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ORIGINAL ARTICLE

Differences and Similarities Between Children and Adults With Rhupus Syndrome

Seher Sener[1] | Dilara Unal[1] | Ezgi Deniz Batu[1] | Gozde Sevgi Kart Bayram[2] | Busra Firlatan[2] | Levent Kilic[2] | Sezgin Sahin[3] | Deniz Gezgin Yildirim[4] | Miray Kisla Ekinci[5] | Hakan Kisaoglu[6] | Yasin Karali[7] | Selcan Demir[8] | Ummusen Kaya Akca[9] | Aybuke Gunalp[3] | Seyma Turkmen[10] | Gulsah Kavrul Kayaalp[11] | Ceyda Arslanoglu[12] | Ruya Torun[13] | Hulya Ercan Emreol[1] | Ozge Basaran[1] | Aysenur Pac Kisaarslan[12] | Betul Sozeri[10] | Nuray Aktay Ayaz[11] | Sevcan Azime Bakkaloglu[4] | Sara Sebnem Kilic[7] | Mukaddes Kalyoncu[6] | Yelda Bilginer[1] | Erbil Unsal[13] | Ozgur Kasapcopur[3] | Sule Apras Bilgen[2] | Seza Ozen[1]

[1]Faculty of Medicine, Division of Pediatric Rheumatology, Department of Pediatrics, Hacettepe University, Ankara, Turkey | [2]Faculty of Medicine, Division of Rheumatology, Department of Internal Medicine, Hacettepe University, Ankara, Turkey | [3]Cerrahpasa Faculty of Medicine, Department of Pediatrics, Department of Pediatric Rheumatology, Istanbul University, Istanbul, Turkey | [4]Faculty of Medicine, Department of Pediatrics, Department of Pediatric Rheumatology, Gazi University, Ankara, Turkey | [5]Faculty of Medicine, Department of Pediatrics, Department of Pediatric Rheumatology, Cukurova University, Adana, Turkey | [6]Faculty of Medicine, Department of Pediatrics, Department of Pediatric Rheumatology, Karadeniz Technical University, Trabzon, Turkey | [7]Faculty of Medicine, Department of Pediatrics, Division of Immunology and Rheumatology, Uludag University, Bursa, Turkey | [8]Faculty of Medicine, Department of Pediatrics, Department of Pediatric Rheumatology, Eskisehir Osmangazi University, Ankara, Turkey | [9]Division of Pediatric Rheumatology, Department of Pediatrics, Aydin Gynecology and Children's Hospital, Aydın, Turkey | [10]Department of Pediatrics, Pediatric Rheumatology, Health Sciences University, Umraniye Training and Research Hospital, Istanbul, Turkey | [11]Faculty of Medicine, Department of Pediatrics, Department of Pediatric Rheumatology, Istanbul University, Istanbul, Turkey | [12]Faculty of Medicine Division of Pediatric Rheumatology, Department of Pediatrics, Erciyes University, Kayseri, Turkey | [13]Faculty of Medicine, Department of Pediatrics, Department of Pediatric Rheumatology, Dokuz Eylul University, Izmir, Turkey

Correspondence: Seher Sener (kzl_seher@hotmail.com)

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ABSTRACT

Aim: In this study, we aimed to evaluate and compare the characteristics of pediatric and adult rhupus patients.

Methods: Thirty pediatric patients with rhupus syndrome and 15 adult patients with rhupus syndrome were included in this study. Similarities and differences between both groups were evaluated.

Results: The time elapsed between the diagnosis of juvenile idiopathic arthritis (JIA)/rheumatoid arthritis (RA) and the diagnosis of systemic lupus erythematosus (SLE) was longer in adults than in pediatric patients ($p < 0.001$). While the most common phenotypes at disease onset were JIA/RA in both adults and children, SLE was more prevalent in pediatric patients and RA in adult patients at the last visit (both $p < 0.001$). Cutaneous findings, oral ulcers, hematological and renal involvement, hypocomplementemia, and antidouble-stranded DNA positivity were more frequent in pediatric patients, whereas constitutional findings, nonscarring alopecia, neuropsychiatric involvement, and anticyclic citrullinated peptide positivity were more common in adults (all $p < 0.001$). Asymmetric polyarthritis was more prevalent in pediatric patients, whereas symmetric polyarthritis was more common in adult patients (both $p < 0.001$). Erosive arthritis was more frequently observed in adult patients ($p < 0.001$). In the treatment, mycophenolate mofetil was more commonly prescribed to pediatric patients, while rituximab was more frequently

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used for adult patients in the treatment of SLE compared to pediatric patients (both $p < 0.001$). Additionally, leflunomide was more commonly used in JIA/RA treatment in adult patients compared to pediatric patients ($p < 0.001$).
Conclusion: This is the first study comparing pediatric and adult patients with rhupus syndrome. Revealing these differences and similarities will contribute significantly to the literature.

1 | Introduction

Rhupus syndrome is a rare, ignored, poorly understood, and therefore disputed clinical syndrome that was first described by Peter Schur in 1971 [1, 2]. Although there is no clear definition for rhupus syndrome in the literature, it is generally accepted as an overlap syndrome between systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA)/juvenile idiopathic arthritis (JIA) [3, 4].

More research has indicated that rhupus syndrome is a distinct syndrome that can be observed in patients who exhibit similar characteristics of SLE and RA/JIA [5]. However, it is important to note that rhupus is not considered a unique pathological or immunological syndrome [6]. On the other hand, it has been established that rhupus syndrome has distinct differences in its course and prognosis compared to SLE or RA/JIA alone [6, 7].

There is still much to be understood about rhupus syndrome, particularly in children, including its prevalence, natural history, clinical profiles, and immunological profiles. In the literature, pediatric and adult patients were typically described in the case reports or case series [3, 5, 8, 9]. Therefore, the true burden of rhupus syndrome is just unknown. Furthermore, treatment is customized according to the expertise of clinicians as there are no treatment guidelines supported by robust evidence [5]. It is crucial to acknowledge and distinguish patients with rhupus syndrome, as their treatment and outcomes vary from those of SLE or JIA/RA patients alone.

In this study, we evaluated and compared the demographic, clinical, and laboratory findings, treatments, and outcomes of adult patients with rhupus syndrome, diagnosed at one center, and pediatric patients with rhupus syndrome from multiple centers in our country.

2 | Patients and Methods

This study was approved by the ethical committee of Hacettepe University (GO 23/215). Informed consent was obtained from all parents/patients before inclusion in the study. The study was performed following the ethical standards laid down in the 1964 Declaration of Helsinki.

2.1 | Patients

Pediatric patients with rhupus syndrome (diagnosed before 18 years of age) from 12 different centers in Turkey and adult patients with rhupus syndrome from one center were included in this study. Rhupus syndrome was defined in pediatric patients who fulfilled both the classification criteria for JIA set by the International League of Associations for Rheumatology (ILAR) and the criteria for childhood-onset SLE established by the Systemic Lupus International Collaborating Clinics (SLICC) [10, 11]. Adult patients fulfilled both the SLICC criteria for SLE and the American College of Rheumatology (ACR)/European League Against Rheumatism (EULAR) criteria for RA [11, 12]. All patients had rheumatoid factor (RF) positivity (> 20 IU/L on two occasions ≥ 3 months apart). The patients who met either Kasukawa or Alarcon-Segovia and Villareal criteria for mixed connective tissue disease (MCTD) were excluded from the study [13, 14].

The demographic features, clinical findings, laboratory parameters, treatments, and outcomes of pediatric and adult patients with rhupus syndrome during the follow-up period were evaluated retrospectively. The most prominent disease-related phenotypes in pediatric and adult patients were identified and the similarities and differences between both groups were revealed. Laboratory tests included complete blood count, acute phase reactants (C-reactive protein [CRP, normal range: 0–0.5 mg/dL] and erythrocyte sedimentation rate [ESR, normal range: 0–20 mm/h]), C3/C4 complement levels, direct Coombs test, and autoantibodies (antinuclear antibody [ANA], anti-double-stranded DNA [anti-dsDNA], extractable nuclear antigen antibodies [ENA], antiphospholipid antibodies, and anticyclic citrullinated peptide [anti-CCP]). A leukocyte count below 3000/mm^3 was classified as leukopenia, a lymphocyte count below 1500/mm^3 as lymphopenia, and a thrombocyte count below 100 000/mm^3 as thrombocytopenia. All patients underwent X-rays of their joints to determine whether they had erosive or nonerosive arthritis. Titers of ≥ 1/100 were accepted as positive for ANA. For other autoantibodies, results above the cutoff values of each laboratory were considered as positive. The primary outcome was defined as disease remission. Secondary outcomes were defined as JIA-related findings (arthritis features) and SLE-related findings (constitutional findings, mucocutaneous, gastrointestinal system, hematologic, renal, neuropsychiatric, and cardiac involvements), laboratory findings (anemia, leukopenia, lymphopenia, thrombocytopenia, CRP/ESR/complement levels, RF/CCP positivity, ENA, and antiphospholipid antibodies), and the management of the disease (used medications). Complete remission was defined as inactive clinical and serological disease findings for ≥ 12 months with or without immunosuppressive treatments. Partial remission was described as a regression of the disease-related findings under immunosuppressive therapy, but not disappearing completely. Refractory/progressive disease was accepted as progression or no improvement in SLE- or JIA-/RA-related symptoms with treatment.

2.2 | Statistical Analysis

Statistical analyses were conducted using SPSS version 25 (IBM, Armonk, NY, USA). The normality of numeric variable distributions was assessed visually (histogram, probability plots) and

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analytically (Shapiro–Wilk's test). Descriptive analyses were reported as medians (minimum–maximum) for continuous variables and as numbers and percentages for categorical variables. The chi-squared test or Fisher's exact test was used to compare categorical variables, whereas the Mann–Whitney *U* test was used for nonnormally distributed continuous variables. A *p* value of < 0.05 was considered statistically significant.

3 | Results

Thirty pediatric patients and 15 adult patients with rhupus syndrome were included in this study. The median age at SLE and JIA diagnosis of pediatric patients were 11.5 (7.5–17.9) and 12.3 (5.5–17.2) years, respectively (F/M = 28/2) (Table 1). The median age at SLE and RA diagnosis of adult patients were 41 (25–77) and 35.5 (23–67) years, respectively (F/M = 14/1) (Table 1).

The differences between pediatric and adult rhupus syndrome patients are summarized in Figure 1. The time between JIA/RA and SLE diagnosis was longer in adults than pediatric patients ($p < 0.001$). The most prominent phenotypes at disease onset were JIA/RA in both adults and children. On the other hand, the most prominent phenotype at the last visit was SLE in pediatric patients and RA in adult patients ($p < 0.001$).

Among SLE-related manifestations, cutaneous findings, oral ulcers, hematological, and renal involvement were more common SLE-related findings in pediatric patients, whereas constitutional findings, nonscarring alopecia, and neuropsychiatric involvement were more common in adults (all $p < 0.001$). All patients with lupus nephritis underwent renal biopsy. Two of the pediatric patients had stage 1, one had stage 2, one had stage 3, three had stage 4 lupus nephritis, and one adult patient had stage 1 lupus nephritis. Arthritis was polyarticular in both groups. Asymmetric arthritis was more common in pediatric patients and symmetric arthritis was more common in adult patients ($p < 0.001$). Erosive arthritis was detected more frequently in adult patients ($p < 0.001$). Proximal interphalangeal (PIP, 23.1%) was the most involved joint in pediatric patients, and wrist (46.7%) was the most frequently involved joint in adult patients. None of the patients had rheumatoid nodules. Laboratory findings showed that hypocomplementemia and anti-dsDNA positivity were more prevalent in pediatric patients, whereas anti-CCP positivity was more common in adult patients.

The most commonly used drug for SLE treatment was hydroxychloroquine, followed by glucocorticoids in both pediatric and adult patients (Table 2). However, mycophenolate mofetil (MMF) was more frequently preferred in pediatric patients and rituximab in adult patients in the treatment of SLE (both $p < 0.001$). Glucocorticoids, methotrexate, and nonsteroidal anti-inflammatory drugs (NSAIDs) were frequently used for both JIA and RA treatment (Table 2). In addition, leflunomide was one of the most preferred drugs in the treatment of RA in adult patients, unlike pediatric patients ($p < 0.001$).

No statistically significant difference was detected between the two groups regarding the disease outcomes during the follow-up period. No patients died during the follow-up period.

4 | Discussion

Our results revealed some differences and similarities between pediatric and adult rhupus syndrome patients. While cutaneous findings, oral ulcers, hematological and renal involvement, hypocomplementemia, and anti-dsDNA positivity were more common in pediatric patients, constitutional findings, nonscarring alopecia, neuropsychiatric involvement, and anti-CCP positivity were more common in adults. While arthritis was seen as asymmetric polyarthritis in pediatric patients, symmetrical polyarthritis was more common in adult patients. Erosive arthritis was detected more frequently in adult patients. In addition, although the main therapeutic approach was similar in both groups, some minor differences were detected such as more prevalent MMF use for SLE in children, and more prevalent rituximab use for SLE and leflunomide use for RA in adults.

There are no validated diagnostic criteria for rhupus syndrome [5]. The most commonly accepted case definition of rhupus syndrome in adults is fulfillment of the 2012 SLICC criteria for SLE and the 2010 ACR/EULAR criteria for RA [11, 12]. On the other hand, children with rhupus often meet ILAR criteria for JIA and SLICC criteria for SLE [10, 11]. However, some studies have also stipulated the need for erosive arthritis, positive RF, and anti-CCP antibodies, and positive ANA and anti-ds DNA antibodies [15–17]. In our study, we accepted a patient as having rhupus syndrome when she/he met the SLICC criteria for SLE in both children and adults, the ILAR classification criteria for JIA in children, and the ACR/EULAR criteria for RA in adults, as well as had RF positivity. The reason we required RF positivity was to better differentiate rhupus arthritis from SLE-related arthritis.

In the literature, studies on adult and pediatric rhupus syndrome patients are mostly in the form of case reports or case series [3, 5, 7]. Therefore, studies comparing children and adults with rhupus syndrome are lacking. On the other hand, in two important systematic reviews, all cases of pediatric and adult rhupus syndrome were analyzed and the general characteristics of the patients were delineated. Table 3 summarizes some findings of these two systematic reviews [3, 7].

Among these compilations, in the systematic review conducted on adults by Antonini et al. [7], 287 adult patients with rhupus syndrome were identified (Table 3). The mean reported age at rhupus diagnosis was approximately 45 years, but the first symptoms appeared at a mean age of 35 years (93% were women). RA features were predominant in most patients (69%), which is consistent with our adult cohort. In terms of SLE-related clinical findings, it has been shown that especially skin (41%) and mucosal (23%) findings, serositis (26%), hematological (70%), and renal (35%) involvement were dominant in adults [5]. Unlike these results, the most common findings associated with SLE were constitutional findings (86.7%), cutaneous findings (53.3%), nonscarring alopecia (40%), neuropsychiatric (26.7%), and hematological (20%) involvement in our adult cohort. However, it should be noted that constitutional symptoms are not mentioned in this systematic review. In the patients mentioned in this review, arthritis mostly presents as symmetric (87%), erosive (90%), and polyarthritis (88.2%), similar to the results in our study. Unlike the patients in our study, some of these patients also had

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TABLE 1 | The comparison between general and disease-related characteristics of pediatric and adult patients with rhupus syndrome.

Median (min–max) or *n* (%)	Pediatric patients (*n* = 30)	Adult patients (*n* = 15)	*p*
Sex, female	28 (93.3)	14 (93.3)	1.000
Age at SLE diagnosis, years	11.5 (7.5–17.9)	41 (25–77)	< 0.001
Age at JIA/RA diagnosis, years	12.3 (5.5–17.2)	35.5 (23–67)	< 0.001
Time between JIA/RA and SLE diagnosis, years	0.7 (0.1–8.1)	5.2 (2.5–9.5)	< 0.001
The most prominent phenotypes at disease onset	JIA: 18 (60) SLE: 12 (40)	RA: 10 (66.7) SLE: 5 (33.3)	0.216 0.149
The most prominent phenotypes at the last visit	SLE: 22 (73.3) JIA: 8 (26.7)	SLE: 4 (26.7) RA: 11 (73.3)	< 0.001 < 0.001
Disease duration (years)	3.7 (0.7-14)	10.3 (5.8-20.6)	< 0.001
SLE-related symptoms[a]			
Constitutional findings	20 (66.7)	13 (86.7)	< 0.001
Cutaneous findings	24 (80)	8 (53.3)	< 0.001
Acute cutaneous lupus	22 (73.3)	6 (40)	< 0.001
Chronic cutaneous lupus	3 (10)	2 (13.3)	0.224
Raynaud phenomenon	5 (16.7)	2 (13.3)	0.389
Oral ulcers	15 (50)	2 (13.3)	< 0.001
Nonscarring alopecia	5 (16.7)	6 (40)	< 0.001
Serositis	3 (10)	2 (13.3)	0.224
Synovitis[b]	1 (3.3)	1 (6.7)	0.092
GIS symptoms	3 (10)	1 (6.7)	0.625
Hematologic findings	16 (53.3)	3 (20)	< 0.001
Renal involvement	7 (23.3)	1 (6.7)	< 0.001
Neuropsychiatric involvement	2 (6.7)	4 (26.7)	0.017
Cardiac involvement	0	1 (6.7)	0.073
JİA/RA related findings[a]			
Morning stiffness (≥ 15 min)	21 (70)	12 (80)	0.142
Arthritis features[c]			
Symmetrical	10 (33.3)	10 (66.7)	< 0.001
Asymmetric	20 (66.7)	5 (33.3)	< 0.001
Oligoarthritis (≤ 4 joints)	8 (26.7)	4 (26.7)	1.000
Polyarthritis (> 4 joints)	22 (73.3)	11 (73.3)	1.000
Erosive	16 (53.3)	12 (80)	< 0.001
Nonerosive	14 (46.7)	3 (20)	< 0.001
Laboratory findings[a]			
Anemia	8 (26.7)	0	< 0.001
Leukopenia	9 (30)	1 (6.7)	< 0.001
Lymphopenia	12 (40)	3 (20)	< 0.001
Thrombocytopenia	6 (20)	2 (13.3)	0.104

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TABLE 1 | (Continued)

Median (min–max) or *n* (%)	Pediatric patients (*n* = 30)	Adult patients (*n* = 15)	*p*
Elevated CRP during arthritis	27 (90)	12 (80)	0.219
Elevated ESR during arthritis	25 (83.3)	12 (80)	0.814
Low complement C3	25 (83.3)	8 (53.3)	< 0.001
Low complement C4	26 (86.6)	9 (60)	< 0.001
Rheumatoid factor positivity	30 (100)	15 (100)	1.000
Anti-CCP positivity	6/23 (26.1)	8 (53.3)	< 0.001
ANA positivity (> 1/80)	30 (100)	15 (100)	1.000
Anti-dsDNA positivity	28 (93.3)	9 (60)	< 0.001
Positive direct coombs	7 (23.3)	2 (13.3)	0.063
Anti-Sm positivity	8 (26.7)	3 (20)	0.138
Anti-SSA/Ro positivity	6 (20)	2 (13.3)	0.203
Anti-SSB/La positivity	3 (10)	1 (6.7)	0.195
Anti-RNP positivity	3 (10)	1 (6.7)	0.195
Lupus anticoagulant	10 (33.3)	4 (26.7)	0.092
Anti-cardiolipin IgG	3 (10)	1 (6.7)	0.195
Anti-cardiolipin IgM	4 (13.3)	1 (6.7)	0.059
Anti-β2-glycoprotein IgG	2 (6.7)	1 (6.7)	1.000
Anti-β2-glycoprotein IgM	3 (10)	1 (6.7)	0.195

Abbreviations: ANA, antinuclear antibody; anti-dsDNA, anti-double-stranded DNA; anti-RNP, antiribonucleoprotein; anti-Sm, anti-Smith; CCP, cyclic citrullinated peptide; CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; GIS, gastrointestinal system; Ig, immunoglobulin; JIA, juvenile idiopathic arthritis; LEF, leflunomide; RA, rheumatoid arthritis; SLE, systemic lupus erythematosus.
[a]All symptoms/findings that had ever occurred since disease onset.
[b]Acute (usually lasting 1 or 2 days), nonerosive.
[c]Chronic (≥ 6 weeks), erosive or nonerosive.

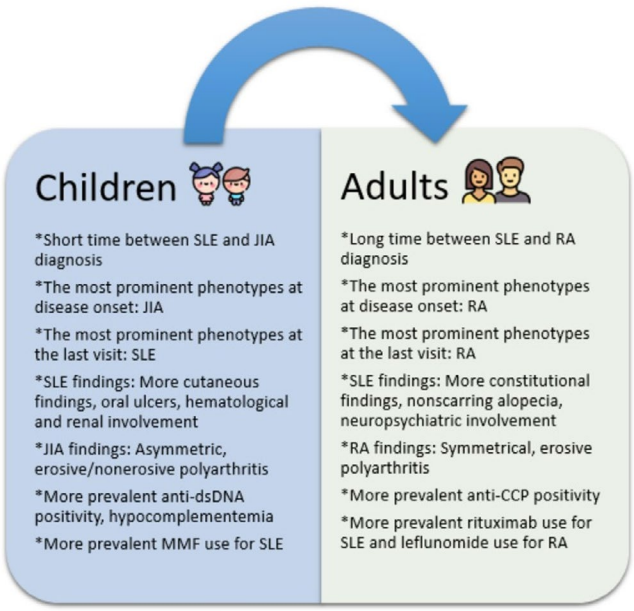


FIGURE 1 | Differences between pediatric and adult patients with rhupus syndrome. Anti-dsDNA, antidouble-stranded DNA; CCP, cyclic citrullinated peptide; JIA, juvenile idiopathic arthritis; MMF, mycophenolate mofetil; RA, rheumatoid arthritis; SLE, systemic lupus erythematosus.

rheumatoid nodules (16%). SLE-related laboratory findings of the adult patients in the review were consistent with the adult patients in our study. RF was detected in 84% of these patients, and anti-CCP was detected in 58% of the patients [7]. Although RF was positive in all our patients because we took it as a diagnostic criterion in our study, it was noteworthy that anti-CCP was found to be positive at a similar rate (53.3%) as in the patients in the review. The detailed treatment of the patients was not mentioned in the review, thus, we could not compare the results with ours.

In the systematic screening conducted by Ziaee et al. [3], they examined 11 pediatric patients with rhupus syndrome, including their cases. The mean age at disease onset of the patients was 8.9 years and 81.8% were female. While JIA was the prominent feature at the onset of the disease in all patients, the time between JIA and SLE diagnosis was 4.2 years. In our pediatric cohort, the prominent disease at the beginning was JIA (60%) in most of them, and SLE in 40% of them. Furthermore, the time between JIA and SLE diagnosis was shorter (median 0.7 years) in our pediatric cohort. In most of the patients in the review, arthritis was polyarticular (70%), which is consistent with our study. Erosion was seen less frequently than in our patients (44.4% vs. 53.3%). Although 50% of the patients in the review were ANA positive, this rate was 100% in our pediatric cohort. Additionally, 60% of pediatric patients in this literature review were found to be RF-positive [3].

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TABLE 2 | The comparison between treatments and outcomes of pediatric and adult patients with rhupus syndrome.

n (%)	Pediatric patients (*n* = 30)	Adult patients (*n* = 15)	*p*
Treatment for SLE[a]			
Hydroxychloroquine	30 (100)	15 (100)	1.000
Glucocorticoid (oral/IV)	26 (86.7)	14 (93.3)	0.227
Mycophenolate mofetil	14 (46.7)	1 (6.7)	< 0.001
Azathioprine	7 (23.3)	4 (26.7)	0.748
Cyclophosphamide	6 (20)	2 (13.3)	0.104
IVIG	5 (16.7)	1 (6.7)	0.053
Rituximab	5 (16.7)	6 (40)	< 0.001
Cyclosporine A	2 (6.7)	1 (6.7)	1.000
Treatment for JIA/RA[a]			
Glucocorticoid (oral/IV)	23 (76.6)	12 (80)	0.353
Methotrexate	22 (73.3)	13 (86.7)	0.076
NSAIDs	17 (57.6)	10 (66.7)	0.082
Intraarticular glucocorticoid	5 (16.7)	2 (13.3)	0.389
TNF-α inhibitors	3 (10)	1 (6.7)	0.195
JAK inhibitors	1 (3.3)	0	0.546
Cyclosporine A	0	1 (6.7)	0.073
Leflunomide	0	3 (20)	< 0.001
Outcome			
Complete remission	20 (66.7)	11 (73.3)	0.137
Partial remission	7 (23.3)	3 (20)	0.281
Refractory/progressive disease	3 (10)	1 (6.7)	0.195

Abbreviatons: IV, intravenous; IVIG, intravenous immunoglobulin; JAK, Janus kinase; JIA, juvenile idiopathic arthritis; NSAIDs, nonsteroidal anti-inflammatory drugs; RA, rheumatoid arthritis; SLE, systemic lupus erythematosus; TNF-α, tumor necrosis factor-alpha.
[a]Treatments included all therapies from disease onset to the last visit.

Treatment of rhupus in the literature is based on several clinical studies, case reports, and retrospective studies [3, 5, 7]. Classical SLE treatment is applied to control SLE-related symptoms in rhupus syndrome. Various disease-modifying antirheumatic drugs (DMARDs), especially glucocorticoid and methotrexate, are widely used to control arthritis and prevent joint damage in rhupus patients [15, 18, 19]. Hydroxychloroquine is largely prescribed in combination with corticosteroids and other DMARDs due to its known efficacy in SLE and JIA/RA [18, 20]. In a few studies, biological treatments, particularly TNF-alpha blockers, have also been used

TABLE 3 | General characteristics of the adult and pediatric patients in the systematic reviews.

	Review in adults (18)	Review in children (3)
Number of patients, *n* (%)	287	11
Sex, female, *n* (%)	267/287 (93)	9 (81.8)
Age at onset (years), mean	35	8.9
Age at diagnosis (years), mean	45	—
Most prominent features, *n* (%)		—
JIA/RA > SLE	181/264 (69)	
SLE > JIA/RA	48/264 (18)	
SLE = JIA/RA	35/264 (13)	
Time to JIA/RA in SLE and SLE in JIA/RA patients (years), mean	11 and 7	—
Time between JIA/RA and SLE diagnosis (years), mean	—	4.2
Polyarthritis, *n* (%)	225/255 (88.2)	7/10 (70)
Erosions, *n* (%)	251/278 (90)	4/9 (44.4)
Symmetric arthritis, *n* (%)	206/237 (87)	—
Rheumatoid nodules, *n* (%)	43/262 (16)	—
Skin lesions, *n* (%)	118/287 (41)	—
Oral ulcers, *n* (%)	65/287 (23)	—
Photosensitivity, *n* (%)	87/287 (30)	—
Alopecia, *n* (%)	47/271 (17)	—
Raynaud's phenomenon, *n* (%)	25/271 (9)	—
Serositis, *n* (%)	74/287 (26)	—
Neurological involvement, *n* (%)	14/287 (5)	—
Renal involvement, *n* (%)	100/287 (35)	—
Pulmonary involvement, *n* (%)	16/287 (6)	—
Hematological involvement, *n* (%)	202/287 (70)	—
Vasculitis, *n* (%)	12/287 (4)	—
Antinuclear antibody, *n* (%)	255/287 (89)	5/10 (50)

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TABLE 3 | (Continued)

	Review in adults (18)	Review in children (3)
Low complement, *n* (%)	78/157 (50)	—
ANA, *n* (%)	255/287 (89)	—
Anti-dsDNA antibodies, *n* (%)	206/278 (74)	—
Rheumatoid factor, *n* (%)	241/287 (84)	6/10 (60)

Abbreviations: ANA, antinuclear antibody; anti-dsDNA, anti-double-stranded DNA; JIA, juvenile idiopathic arthritis; RA, rheumatoid arthritis; SLE, systemic lupus erythematosus.

in resistant patients [20–22]. All these treatment approaches are compatible with both our pediatric and adult cohorts. In addition, it is noteworthy that MMF was used more frequently for the treatment of SLE in our pediatric patients, whereas rituximab was used more frequently for the treatment of SLE and leflunomide was used more frequently for the treatment of RA in our adult patients.

Rituximab might have been used more frequently, especially in adult patients with rhupus syndrome because it can target features of both RA and SLE [7]. Rituximab has shown efficacy in refractory RA and SLE, making it a logical choice for rhupus syndrome. In addition, given the overlap in pathophysiology, rituximab's approval for moderate-to-severe RA and off-label use in SLE makes it a convenient option for adult rhupus syndrome [23]. MMF might have been preferred more frequently in the treatment of SLE in pediatric patients with rhupus syndrome due to its efficacy, favorable safety profile, and adaptability to the specific needs of children [24]. Compared to intravenous rituximab, MMF is administered orally, which is more convenient and less invasive for pediatric patients. MMF offers adjustable dosing based on body weight or body surface area, allowing for tailored treatment in growing children [24]. Furthermore, studies and clinical trials have demonstrated that MMF is an efficacious and well-tolerated treatment option for pediatric populations [25]. Leflunomide is also commonly used for the treatment of RA in adult patients due to its specific advantages and suitability for long-term disease management [26]. Leflunomide's efficacy, oral administration, cost-effectiveness, and role as a methotrexate alternative might have made it a frequent choice for treating the RA component of rhupus syndrome in adults [26].

Due to the lack of prospective large studies focusing on rhupus patients, the long-term consequences of the disease have not been adequately described in the literature studies. However, musculoskeletal damage in these patients is expected to be severe in this population [27]. Despite the paucity of data regarding extra-articular organ damage in patients with rhupus, studies have demonstrated that the presence of four or more SLE features in individuals with RA is associated with a mortality risk that is 2.56 times higher (95% CI: 1.60, 4.08) compared to patients with arthritis alone [28]. SLE-related organ damage is known to be less severe in rhupus patients than in SLE patients [7]. To our knowledge, no study has focused on mortality in rhupus patients.

Our study has some limitations. The first is the retrospective design of the study. The second important limitation is that there is no clear case definition for pediatric rhupus syndrome in the literature, and there is a wide variety of case definitions for adult rhupus syndrome. In this context, we developed our case definition for pediatric and adult cases. Third, the number of adult cases was less than the number of pediatric cases. Finally, since our results cover certain regions, they cannot be generalized to the entire universe.

5 | Conclusion

Our study is very valuable because it includes a large pediatric rhupus cohort and draws attention to features of children and adult patients with rhupus syndrome. Our results revealed that there are some differences and similarities between pediatric and adult patients with rhupus syndrome, both in clinical and laboratory findings and in the treatment approach. We think that our study and other studies on this subject in larger cohorts will improve and improve the diagnosis and management of rhupus syndrome. Future studies should develop a specific diagnostic guideline to help distinguish rhupus syndrome from other autoimmune diseases, including clinical features, biomarkers, and imaging techniques so that these patients can be more easily identified and their outcomes can be improved.

Author Contributions

Conceptualization: Seher Sener, Dilara Unal, Ezgi Deniz Batu; Data curation: Seher Sener, Dilara Unal, Ezgi Deniz Batu, Gozde Sevgi Kart Bayram, Busra Firlatan, Levent Kilic. Formal analysis: Seher Sener, Ezgi Deniz Batu. Investigation: Seher Sener, Dilara Unal, Ezgi Deniz Batu. Methodology: Seher Sener, Sule Apras Bilgen, Seza Ozen; Project administration: Yelda Bilginer, Seza Ozen. Resources: Seher Sener, Ezgi Deniz Batu, Seza Ozen. Supervision; Sezgin Sahin, Deniz Gezgin Yildirim, Miray Kisla Ekinci, Hakan Kisaoglu, Yasin Karali, Selcan Demir, Ummusen Kaya Akca, Aybuke Gunalp, Seyma Turkmen, Gulsah Kavrul Kayaalp, Ceyda Arslanoglu, Ruya Torun. Validation: Seher Sener, Ezgi Deniz Batu. Visualization: Seher Sener, Ezgi Deniz Batu. Roles/Writing – original draft: Seher Sener, Ezgi Deniz Batu, and Seza Ozen. Writing – review and editing: Seher Sener, Ezgi Deniz Batu, Levent Kilic, Ozge Basaran, Aysenur Pac Kisaarslan, Betul Sozeri, Nuray Aktay Ayaz, Sevcan Azime Bakkaloglu, Sara Sebnem Kilic, Mukaddes Kalyoncu, Yelda Bilginer, Erbil Unsal, Ozgur Kasapcopur, Sule Apras Bilgen, and Seza Ozen.

Acknowledgments

The authors have nothing to report.

Ethics Statement

This study has been approved by the Hacettepe University Ethics Commission (approval no. GO 23/215) and was conducted in accordance with the Declaration of Helsinki.

Consent

Informed consent was obtained from all parents/patients before inclusion in the study.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

References

1. P. Schur, "Systemic Lupus Erythematosus," in *Cecil-Loeb Textbook of Medicine*, eds. P. B. Beeson and W. McDermott, 13th ed. (Philadelphia: WB Saunders, 1971), 821.

2. L. M. Amezcua-Guerra, "Overlap Between Systemic Lupus Ythematosus and Rheumatoid Arthritis: Is It Real or Just Illusion?," *Journal of Rheumatology* 36, no. 1 (2009): 4–6.

3. V. Ziaee, M. H. Moradinejad, and R. Bayat, "RHUPUS Syndrome in Children: A Case Series and Literature Review," *Case Reports in Rheumatology* 2013 (2013): 819629.

4. G. Devrimsel and B. M. Serdaroglu, "Three Case Reports of Rhupus Syndrome: An Overlap Syndrome of Rheumatoid Arthritis and Systemic Lupus Erythematosus," *Case Reports in Rheumatology* 2018 (2018): 6194738, https://doi.org/10.1155/2018/6194738.

5. S. Sener, E. Batu, S. Sahin, et al., "Rhupus Syndrome in Children: A Multi-Center Retrospective Cohort Study and Literature Review," *Lupus* 33, no. 3 (2024): 273–281.

6. R. S. Panush, N. L. Edwards, S. Longley, and E. Webster, "'Rhupus' Syndrome," *Archives of Internal Medicine* 148, no. 7 (1988): 1633–1636.

7. L. Antonini, B. Le Mauff, C. Marcelli, A. Aouba, and H. de Boysson, "Rhupus: A Systematic Literature Review," *Autoimmunity Reviews* 19, no. 9 (2020): 102612.

8. E. G. Cavalcante, N. E. Aikawa, R. G. Lozano, A. P. Lotito, A. A. Jesus, and C. A. Silva, "Chronic Polyarthritis as the First Manifestation of Juvenile Systemic Lupus Erythematosus Patients," *Lupus* 20, no. 9 (2011): 960–964.

9. S. Mitra and R. Mondal, "Childhood Rhupus Syndrome," *Indian Pediatrics* 52, no. 4 (2015): 346–347.

10. R. E. Petty, T. R. Southwood, P. Manners, et al., "International League of Associations for Rheumatology Classification of Juvenile Idiopathic Arthritis: Second Revision, Edmonton, 2001," *Journal of Rheumatology* 31, no. 2 (2004): 390–392.

11. M. Petri, A. M. Orbai, G. S. Alarcón, et al., "Derivation and Validation of the Systemic Lupus International Collaborating Clinics Classification Criteria for Systemic Lupus Erythematosus," *Arthritis and Rheumatism* 64 (2012): 2677–2686.

12. M. P. van der Linden, R. Knevel, T. W. Huizinga, and A. H. van der Helm-van Mil, "Classification of Rheumatoid Arthritis: Comparison of the 1987 American College of Rheumatology Criteria and the 2010 American College of Rheumatology/European League Against Rheumatism Criteria," *Arthritis and Rheumatism* 63 (2011): 37–42.

13. R. Kasukawa, T. Tojo, and S. Miyawaki, "Preliminary Diagnostic Criteria for Classification of Mixed Connective Tissue Disease," in *Mixed Connective Tissue Disease and Antinuclear Antibodies*, eds. R. Kasukawa and G. C. Sharp (Amsterdam: Elsevier, 1987), 41–47.

14. D. Alarcon-Segovia and M. Villarreal, "Classification and Diagnostic Criteria for Mixed Connective Tissue Disease," in *Mixed Connective Tissue Disease and Antinuclear Antibodies*, eds. R. Kasukawa and G. C. Sharp (Amsterdam: Elsevier, 1987), 33–40.

15. T. Liu, G. Li, R. Mu, H. Ye, W. Li, and Z. Li, "Clinical and Laboratory Profiles of Rhupus Syndrome in a Chinese Population: A Single-Centre Study of 51 Patients," *Lupus* 23, no. 9 (2014): 958–963.

16. A. Lozada Navarro, D. Castillo Martínez, M. Moreno Ramírez, et al., "An Imbalance in the T-Helper Phenotypes Displayed by Senescent $CD4^+$ CD28null T Cells Is Associated With Erosive Arthritis (Rhupus Syndrome) in Systemic Lupus Erythematosus," *Lupus* 27, no. 13 (2018): 2155–2160.

17. N. W. Gormezano, C. A. Silva, N. E. Aikawa, et al., "Chronic Arthritis in Systemic Lupus Erythematosus: Distinct Features in 336 Paediatric and 1830 Adult Patients," *Clinical Rheumatology* 35 (2016): 227–231.

18. C. Tani, D. D'aniello, A. Delle Sedie, et al., "Rhupus Syndrome: Assessment of Its Prevalence and Its Clinical and Instrumental Characteristics in a Prospective Cohort of 103 SLE Patients," *Autoimmunity Reviews* 12, no. 4 (2013): 537–541.

19. J. Li, H. Wu, X. Huang, et al., "Clinical Analysis of 56 Patients With Rhupus Syndrome: Manifestations and Comparisons With Systemic Lupus Erythematosus: A Retrospective Case–Control Study," *Medicine* 93, no. 10 (2014): e49.

20. F. Danion, L. Sparsa, L. Arnaud, et al., "Long-Term Efficacy and Safety of Antitumour Necrosis Factor Alpha Treatment in Rhupus: An Open-Label Study of 15 Patients," *RMD Open* 3, no. 2 (2017): e000555.

21. M. Piga, A. Gabba, A. Cauli, P. Garau, A. Vacca, and A. Mathieu, "Rituximab Treatment for 'Rhupus Syndrome': Clinical and Power-Doppler Ultrasonographic Monitoring of Response. A Longitudinal Pilot Study," *Lupus* 22, no. 6 (2013): 624–628.

22. B.-B. Yang, H. Xiao, X.-J. Li, and M. Zheng, "Safety and Efficacy of Etanercept-Methotrexate Combination Therapy in Patients With Rhupus: An Observational Study of Non-glucocorticoid Treatment," *Discovery Medicine* 25, no. 135 (2018): 14–20.

23. D. Roccatello, S. Sciascia, D. Rossi, and R. Fenoglio, "Refractory Systemic Lupus Erythematosus: Identification and Pharmacological Management," *Drugs* 83, no. 2 (2023): 117–134, https://doi.org/10.1007/s40265-022-01824-x.

24. M. Pennesi and S. Benvenuto, "Lupus Nephritis in Children: Novel Perspectives," *Medicina (Kaunas, Lithuania)* 59, no. 10 (2023): 1841, https://doi.org/10.3390/medicina59101841.

25. A. C. P. Sagcal Gironella, A. Merritt, T. Mizuno, et al., "Efficacy and Safety of Pharmacokinetically-Driven Dosing of Mycophenolate Mofetil for the Treatment of Pediatric Proliferative Lupus Nephritis-A Double-Blind Placebo Controlled Clinical Trial (The Pediatric Lupus Nephritis Mycophenolate Mofetil Study)," *Journal of Clinical Trials* 14, no. 4 (2024): 563.

26. M. Osiri, B. Shea, V. Robinson, et al., "Leflunomide for the Treatment of Rheumatoid Arthritis: A Systematic Review and Metaanalysis," *Journal of Rheumatology* 30, no. 6 (2003): 1182–1190.

27. F. Conti, F. Ceccarelli, C. Perricone, et al., "The Chronic Damage in Systemic Lupus Erythematosus Is Driven by Flares, Glucocorticoids and Antiphospholipid Antibodies: Results From a Monocentric Cohort," *Lupus* 25, no. 7 (2016): 719–726, https://doi.org/10.1177/0961203315627199.

28. M. Icen, P. J. Nicola, H. Maradit Kremers, et al., "Systemic Lupus Erythematosus Features in Rheumatoid Arthritis and Their Effect on Overall Mortality," *Journal of Rheumatology* 36, no. 1 (2009): 50–57, https://doi.org/10.3899/jrheum.080091.

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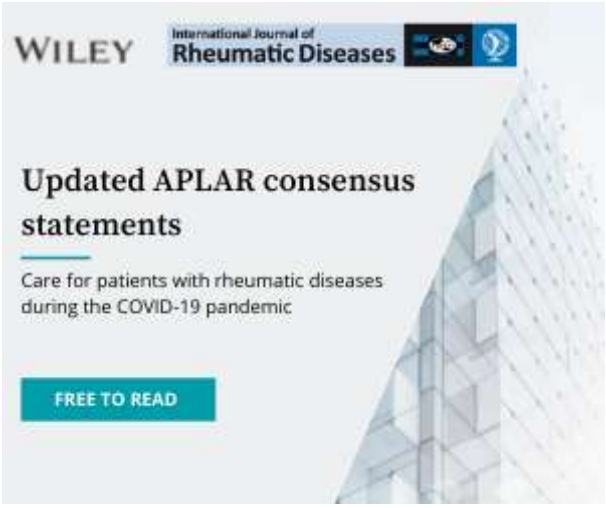
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