definite JPsA and 24 (29%) had probable JPsA, according to the Vancouver criteria. The clinical and demographic characteristics are presented in table 1.

TABLE 1.

The clinical and demographic characteristics of patients with JPsA (n=83)

Demographic indicators		JPsA	
		Definite	Probable
Number of patients (n)		59	24
Girl/Boy Ratio		1.7:1	2:1
Average age, years		6.6±4	6.3±2.7
Duration of the disease, years		3±2	
Family history of psoriasis n, (%)	First-degree relative with psoriasis	22 (26%)	
	Second-degree relative with psoriasis	34 (41%)	
Potential trigger n, (%)	Infection	22 (27%)	
	Trauma	12 (14%)	
	Vaccination	7 (8%)	
	Insolation	5 (6%)	
	Stress	3 (4%)	
	Not identified	34 (41%)	

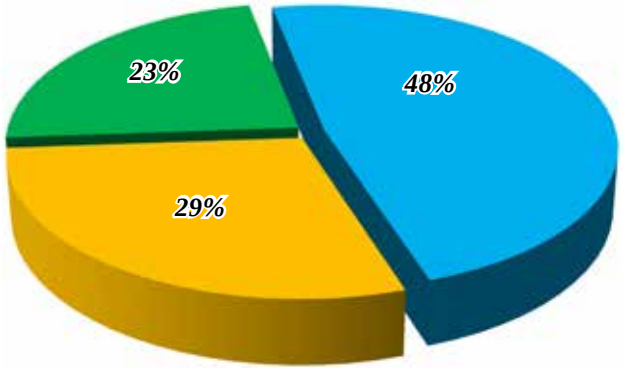

FIGURE 1. *Skin and / or articular syndromes in the onset of the disease in children with definite uvenile Psoriatic Arthritis. Onset with articular syndrome (48%), onset with skin syndrome (29%), simultaneously (23%)*

In 17 (29%) children with definite JPsA, skin lesions presented as the first sign of the disease, joint damage in these patients developed after 3.5 ± 2 years. In 28 (48%) patients' articular syndrome was observed on the onset with subsequent skin manifestations after 5.3 ± 3 years. Fourteen (23%) children with definite JPsA had simultaneous debut of skin and articular syndromes (Fig.1).

Among 59 patients with definite JPsA, vulgar psoriasis was observed in 45 (76%) patients, guttate psoriasis in 9 (15%), isolated nail psoriasis in 3 (5%), and palmoplantar psoriasis in 2 (4%). Fifteen (28%) patients had a combination of cutaneous psoriasis with damage to the nail plates (Fig. 2).

Articular syndrome in the onset of the disease was represented by oligoarticular arthritis in 57 (69%) patients, in 15 (18%) children - symmetric rheumatoid-like arthritis, and in 11 (13%) - spondylitis. The most commonly involved joints at both presentation and during the course of the disease were the knee (41%), ankle (31%), and small joints of the hands (29%). During course of the disease, the articular syndrome transformed with symmetric rheumatoid-like arthritis prevalence (Fig. 3).

To overcome it is possible, due to the uniting the knowledge and will of all doctors in the world

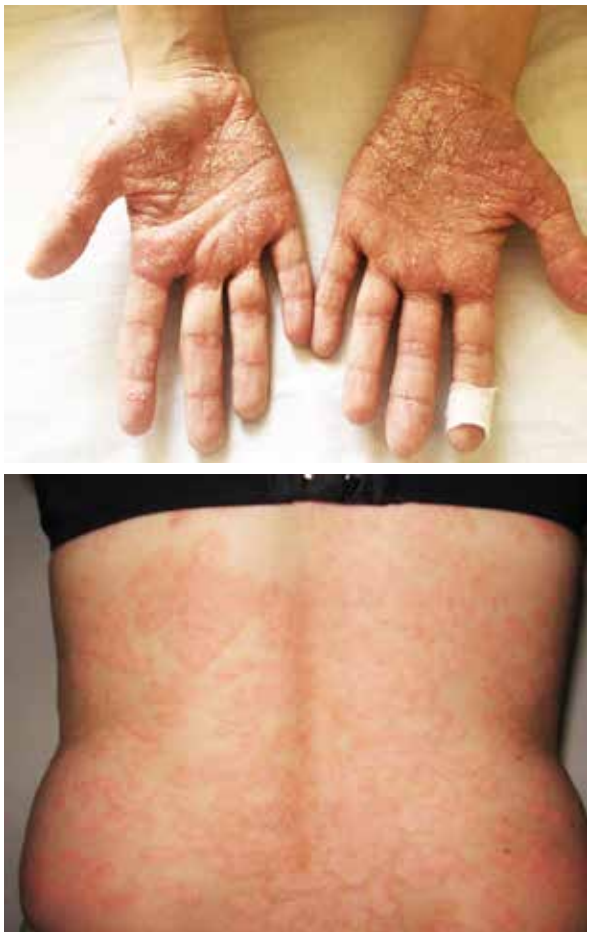

***Figure** 2. Vulgar psoriasis in patient with JPsA*

All joint groups in PsA may be involved in the pathological process. However, knee joints, ankles, and interphalangeal joints are more often affected (41.0%, 31.3%, 28.9%, respectively) (Table 2, Fig. 4).

According to our data, the clinical picture of JPsA turned out to be variable. In 39 (47%) children, the disease was characterized by high laboratory and clinical activity. Exacerbations of articular and skin syndromes were noted up to 5-6 times a year. In 44 (53%) patients, on the contrary, the process was easy, there was a positive effect from the ongoing anti-rheumatic therapy.

According to the results of the X-ray examination, in the active period of the disease, 39 (47%) patients had the I radiological stage according to Steinbroker, in 44 (53%) the III-IV radiological stages.

It should be noted that in all patients, periarticular osteoporosis was expressed, which is not characteristic of PsA.

Discussion

Despite the current experience and knowledge in the field of PsA, the etiology and pathogenesis are still largely unclear. Environmental factors, including infection, trauma, stress, only trigger factors in the development of PsA in genetically predisposed people.

So, according to the results of our study in most cases (41%), the potential trigger could not be established. A hereditary predisposition to the development of psoriasis and PsA are noted: it is known that more than 40% of patients have a family history of psoriasis in relatives of the 1st degree of kinship. According to our data, a family history of psoriasis among relatives of the 1st degree of kinship was observed in 26% of children, 2nd degree of kinship - in 41% of children. Girls predominate in the sexual distribution, which is consistent with literature [*Stoll ML, Nigrovic PA, 2006; Stoll ML et al., 2006; Stoll ML, Elizabeth DM, 2020*]. However, two peaks of morbidity at an early age and adolescence described in the literature are not traced by us. In childhood, according to a few studies, in 50% of cases, arthritis precedes the appearance of psoriasis [*Prakken BJ et al., 2018*; *Chebysheva SN et al., 2019*]. So, according to our data, in 48.0% of children, articular syndrome preceded psoriasis. In children with JPsA,

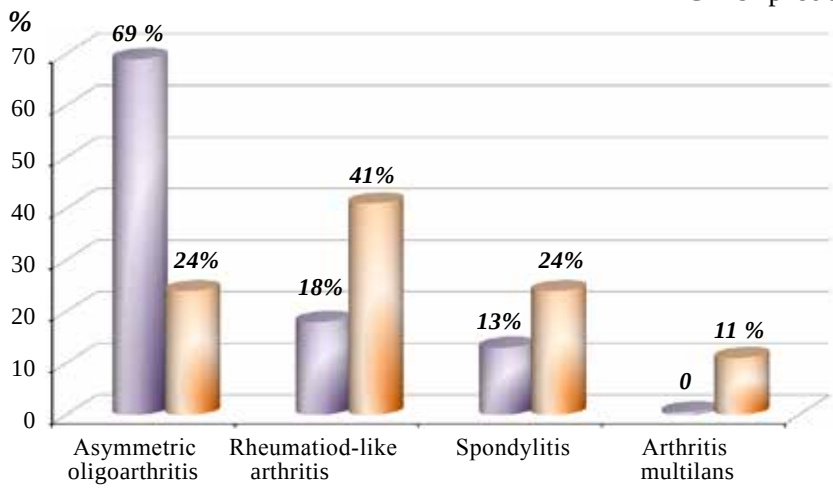

***Figure** 3. Articular syndrome JPsA in the onset and during the disease course (%),* in the onset (purple columns),during the disease course (yellow columns)

Table 2.

Joint disease incidence in PsA children (n=83)

Affected joints	n	%
Axial skeleton (cervical, thoracic, lumbar spine sections)	6	10.8
Temporomandibular joint	1	1.2
Shoulder joints	6	7.2
Elbow joints	9	10.8
Wrist joints	10	12.1
Small joints of the hands	24	28.9
Hip joints	8	9.6
Knee joints	34	41.0
Ankle joints	26	31.3
Small joints of the feet	15	18.1
Enthesopathies	4	4.8

asymmetric oligoarthritis is more often observed at the onset of the disease [*Moll JMH, Wright V, 1973*; *Southwood TR et al., 1989; Prakken BJ et al., 2018*; *Chebysheva SN et al., 2019*]. Among the children we observed in the onset of the disease, asymmetric oligoarthritis was recorded in 69% of children. During the course of the disease, a transformation of the articular syndrome was observed with rheumatoid arthritis prevailing (46.6%). The most common clinical form of psoriasis was plaque psoriasis (71.2%), which is consistent with published data [*Silverberg NB, 2010; Boehncke WH, Schon MP, 2015*; *Relvas M, Torres T, 2017*]. Much less often than in the described literature, an isolated lesion of the nail plates was found (5% versus 20-50%) [*Relvas M, Torres T, 2017*]. In 40-60% of patients, biomarkers of inflammation (ESR and CRP) remain normal [*Korotaeva TV et al., 2018*]. In our study, in 20% of children, the disease proceeded without activity. The X-ray picture in PsA is characterized by features: narrowing of the joint gap, bone remodulation (resorption of terminal phalanges, large eccentric erosion, osteolysis), bone proliferation (marginal bone growths, periostitis, enthesophytes, bone ankylosis), asymmetric bilateral or unilateral spondylitis, paravertebral

***Figure** 4. Arthritis of the distal interphalangeal joints. Psoriatic damage to the nail plates and multilans arthritis*

ossification and marginal syndesmophytes [*Chandran V, Barrett J, 2009*]. According to our data, 53% of patients had the III-IV radiological stages, 47%) patients had the I radiological stage according to Steinbroker. Periarticular osteoporosis has been described in all children with JPsA, which is not characteristic of JPsA [*Loginova E.Yu. et al., 2016*].

Conclusion

The clinical picture of JPsA is variable. Most patients with JPsA do not have a chronological relationship between skin and joint damage. The most common form of psoriasis is plaque psoriasis. At the onset of the disease, asymmetric oligoarthritis prevails, followed by transformation with a predominance of rheumatoid-like arthritis. Thus, children with JPsA require the joint supervision of a rheumatologist and a dermatologist.

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THE NEW ARMENIAN MEDICAL JOURNAL
Vol.15 (2021). No 1

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Our journal is registered in the databases of Scopus, EBSCO and Thomson Reuters (in the registration process)

SCOPUS EBSCO THOMSON REUTERS

Copy editor: Tatevik R. Movsisyan

Printed in "collage" LTD
Director: A. Muradyan
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