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Outcome of Early Onset Systemic Lupus Erythmatosus – A Tertiary Care Study

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ABSTRACT

Objective: To evaluate the outcome of early onset systemic lupus erythematosus at tertiary care centre.
Study Design: A cross sectional study.
Place and Duration of Study: Combined Military Hospital, Kharian Pakistan, from Feb 2021 to Jan 2024.
Methodology: Total 77 female patients both indoor and outdoor were included. Patients <16 years (juvenile onset) and >50 years (late onset lupus) were excluded. Clinical manifestations as fever, arthralgia, mucocutaneous lesions, malar rash, neuropsychiatric illness, and anaemias were observed on initial presentation. Outcome has been finalised by SPSS version 22. *p*-value of 0.05 or less was significant.
Results: Total 77 individuals, all were women (100%), including 64(83.1%) housewives, and 13(16.9%) working ladies. Mean age of patients was 31.86%(±7.9 SD) between 18 to 48 years. Photosensitivity is observed in 64(83.1%) patients. Complications have been noticed in 46(59.8%) patients. 4(5.2 %) died of lupus nephritis. Flare of lupus seen in 24(31.2%) patients. Lupus cerebritis in 11(14.3%), pericarditis in 7(9.1%), and haemolytic anaemia in 4(5.2%) patients. 31(40.2%) patients went in remission.
Conclusion: Early onset Systemic lupus Erythematosus has an aggressive clinical course. A substantial improvement in management, may help to improve the outcome and delay life-threatening complications.

Keywords: Arthralgia, Early, lupus, Onset, Outcome.

How to Cite This Article: *Rafique I, Jamal Y, Saif M, Rafeeq N, Ikram S, Zaman A. Outcome of Early Onset Systemic Lupus Erythmatosus – A Tertiary Care Study. Pak Armed Forces Med J 2025; 75(Suppl-2): S169-S172. DOI: https://doi.org/10.51253/pafmj.v75iSUPPL-2.12343*

INTRODUCTION

SLE, a chronic multisystem disorder, in which autoantibodies are formed against autoantigen (ANA). It predominantly affecting women between 16-55 years of age and has wide range of clinical and laboratory manifestations encompassing all organs and tissues.[1] Clinical course varies greatly from indolent to fulminant. Estimated highest prevalence of early onset SLE reported in North America is 21.2 in 100,000 individuals annually, and lowest prevalence reported in Africa 0.3/ 100,00 annually.[2] Among Asians, the estimated incidence is around 20-40% in 100,000 individuals annually.[3] Females to male ratio is 9:1 worldwide.[4] Early onset SLE (16-25 years) is the most commonly involved up to 66%, followed by juvenile onset SLE (<16 years) up to 20%, and late onset SLE (>55 years) were calculated up to 15%.[5]

The progression of disease is fulminant in early age group, the maximum duration is 3 years in Asians, however it is between 5-6 years in late onset SLE.[6] The outcome of disease course is diverse in early onset, varies from lupus nephritis, neurological and cutaneous manifestations subsequently.[7]

Despite advances over decades, morbidity and mortality risks persists and remains a challenge in SLE.[8] Long term complications have been contributed by disease flares, remissions and relapses. Moreover, chronic use of glucocorticoid, deteriorates quality of life, and general wellbeing.[9] In this article we will discuss a comprehensive review of the main outcome of early onset SLE, as this unique study has never been so far conducted in Pakistan.

METHODOLOGY

This single centre prospective cross-sectional study was conducted in Department of Medicine, at Combined Military Hospital, Kharian Pakistan, from February 2021 to January 2024. Ethical approval was obtained from the ethical committee of the institute (Institutional Review board - IRB no. 21). Signed informed consent was also obtained from all study participants. Proper confidentiality was ensured.

Inclusion Criteria: All indoor and outdoor patients aged between 16 – 50 years both males and females presented with fever of > 2 weeks duration associated with arthralgias, mucocutaneous lesions, oral ulcers, malar rash, photosensitivity, neuropsychiatric illness, and haemolytic anaemias were included in the study.

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Received: 11 Jun 2024; revision received: 04 Mar 2025; accepted: 13 Mar 2025

Patients with positive serology of Antinuclear antibodies ANA or anti double stranded DNA were also included.

Exclusion Criteria: Patients aged <16 years (juvenile onset) and >50 years (late onset lupus) were excluded from study.

The patients underwent a survey by an analytical proforma which focused on presenting features of early onset systemic lupus erythematosus, their laboratory parameters and treatment options. The sample size has been calculated as 77 by using WHO sample size calculator with 95% confidence interval.[10] Sampling was non-probability consecutive sampling. SPSS version 22 was accounted for data analysis. Continuous variables were measured by mean and standard deviation, whereas, categorical variables were estimated for frequencies and percentages. Data analysis was performed by applying chi square test. A *p*-value of 0.05 or less was obtained as statistically significant.

RESULTS

Total 77 individuals, all were women (100%), 64(83.1%) were housewives, and 13(16.9%) were working ladies. Estimated mean age was 31.86% (±7.95D) between 18-48 years. Estimated mean time to establish the diagnosis was 2.34±1.13 years. We can appreciate the percentage of initial clinical manifestations of the disease, displayed on Y axis (Figure-1). Photosensitivity has been frequently observed in 64(83.1%) patients. Serology of Antinuclear antibodies ANA was positive in 66(85.7%) patients, with homogenous pattern observed in 44(57.1%) and speckled pattern in 33(42.9%).

Complications have been noticed in 46(59.8%) patients displayed individually (Figure-2). 4(5.2%) out of them died (Figure-2). They suffered from lupus nephritis flare, seen in 24(31.2%) patients, lupus cerebritis in 11(14.3%), pericarditis with pericardial effusion in 7(9.1%) (Figure-3), and haemolytic anaemia in 4(5.2%) patients. 31(40.2%) went into remission. Distribution of early onset SLE with and without complications are shown in chi square (Table). One of the deceased patients was a case of primary infertility, and the other was a lady of 32 years delivered an early preterm baby girl at 33+ weeks. Both of them suffered from end stage renal disease. They underwent haemodialysis followed by cyclophosphamide intravenous pulse therapy. Unfortunately, due to severe sepsis and multiorgan dysfunction patients could not survived.

Table-I: Data of Early Onset SLE with and Without Complications

Parameters	Group A (Early onset SLE with complications)	Group B (Early onset SLE without complications)	*p*-value
Category I OUTCOME (Remission)	54.6%	45.4%	<0. 05
(Deaths)	5.2%	Nil	<0.05
Category II Systemic Manifestation	59.8 %	40.2%	
Dermatological	16.9%	83.1%	<0.05

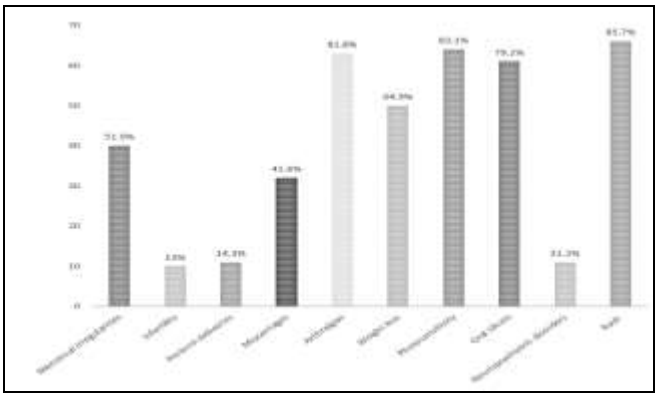

Figure-1: Percentage Displayed on Y Axis Representing the Initial Clinical Manifestation in Early Onset SLE

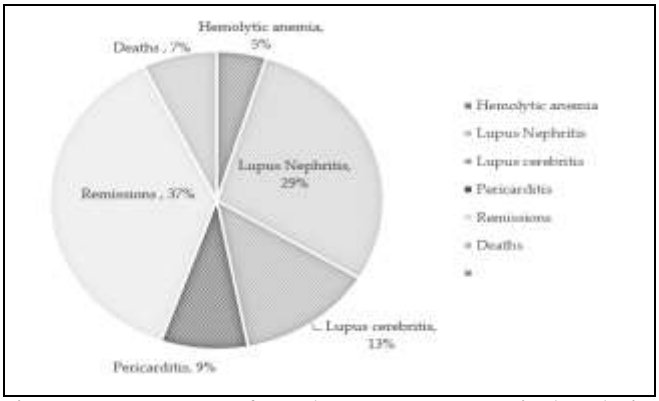

Figure-2: Outcome of Early Onset SLE Displayed in Percentage

DISCUSSION

Early onset SLE is an autoimmune multisystem disorder of unidentified aetiology. Renal, neuropsychiatric illness, cardiological and haematological manifestations results in massive morbidity and catastrophic outcome.[11] Genetic predisposition of the illness can predict up to 10% of the worst outcome of disease.[12] Monogenic lupus

develops due to highly penetrant rare single mutant gene; the remaining cases carries wide genomic variation over >100 susceptibility loci associated with SLE.[13] Asian women among 20-30 years are mostly affected. Neurological and lupus nephritis accounts for 60% of the adverse outcome, may be complicated by bacterial infection.[14]

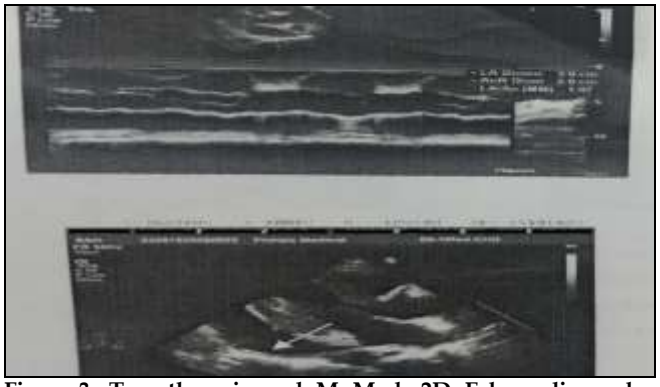

Figure-3: Transthoracic and M Mode-2D Echocardiography Showing Massive Pericardial Effusion

According to World Health Organization (WHO) and International Society of Nephrology (ISN), lupus nephritis has been classified in six histologically different classes. Renal biopsy with immuno-fluorescence on electron microscopy revealed immune complex deposits on glomerular basement membrane.[15] Class III–VI are associated with the advanced risk of long-term damage, that may lead to haemodialysis or renal transplantation.[16]

Lupus cerebritis have been seen in 30-40% patients. The wide range of symptoms have been reported as headache, anxiety, seizures or unexplained psychosis. In our study seizures were the most common presentation. Neuropsychiatric illness has been usually seen in first year of life and pose a great diagnostic challenge.[17] Arterial thromboembolic events in association with antiphospholipid antibodies detected in up to 30-40 % patients of SLE may lead to stoke or seizures.[18] These patients have 1.5–3 fold higher risk of stroke than matched population. They receive intravenous glucocorticoid pulse therapy followed by immunosuppressives or anti TNF alpha (rituximab) in refractory cases. Studies have shown good long-term recovery.[19]

Pericarditis is the most common form of cardiac involvement, occurs in around 19 to 48% of cases. Substernal chest pain with pericardial rub typically presents with change in position is the hallmark of pericarditis. Serositis may presents in pleural, peritoneal or synovial cavities as well, however tamponade is rare. Incidence of pericarditis varies from 11-54%.[20]

Haemolytic anaemias are commonly observed and range from mild to moderate cases. Anti TNF alpha (biological therapy) generated new approach to manage critical cases, however clinical trials are still on way.[21] Haematological involvement typically presents during the first years of the illness and persists over time; in many cases it may be the early clinical presentation.[22] Immune thrombocytopenia, that can be either primary or secondary may be associated with infections, medications, neoplasms, or autoimmune diseases. Hepatosplenomegaly, lymphadenopathy and pancytopenia are the prominent features of high disease activity.[23] Early onset SLE has the most devastating course of illness, that need prompt diagnosis and early management.

CONCLUSION

Early onset Systemic lupus Erythematosus has an aggressive clinical course. Therefore, a substantial improvement in diagnosis and management, may help to improve the long-term outcome and delay life-threatening complications. Ongoing research on novel medicines, as well as re-consideration of older clinically proven drugs will enhance the outcome of disease.

Conflict of Interest: None.

Funding Source: None.

Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

IR & YJ: Data acquisition, data analysis, critical review, approval of the final version to be published.

MS & NR: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

SI & AZ: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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