RESEARCH PAPER

Clinical Outcomes and Safety of Mycophenolate Mofetil in Patients with Lupus Nephritis: A Cross-Sectional Study

Nermin Mohamed Sadek[1], Ayman F. Refaie[1], Manar Elsayed Elkady[1], Ahmed Yahia Elmowafy[1], Sameh Saber[2], Ghada El Kannishy[3], Mohammed Kamal Nassar[3]

[1] Urology and Nephrology Centre, Mansoura University, Mansoura, Egypt.

[2] Department of Pharmacology, Faculty of Pharmacy, Delta University, Gamasa, Egypt.

[3] Department of Internal Medicine, Nephrology Unit, Mansoura University, Mansoura, Egypt.

Corresponding author: Nermin Mohamed Sadek

ABSTRACT

Background:

Lupus nephritis (LN) is a severe manifestation of systemic lupus erythematosus (SLE) associated with significant morbidity and risk of renal failure. Mycophenolate mofetil (MMF) is widely used as a maintenance therapy; however, real-world data on its effectiveness and safety remain essential for optimizing patient outcomes.

Objective:

To evaluate the clinical outcomes, remission rates, and safety profile of MMF in adult patients with biopsy-proven lupus nephritis.

Methods:

This cross-sectional study included 100 adult LN patients attending the Mansoura Urology and Nephrology Center between July 2024 and July 2025. All patients had class III or IV LN and received MMF-based therapy. Clinical, laboratory, and histopathological data were collected. Patients were categorized into complete remission, partial remission, or relapse based on standard criteria.

Results:

The mean age was 37.66 ± 9.50 years, with a predominance of females (93%). Hypertension was present in 65% of patients, and 54% had prior acute kidney injury. Class IV LN was the most frequent histopathological subtype (70%). At assessment, 40% achieved complete remission, 30% partial remission, and 30% experienced relapse. Proteinuria significantly improved from a median of 3.7 g/day at presentation to 0.75 g/day at follow-up, with stable renal function. MMF was well tolerated, with 80% of patients reporting no adverse events; serious infections occurred in 12%.

Conclusions:

MMF demonstrates favorable efficacy and safety in the management of lupus nephritis, with substantial remission rates and acceptable adverse effects. Continuous monitoring is essential to manage relapses and complications.

Keywords: Lupus nephritis; Mycophenolate mofetil; Remission; Systemic lupus erythematosus; Proteinuria; Immunosuppressive therapy

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INTRODUCTION

Lupus nephritis (LN) is one of the most severe manifestations of systemic lupus erythematosus (SLE), contributing significantly to morbidity, mortality, and long-term renal impairment **(1)**. Renal involvement occurs in a substantial proportion of SLE patients, with proliferative forms such as Class III and Class IV LN being particularly aggressive and associated with poor renal outcomes. The clinical spectrum of LN is highly variable, ranging from asymptomatic urinary abnormalities to rapidly progressive renal failure, necessitating early diagnosis and prompt therapeutic intervention. Advances in immunosuppressive therapy have improved patient outcomes; however, disease heterogeneity and variability in treatment response continue to pose major clinical challenges **(2)**.

Current management strategies for LN rely on immunosuppressive agents such as mycophenolate mofetil

and cyclophosphamide, often combined with corticosteroids and adjunctive therapies. While these treatments have demonstrated effectiveness in inducing remission, achieving sustained disease control remains difficult in a considerable proportion of patients **(3)**. Relapse, treatment-related adverse effects, and the presence of comorbid conditions further complicate disease management. Additionally, the variability in patient characteristics, disease activity, and histopathological patterns contributes to differences in treatment response and long-term prognosis **(4)**.

Despite progress in understanding LN, a significant gap persists in the availability of comprehensive real-world data that integrates multiple aspects of the disease within a single framework **(5)**. Many investigations tend to focus on isolated components such as treatment efficacy or disease activity, without fully addressing the combined influence of sociodemographic factors, comorbidities, clinical presentation, and histopathological features on patient outcomes. Furthermore, variations in regional patient profiles and clinical practices are often underrepresented, limiting the applicability of existing evidence to diverse populations **(6,7)**.

In this context, our study provides a novel contribution by offering a comprehensive evaluation of lupus nephritis through the integration of demographic, clinical, laboratory, and histopathological data alongside treatment outcomes. By analyzing remission, relapse, and adverse events within a single cohort, our study presents a holistic perspective on disease behavior in routine clinical practice. This approach allows for a better understanding of how different patient- and disease-related factors interact to influence therapeutic outcomes.

Therefore, the rationale for conducting this study was to address these gaps by generating real-world evidence that reflects the complexity and heterogeneity of lupus nephritis. The aim of our study was to evaluate the sociodemographic characteristics, comorbidities, clinical presentation, disease activity, histopathological findings, and treatment outcomes of patients with lupus nephritis, in order to provide a comprehensive understanding of disease patterns and inform more effective and individualized management strategies.

PATIENTS AND METHODS

After obtaining ethical committee approval and written informed consent from all participants, this cross-sectional study was conducted on a total of 100 adult patients diagnosed with lupus nephritis who were under regular follow-up at the outpatient clinic of Mansoura Urology and Nephrology Center, Mansoura University. The study was carried out over a period extending from July 1, 2024 to July 1, 2025. All procedures were performed in accordance with the ethical standards of the institutional research committee and the Declaration of Helsinki.

Inclusion and Exclusion Criteria

Patients were included if they were above 18 years of age, had a biopsy-proven diagnosis of lupus nephritis class III or IV, and were maintained on mycophenolate mofetil therapy for at least six months. Patients were excluded if they were receiving biological therapy, using mycophenolate mofetil for conditions other than systemic lupus erythematosus, or declined to participate in the study.

Study Population and Classification

The study included 100 Egyptian adult patients who received a standard oral dose of 2 g/day of mycophenolate mofetil. Patients were categorized based on their clinical and laboratory response into complete remission, partial remission, and relapsers or non-responders. Complete remission was defined as proteinuria less than 0.5 g/day with stable renal function, while partial remission required a reduction of proteinuria by at least 50% to less than 1 g/day. Relapse or non-response was defined by worsening proteinuria, decline in renal function, or failure to achieve remission within the expected period. Patients were further classified according to the occurrence of clinically significant infections requiring hospitalization.

Study Procedures

All participants were subjected to comprehensive evaluation including detailed history taking, clinical examination, and laboratory investigations.

History Taking and Clinical Examination:

A detailed history was obtained including demographic data (age and sex), medical history (hypertension, diabetes, cardiac and liver diseases), and disease-related data such as duration of systemic lupus erythematosus, lupus nephritis duration, presenting symptoms, and previous episodes of acute kidney injury. Family history of similar conditions was also recorded. A thorough clinical examination was performed, and disease activity was assessed using the Systemic Lupus Erythematosus Disease Activity Index score.

Laboratory Investigations:

Laboratory evaluation included serum creatinine, electrolytes, albumin, cholesterol, and 24-hour urinary protein measurement. Immunological markers such as anti–double-stranded DNA antibodies, complement component 3, and complement component 4 were

assessed. Complete blood count was performed using automated hematology analyzers. Urinalysis was conducted using standardized automated systems, and all biochemical tests were performed using validated clinical chemistry analyzers.

Histopathological evaluation:

Kidney biopsies were evaluated for light microscopy, immunofluorescence, and electron microscopy whenever required. LN histopathological findings were classified according to the revised ISN/RPS LN classification of 2018. All biopsies were regarded as either Class III or Class IV LN. The activity and chronicity indices of National Institutes of Health (NIH) were used to determine the severity of histological changes

Sample Size Justification

The sample size of this study was determined based on feasibility and the availability of eligible patients attending the outpatient clinic during the study period. A total of 100 adult patients with biopsy-proven lupus nephritis were included, which exceeded the minimum required sample size calculated using the G*Power program. Assuming a significance level (α) of 0.05 and a study power of 80%, the minimum estimated sample size was 40 patients. Therefore, the inclusion of 100 patients provided adequate statistical power to detect clinically significant differences between study groups and improved the reliability and generalizability of the findings.

Ethical Approval and Regulatory Compliance:

The study protocol was reviewed and approved by the Institutional Review Board (IRB) of the Faculty of Medicine, Mansoura University **(Approval No. MD.24.07.868-04/072024).** This ensures that the research met institutional, national, and international ethical standards, including compliance with the Declaration of Helsinki (1964), which governs research involving human participants.

Statistical Analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 27 (IBM Corp., Chicago, IL, USA). Quantitative data were expressed as mean ± standard deviation for normally distributed variables, while non-normally distributed data were presented as median and interquartile range. Qualitative data were expressed as numbers and percentages.

Data were tested for normality using the Kolmogorov–Smirnov and Shapiro–Wilk tests. For comparison between more than two groups, one-way analysis of variance (ANOVA) was used for parametric data, followed by post hoc Tukey test for multiple comparisons. Non-parametric data were analyzed using the Kruskal–Wallis test.

Comparisons between categorical variables were performed using the Chi-square test or Fisher's exact test when appropriate. Correlation analysis was conducted using Spearman's rank correlation coefficient for non-parametric data.

A p-value of less than 0.05 was considered statistically significant, while a p-value of less than 0.001 was considered highly significant. The confidence interval was set at 95%, with a margin of error of 5%.

RESULTS

The results of the present study are demonstrated in the following tables.

Table 1: Sociodemographic Characteristics

This table shows that the study population had a mean age of 37.66 ± 9.50 years, with a clear female predominance (93% females vs 7% males). The mean BMI was 26.70 ± 4.85 kg/m², indicating that most patients were overweight. The majority lived in rural areas (83%) and were married (78%). A positive family history of systemic disease was present in 13% of patients, with a median of 1 offspring and 0 abortions.

Table 2: Laboratory and Histopathological Findings

At presentation, renal involvement was evident with median serum creatinine of 0.8 mg/dL (0.6–2.9) and median proteinuria of 3.7 g/day (1.7–5). Histopathology revealed predominance of Class IV lupus nephritis (70%), followed by Class III (30%). The activity index was relatively high with a median of 8 (6–10), while chronicity index was lower at 2 (0–3).

Table 3: Immunosuppressive Treatment

Most patients received induction therapy with mycophenolate mofetil (80%), while 20% received cyclophosphamide. Pulse steroids were administered to 32% of patients. All patients were maintained on corticosteroids and hydroxychloroquine (100%), with a median steroid dose of 10 mg/day (10–20). Additional therapies such as methotrexate and plasmapheresis were rarely used (2% and 3%, respectively).

Table 4: Follow-Up Outcomes

At follow-up, patients showed clinical improvement with median serum creatinine of 0.95 mg/dL (0.80–2.2) and reduced proteinuria to 0.75 g/day (0.30–2.23). Serum albumin was 3.80 ± 0.40 g/dL, and

hemoglobin was 12.15 ± 1.92 g/dL, reflecting improved clinical status. However, immunological activity persisted in some patients, with 36% showing C3 consumption, 23% C4 consumption, and 28% positive anti-dsDNA, indicating ongoing disease activity in a subset of patients.

Table 1. Sociodemographic characteristics of the included patients

Demographics	**Study patients** (n= 100)
Age (years) Mean ± SD	37.66 ± 9.50
Sex No. (%) - Male - Female	 7 (7%) 93 (93%)
Weight (kg) Mean ± SD	70.54 ± 11.47
BMI (Kg/m^2) Mean ± SD	26.70 ± 4.85
Residency No. (%) - Rural - Urban	 83 (83%) 17 (17%)
Marital status No. (%) - Single - Married	 22 (22%) 78 (78%)
Family history of renal disease and SLE	13 (13%)
Number of offsprings Median (IQRs)	1 (0, 2)
Number of abortions Median (IQRs)	0 (0, 3)

BMI: Body mass index; SLE: Systemic lupus erythematosus. Descriptive analysis: Categorical data are expressed in number and percent. Normally distributed data are expressed in Mean ± SD. Non-parametric data are expressed in Median and interquartile ranges.

About 65% of patients were hypertensives, 54% of patients previously experienced AKI episodes, 13% were diabetics and 2% had cardiac diseases ***(Figure 1)***.

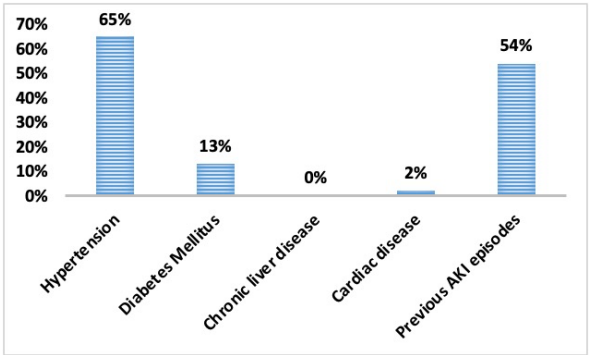

Figure 1. Frequency of associated comorbidities among the included patients.

The mean duration of SLE was 30.50 ± 3.95months. The most presenting symptom was renal involvement in 74% of the patients ***(Figure 2)***, Other symptoms were less common. The SLEDAI score ranged from 4–10 with median 8 ***(Figure 3).***

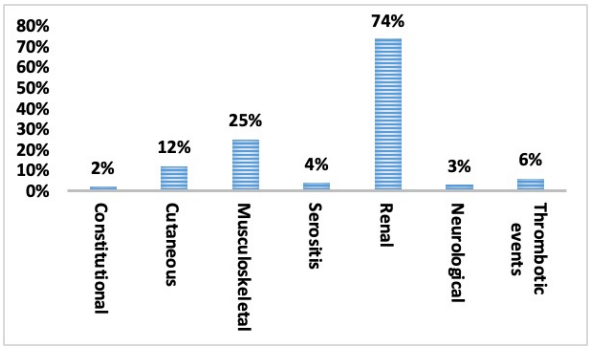

Figure 2. Systemic lupus clinical presenting symptoms.

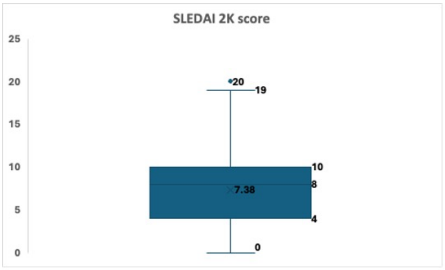

Figure 3. SLEDAI 2K score of the included patients.

Table 2. Laboratory findings at presentation and renal histopathological results

Laboratory and histopathology data	**Study patients** (n= 100)
S. creatinine at presentation (mg/dL) Median IQRs	0.8 (0.6, 2.9)
24- hour urinary protein at presentation (g/day)	3.7 (1.7, 5)
Lupus nephritis Class No. (%) - Class III - Class IV	 30(30%) 70(70%)
Activity index Median (IQRs)	8(6, 10)
Chronicity index Median (IQRs)	2 (0, 3)

Table 3. Immunosuppressive medications of the included patients

Received treatment	**Study patients** (n=100)
Induction therapy No. (%) - Cyclophosphamide - MMF	 20 (20%) 80 (80%)
Pulse steroid No. (%)	32 (32%)
Adjuvant therapy No. (%) - Hydroxychloroquine - Methotrexate - Plasmapheresis	 100 (100%) 2 (2%) 3 (3%)
Current steroid dose (mg/day) Median IQRs	10 (10, 20)

MMF: Mycophenolate mofetil.

At time of assessment, 40% of patients were in complete remission, 30% in partial remission, and 30% were in relapse **(Figure 4)**.

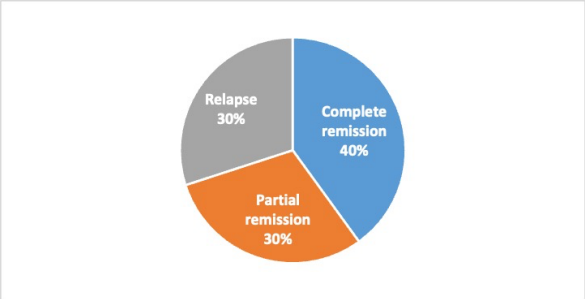

Figure 4. Current status of the included patients

About 80% of patients did not experience any adverse events related to MPA. Among the patients who experienced adverse events, the most common complication was serious infection necessitating hospitalization, which was seen in 12% of patients. Haematological abnormalities were noted in 5% of patients, while gastrointestinal symptoms were the least common, reported in 3% of patients.

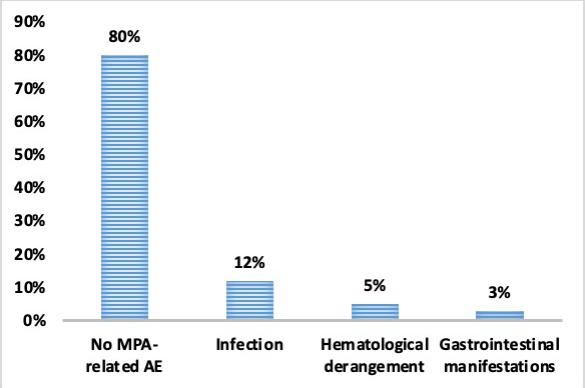

Figure 5. MPA- related adverse events of the included patients.

Table 4. Outcome of the included patients at last follow up

Follow up data	Study patients (n= 100)
Follow up duration (months) Mean ± SD	14.7 ± 1.97
24- hour urinary protein (g/dL) Median IQRs	0.75 (0.30, 2.23)
Serum creatinine (mg/dL) Median (IQRs)	0.95 (0.80, 2.2)
Serum Cholesterol (mg/dL) Median (IQRs)	180 (137, 218)
Serum albumin (mg/dL) Mean ± SD	3.80 ± 0.40
Hemoglobin (g/dL) Mean ± SD	12.15 ± 1.92
Total leucocytic count (*10^3/mm^3) Mean ± SD	8.23 ± 3.77
Platelets (*10^3/mm^3) Mean ± SD	279.95 ± 82.60
C3 Consumed (%)	36 (36%)
C4 Consumed (%)	23 (23%)
Positive anti *ds*DNA No. (%)	28(28%)

Anti dsDNA: anti-double-stranded DNA (antibody), C3: Complement component 3, C4: Complement component 4.

DISCUSSION

Despite advances in immunosuppressive therapies in Lupus nephritis, including mycophenolate mofetil (MMF) and cyclophosphamide, variability in patient response, disease severity, and long-term outcomes continues to present major clinical challenges **(8)**. Several recent studies have provided valuable insights into treatment efficacy, safety, and disease control. However, these studies predominantly focus on specific aspects such as treatment comparisons, pharmacological efficacy, or long-term maintenance strategies, often within controlled or ethnically specific populations **(9)**.

Accordingly, the aim of our study was to evaluate the clinical characteristics, disease activity, histopathological patterns, and treatment outcomes of patients with lupus nephritis, and to compare these findings with existing literature to better understand real-world variations in disease presentation and management. This approach seeks to bridge existing knowledge gaps and contribute to optimizing individualized treatment strategies in lupus nephritis.

Regarding Sociodemographic Characteristics, our study demonstrated that lupus nephritis predominantly affected young adult females, with a mean age of 37.66 ± 9.50 years and a striking female predominance of 93%. This pattern is highly consistent with global epidemiological data. **Zhang et al. (10)** reported a comparable mean age of 35.0 years and 83.6% female patients, confirming that LN primarily affects women in their reproductive years. Similarly, **Chakravarty et al. (11)** observed a slightly older cohort with a mean age of 42 ± 12.7 years, but still with a high female predominance of 84%, reinforcing the chronic autoimmune nature of SLE across age groups. In the Japanese cohort studied by **Takeuchi et al. (12)**, although exact percentages varied, female predominance remained a defining feature of LN populations. The consistency across these studies suggests that our study population is representative; however, the slightly higher female proportion in our study (93%) may reflect regional or sociocultural healthcare access patterns.

Regarding Comorbidities Profile, our study revealed a high burden of comorbidities, with 65% of patients being hypertensive, 54% having a history of acute kidney injury, and 13% diagnosed with diabetes mellitus. These findings underscore the complexity of LN management, as such comorbidities can significantly influence renal outcomes and therapeutic responses. While **Zhang et al. (10)** primarily focused on treatment outcomes, their cohort demonstrated significant renal impairment markers, including elevated proteinuria and serum creatinine, indirectly reflecting similar comorbidity burdens. **Takeuchi et al. (12)** highlighted that renal dysfunction and associated clinical factors play a critical role in determining treatment safety and effectiveness,

particularly in real-world settings. Furthermore, **Chakravarty et al. (11)** emphasized the impact of long-term immunosuppression, reporting infection rates of up to 64% in patients maintained on MMF, illustrating how comorbidities and therapy-related risks intersect. Compared to these studies, our cohort appears to have a relatively higher prevalence of hypertension and prior AKI, which may contribute to disease severity and influence remission rates.

Regarding Clinical Presentation and Disease Activity, in our study, renal involvement was the most common clinical presentation, observed in 74% of patients, with a mean SLE duration of 30.50 ± 3.95 months and a median SLEDAI score of **8**, indicating moderate disease activity. In contrast, **Zhang et al. (10)** reported a markedly higher disease activity, with a mean SLEDAI score of **17.8 ± 5.9**, reflecting a cohort with more severe and active disease at baseline. On the other hand, **Chakravarty et al. (11)** studied patients with quiescent disease (SLEDAI <4), representing the opposite end of the disease spectrum. Meanwhile, **Takeuchi et al. (12)** reported variable disease duration, with induction group patients having a mean duration of 49.1 ± 87.8 months, indicating heterogeneity in disease chronicity. These comparisons suggest that our study population lies within an intermediate disease activity range, bridging the gap between highly active and well-controlled LN populations.

Regarding Lupus Nephritis Characteristics, our study identified Class IV lupus nephritis as the predominant histopathological subtype (70%), followed by Class III (30%), with a median proteinuria of 3.7 g/day and median serum creatinine of 0.80 mg/dL . These findings are consistent with the literature, as proliferative LN (Classes III and IV) is widely recognized as the most severe and common form. **Takeuchi et al. (12)** similarly reported Class IV LN as the most frequent subtype in both induction and maintenance groups. **Zhang et al. (10)** included patients with Class III–V LN and reported significant proteinuria and renal impairment, reinforcing the predominance of severe histological classes. Furthermore, **Lee et al. (13)** emphasized that proliferative LN requires aggressive immunosuppressive therapy due to its association with poor renal outcomes. Compared to these studies, our patients exhibited relatively preserved renal function (median creatinine 0.80 mg/dL), which may indicate earlier detection or effective initial management despite significant proteinuria.

Regarding Treatment Modalities, our study demonstrated that 80% of patients received mycophenolate mofetil (MMF) as induction therapy, while 20% received cyclophosphamide, with 32% receiving pulse methylprednisolone, and all patients maintained on corticosteroids and hydroxychloroquine . These findings align closely with current treatment guidelines and real-world practices. **Zhang et al. (10)** showed that MMF achieved higher total renal remission rates compared to cyclophosphamide (79.4% vs. 63.8% at 6 months, p = 0.026) and higher complete remission at 12 months (72.8% vs. 57.6%, p = 0.049), supporting the preferential use of MMF. Similarly, **Takeuchi et al. (12)** reported combined complete and partial remission rates of 64.36% in the induction group, confirming the effectiveness of MMF in real-world settings. **Lee et al. (13)** further expanded treatment options, demonstrating that calcineurin inhibitors such as tacrolimus may offer superior response rates compared to MMF and cyclophosphamide in certain LN subtypes. Additionally, **Chakravarty et al. (11)** highlighted the importance of maintenance therapy, showing that discontinuation of MMF increased disease reactivation risk (18% vs. 10.2%). In our study, remission outcomes included 40% complete remission, 30% partial remission, and 30% relapse, which are generally comparable to published data but indicate a slightly higher relapse rate, possibly due to comorbidity burden or disease severity

Clinical Implications

Our study provides important clinical insights into the real-world management of lupus nephritis. The high prevalence of hypertension (65%) and prior acute kidney injury (54%) highlights the need for early identification and aggressive management of comorbid conditions, as these factors may adversely affect renal outcomes and treatment response. The predominance of Class IV lupus nephritis (70%) and substantial proteinuria (median 3.7 g/day) emphasize the importance of early renal biopsy and prompt initiation of immunosuppressive therapy. The widespread use of mycophenolate mofetil (MMF) (80%) in our cohort, with favorable remission outcomes (40% complete remission and 30% partial remission), supports its role as a first-line agent in routine clinical practice. However, the observed relapse rate (30%) indicates that sustained disease control remains challenging, underscoring the need for close monitoring, individualized treatment adjustments, and optimization of maintenance therapy. Additionally, the occurrence of serious infections (12%) reinforces the importance of balancing immunosuppression efficacy with safety considerations.

Strength Points

Our study has several notable strengths. First, it provides a comprehensive evaluation of lupus nephritis by integrating sociodemographic characteristics, comorbidities, clinical presentation, disease activity indices, histopathological findings, and treatment outcomes within a single cohort. This holistic approach allows for a more accurate reflection of real-world clinical practice compared to studies focusing on isolated aspects. Second, the inclusion of detailed quantitative data, such as SLEDAI scores (median 8), proteinuria levels, and histopathological indices (activity index median 8, chronicity index median 2), enhances the robustness of the analysis. Third, the study reflects actual treatment patterns, particularly the predominant use of MMF, thereby improving the external validity and applicability of the findings. Finally, the relatively standardized follow-up and outcome assessment, including remission and relapse rates, provide meaningful insights into short-term clinical outcomes.

Limitations

Despite its strengths, our study has several limitations that should be acknowledged. The study design appears to be observational and single-centered, which may limit the generalizability of the findings to broader populations. The sample size (n = 100) is relatively modest, potentially affecting the statistical power and limiting subgroup analyses. Additionally, the absence of a control or comparator group restricts the ability to draw definitive conclusions regarding the superiority of one treatment modality over another. The follow-up duration (14.7 ± 1.97 months) may not be sufficient to fully assess long-term renal outcomes, chronic damage progression, or late relapses. Furthermore, potential confounding factors such as adherence to therapy, socioeconomic status, and variations in supportive care were not extensively evaluated. Lastly, the reliance on descriptive analysis without advanced multivariate modeling may limit the identification of independent predictors of outcomes.

CONCLUSION

In conclusion, our study demonstrates that lupus nephritis predominantly affects young females and is frequently associated with significant comorbidities and moderate disease activity. Proliferative lupus nephritis, particularly Class IV, remains the most common histopathological subtype. Mycophenolate mofetil-based therapy constitutes the cornerstone of treatment in real-world practice and is associated with satisfactory remission rates. However, the persistence of relapse in a considerable proportion of patients highlights the ongoing challenges in achieving sustained disease control. These findings are consistent with existing literature and reinforce the importance of early diagnosis, appropriate immunosuppressive therapy, and comprehensive patient management.

List of Abbreviations

SLE: Systemic Lupus Erythematosus
LN: Lupus Nephritis
MMF: Mycophenolate Mofetil
CYC: Cyclophosphamide
SLEDAI: Systemic Lupus Erythematosus Disease Activity Index
AKI: Acute Kidney Injury
BMI: Body Mass Index
MPA: Mycophenolic Acid
HCQ: Hydroxychloroquine
CR: Complete Remission
PR: Partial Remission

Acknowledgment: none

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this study.

REFERENCES

1. Sagcal-Gironella AC, Merritt A, Mizuno T, Dharnidharka VR, McDonald J, DeGuzman M, Wahezi D, Goilav B, Onel K, Kim S, Cody E. 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. 2024 May 13;14(4):563.
2. Wuttiputhanun T, Naiyarakseree N, Udomkarnjananun S, Kittanamongkolchai W, Asada L, Chariyavilaskul P, Townamchai N, Avihingsanon Y. Therapeutic drug monitoring of mycophenolic acid and clinical outcomes of lupus nephritis: a systematic review and meta-analysis. Lupus Science & Medicine. 2024 Jan 17;11(1).
3. Ayano M, Kimoto Y, Mitoma H, Akahoshi M, Ono N, Arinobu Y, Akashi K, Horiuchi T, Niiro H. Comparative efficacy and safety of mizoribine and mycophenolate mofetil for treating systemic lupus erythematosus: a retrospective cohort study. Therapeutic

Advances in Musculoskeletal Disease. 2022 May;14:1759720X221096367.

4. Sarkar S, Mukhopadhyay K, Das A, Mandal M, Bhowmick R, Bhunia NS, Sonowal R, Kamal VK, Bhatt GC, Mishra NR, Sinha R. Efficacy of mycophenolate mofetil versus cyclophosphamide in the management of childhood-onset lupus nephritis: a systematic review and meta-analysis. Pediatric Nephrology. 2026 Jan 8:1-0.
5. Trevisonno M, Hall A, Rosengarten S, Ginzler EM. Mycophenolate mofetil for systemic lupus erythematosus: our 20-year experience. Cureus. 2023 Jan 30;15(1).
6. You Y, Zhou Z, Wang F, Li J, Liu H, Cheng X, Su Y, Chen X, Zheng H, Sun Y, Shi H. Mycophenolate mofetil and new-onset systemic lupus erythematosus: a randomized clinical trial. JAMA network open. 2024 Sep 16;7(9):e2432131.
7. Jiang N, Jin S, Yu C, Zhao J, Wang Q, Tian X, Li M, Zeng X. Efficacy and safety of immunosuppressive agents for adults with lupus nephritis: a systematic review and network meta-analysis. Frontiers in Immunology. 2023 Oct 13;14:1232244.
8. Abdelwahab OA, Mechi A, Gahlan S, Hamadein FE, Kadhim H, Ismail D, Soliman Y, El Samahy M. Efficacy and safety of mycophenolate mofetil in patients with immune thrombocytopenic purpura: a systematic review and meta-analysis. Clinical rheumatology. 2024 Feb;43(2):621-32.
9. Matsuoka N, Yajima N, Inoue E, Sato S, Ogawa S, Sumichika Y, Saito K, Yoshida S, Matsumoto H, Temmoku J, Fujita Y. Safety of mycophenolate mofetil in systemic lupus erythematosus maintenance therapy: insights from the LUNA registry in a nationwide prospective cohort study. RMD open. 2025 Jul;11(3):e005558.
10. Zhang X, Huang H, Gao D, Zhao J, Ji L, Fan Y, Hao Y, Zhang Z. Comparison of the effectiveness and safety of mycophenolate mofetil and cyclophosphamide in lupus nephritis: evidence from a real-world study. Rheumatology and Therapy. 2023 Oct;10(5):1199-213.
11. Chakravarty EF, Utset T, Kamen DL, Contreras G, McCune WJ, Aranow C, Kalunian K, Massarotti E, Clowse ME, Rovin BH, Lim SS. Mycophenolate mofetil withdrawal in patients with systemic lupus erythematosus: a multicentre, open-label, randomised controlled trial. The Lancet Rheumatology. 2024 Mar 1;6(3):e168-77.
12. Takeuchi T, Hashimoto H, Matsumoto M. Long-term safety and effectiveness of mycophenolate mofetil in adults with lupus nephritis: a real-world study in Japan. Modern Rheumatology. 2022 Jul 1;32(4):746-54.
13. Lee YH, Song GG. Comparative efficacy and safety of tacrolimus, cyclosporin a, mycophenolate mofetil, cyclophosphamide, and corticosteroids as induction therapy for membranous lupus nephritis: a network meta-analysis. Pharmacology. 2022 May 24;107(9-10):439-45.