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Original Article

Juvenile lupus: Different clinical and serological presentations compared to adult lupus in Egypt

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ABSTRACT

Aim of the work: We aimed to evaluate the differences in clinical presentation, serological pattern and disease activity between juvenile and adult-onset of Egyptian systemic lupus erythematosus (SLE) patients. *Patients and methods*: 160 Egyptian SLE patients (80 Adult-onset and 80 juveniles) were included. Patients records were reviewed for clinical and laboratory evaluation on presentation. Disease activity at onset was assessed using SLE Disease Activity Index (SLEDAI). *Results*: The mean age of the adult patients was 29.9 ± 7.2 years and of the juvenile cases (12.8 ± 2.1 years). The female:male ratio of the adults was 10:1 while it was 39:1 in the SLE children. The most common clinical presentation among adult SLE was malar rash (75%) followed by articular manifestations (62.5%), while in juveniles, nephritis (78.8%) followed by articular manifestations (71.2%) were the most common. Juvenile patients had more frequent neuropsychiatric ($p = 0.015$) and hematologic abnormalities ($p < 0.001$) at onset; and lupus nephritis (72.5%) compared to adults (36.2%) ($p < 0.001$) during the first year of presentation. Juvenile SLE showed higher frequency of proteinuria ($p < 0.001$), hematuria ($p = 0.02$) and active urinary sediments ($p = 0.016$). Proliferative nephritis was the most common form among both juveniles and adults. Positivity and titres of both anticardiolipin antibodies and lupus anticoagulant were significantly higher in juvenile SLE. Juvenile SLE patients had significantly higher SLEDAI [median (IQR): 12 (10–22)] compared to adults [median (IQR): 8 (4–12)], $p < 0.001$. *Conclusion*: Juvenile SLE patients differ from adult SLE with more frequent major organs affection and significantly higher serological activity. Earlier and more careful assessment with strict management plan and follow-up are needed in juvenile SLE patients.

1. Introduction

Systemic lupus erythematosus (SLE) is a worldwide multisystem autoimmune disease of unknown etiology [1]. It usually affects adults as well as adolescences and affects women ten times as many as men. It is characterized by production of autoantibodies, which result in widespread immunological abnormalities and immune complex formation. Symptoms range from rather mild manifestations such as rash or arthritis to life threatening conditions [2].

Juvenile SLE is diagnosed as disease onset before either 16 or 18 year of age. Patients younger than 5 years are rarely affected and the age of onset may contribute to the course of disease in terms of clinical presentation, organ involvement, and serological findings [3].

Juvenile-onset SLE represents 15–20% of all SLE cases. While features of this complex chronic multisystem autoimmune disorder are highly variable, children and adolescents generally present with a more severe illness than adults and accrue greater disease damage over time [4]. A better recognition of the age specific manifestations and long term complications of the disease is needed to improve its outcome [5].

This study was performed to evaluate the differences in clinical presentation, serological pattern and disease activity on presentation between juvenile and adult-onset Egyptian SLE patients.

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2. Patients and methods

This study included 160 SLE patients diagnosed according to the Systemic Lupus International Collaborating Clinics (SLICC) classification criteria for SLE [6]. The medical records of the enrolled patients were retrospectively reviewed and analyzed for their presentation at disease onset; the renal biopsy findings were considered during the first year after onset and lupus nephritis (LN) during the disease course. They were 80 patients with adult onset (onset above the age of 18 years) and 80 patients with juvenile SLE (onset before the age of 18 years), enrolled from Adult and Pediatric Rheumatology Units of Ain Shams University Hospitals during the period from April 2014 to May 2015. Juvenile-onset SLE adults were excluded. The nature of the present study was explained to all participants. Informed consent was obtained from each adult patients and care giver of each Pediatric patient after explanation of the study to them. Study protocol gained approval of local ethical committee of Ain Shams University before being carried out.

All patients' records were examined for clinical and serological data at presentation. Patients initial rheumatological evaluation in terms of SLE Disease Activity Index (SLEDAI) [7] and laboratory investigations were recorded including: complete blood count, erythrocyte sedimentation rate (ESR), kidney and liver function tests, complete urine analysis, 24 h urinary proteins and corrected creatinine clearance. Antinuclear antibodies (ANA), anti-double stranded DNA (anti-ds-DNA) antibodies using immunofluorescence technique, anticardiolipin IgG (ACL IgG) and IgM (ACL IgM) antibodies, lupus anticoagulant (LAC) and serum complement C3 levels were detected. Data of histological assessment of renal biopsies (in 87 patients) were collected from their medical records. Histopathological classification of lupus nephritis (LN) was performed according to the revised classification of the International Society of Nephrology and the Renal Pathology Society [8].

2.1. Statistical analysis

Data were analyzed using Statistical Program for Social Science (SPSS) version 20.0. Quantitative data were expressed as mean ± standard deviation (SD). Qualitative data were expressed as frequency and percentage. Independent-samples *t*-test of significance was used when comparing between two means. Mann Whitney *U* test: for two-group comparisons in non-parametric data. Chi-square (X^2) test of significance was used in order to compare proportions between two qualitative parameters. A probability *p*-value < 0.05 was considered significant.

3. Results

The demographic features and clinical presentations in adult and juvenile SLE patients at disease onset are summarized in Table 1. The most common clinical presentation at disease onset among adult SLE was malar rash (75%) followed by articular manifestations (62.5%), photosensitivity (52.5%), nephritis (36.2%), and the least manifestation was myocarditis (1.3%), while in juvenile patients the most common was nephritis (72.5%) followed by articular manifestations (71.2%), malar rash (55.7%), photosensitivity (46.2%) and the least manifestation was pleural effusion (2.5%). Juvenile patients had significantly more frequent neuropsychiatric manifestations ($p = 0.015$) in the form of cerebrovascular disease (25%), seizures (50%), psychosis (75%) and lupus headache (50%). Juvenile patients also had more frequent LN on presentation ($p < 0.001$) and different hematological abnormalities while adult patients had significantly more frequent malar rash ($p = 0.01$). Cardiac affection in the form of myocarditis and/or pericardial effusion was comparable albeit, it was more frequent among the juveniles.

Table 1
Demographic features and clinical manifestations of adult and juvenile SLE patients on presentation.

Parameter Mean ± SD (range) or n (%)	SLE patients (n = 160)		
	Adults (n = 80)	Juveniles (n = 80)	*p*-value
Age (years)	29.9 ± 7.2 (19–49)	12.8 ± 2.1 (5–16)	**<0.0001**
Gender F:M	73:7 (10:1)	78:2 (39:1)	0.09
Clinical manifestations:			
Malar rash	60 (75)	44 (55.70)	**0.01**
Oral ulcer	32 (40)	27 (33.75)	0.41
Photosensitivity	42 (52.5)	37 (46.25)	0.43
Alopecia	27(33.75)	22 (27.5)	0.39
Polyarthralgia/arthritis	50 (62.5)	57 (71.25)	0.24
Fever	10 (12.5)	8 (10)	0.62
Serositis	6 (7.59)	10 (12.5)	0.30
Pleural effusion	4 (5)	2 (2.5)	0.41
Pericardial effusion	4 (5)	8 (10)	0.23
Myocarditis	1 (1.3)	3 (3.8)	0.62
Neuropsychiatric	6 (7.5)	18 (22.5)	**0.015**
Nephritis	29 (36.2)	58 (72.5)	**<0.0001**
Vasculitis	8 (10)	14 (17.5)	0.17
Raynaud's phenomena	5 (6.3)	6 (7.5)	0.76
Hematological			
Leucopenia	15 (18.75)	26 (32.5)	**0.046**
Neutropenia	25 (31.25)	59 (73.75)	**<0.001**
Lymphopenia	6 (7.5)	29 (36.25)	**<0.001**
Anemia	48 (60)	67 (83.75)	**<0.001**
Thrombocytopenia	6 (7.5)	30 (37.5)	**<0.001**

SLE: systemic lupus erythematosus. Bold values are significant at p < 0.05.

Renal biopsies were done in 87 patients (29 adults and 58 juveniles) with significantly higher frequency of LN among juvenile SLE patients compared to adults (72.5% versus 36.2%) *during the first year of presentation* ($p < 0.0001$). The frequency of LN along the disease course in the juvenile patients was 78.8% (n = 63) over a disease duration mean ± SD: 1.84 ± 1.7 years, versus 52.5% (n = 42) in adults over a disease duration mean ± SD: 2.96 ± 2.46 years. The relative frequency of different histological classes of LN was comparable among adult and juvenile patients. Proliferative LN (class III/IV) was the most common histological form of LN in both adult and juvenile SLE patients (72.4% and 57% respectively, $p = 0.17$). Classes II and V tended to be more frequent among juvenile patients with LN (31% and 12%) versus 20.6% and 7% in adults, respectively ($p = 0.31$, $p = 0.47$).

The results of urine analysis, laboratory investigations and autoantibodies of SLE patients at diagnosis are summarized in Table 2. Hematuria, proteinuria, urinary cast and pyuria were more frequent and 24 hours' urine proteinuria (corrected per m^2 surface area) was higher in juvenile than adult SLE patients at disease onset. C3 and C4 consumptions and positive anti-ds-DNA antibodies were significantly more frequent in juvenile than adult patients. Positivity and measures of both ACL antibodies and LAC were significantly higher in juvenile SLE than adult (28% vs 14% and 24% vs 11% respectively).

Juvenile SLE patients had significantly higher SLEDAI at diagnosis [median (IQR): 12 (10–22); range: 6–32] compared to adult patients [median (IQR): 8 (4–12); range 4–28], ($p < 0.001$).

4. Discussion

Approximately 15–20% of SLE patients have disease onset before adulthood [9]. Clinical presentations, serological characteristics and the applied immunosuppressive treatment may differ from the adult onset form. Juvenile SLE patients have tendency to more aggressive presentation with higher frequencies of organ involvement and lower life expectancy than adult-onset SLE patients [10]. Incidence and prevalence of the juvenile form of SLE are affected by geographic and ethnic factors [11].

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