



OPEN ACCESS

**Published:** February 29, 2024

**Citation:** Sharma M and Sangma BS, 2024. Lupus Nephritis in Northeastern India: Navigating the complex landscape of clinical challenges and emerging healthcare opportunities, Medical Research Archives, [online] 12(2). <https://doi.org/10.18103/mra.v12i2.5123>

**Copyright:** © 2024 European Society of Medicine. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**DOI**

<https://doi.org/10.18103/mra.v12i2.5123>

**ISSN:** 2375-1924

RESEARCH ARTICLE

## Lupus Nephritis in Northeastern India: Navigating the complex landscape of clinical challenges and emerging healthcare opportunities

**Dr. Manjuri Sharma\*<sup>1</sup>, Dr. Benjamin S Sangma<sup>2</sup>**

<sup>1</sup> Prof & Head, Dept. of Nephrology, Gauhati Medical College & Hospital.

<sup>2</sup> Senior Resident, Dept. of Nephrology, Gauhati Medical College & Hospital.

\*Corresponding author: [manjurisharma@yahoo.com](mailto:manjurisharma@yahoo.com)

**ABSTRACT:**

Systemic Lupus Erythematosus (SLE) is a complex autoimmune disease with varied manifestations, significantly impacting women and potentially leading to Lupus Nephritis (LN), a major cause of morbidity and mortality. The review article explores the unique challenges and opportunities in managing lupus nephritis (LN) in North Eastern India, a region characterised by diverse ethnicities, cultures, and socioeconomic challenges. With a higher than average prevalence of systemic lupus erythematosus (SLE) and lupus nephritis (LN), the region presents distinct epidemiological patterns, likely influenced by genetic, environmental, and lifestyle factors. The management and prognosis of LN are further complicated by the region's geographical and infrastructural limitations, including access to specialised healthcare and socioeconomic barriers, which impacts the patient's outcome. Despite the challenges, there are emerging opportunities for improvement through innovations in healthcare delivery, governmental and non-governmental initiatives aimed at enhancing healthcare access, and the adaptation of treatment guidelines to the local context. This review article underscores the importance of region-specific research and healthcare strategies to improve care and outcome for lupus nephritis (LN) patients in North Eastern India, thus contributing to the broader understanding of the disease in diverse populations and settings.

**Keywords:** SLE, Lupus nephritis, Northeast, Challenges

## Introduction

Systemic Lupus Erythematosus (SLE) is an autoimmune disease characterised by a wide range of clinical manifestations and the production of a variety of autoantibodies and immune complexes. Autoantibodies are present for few years before the clinical symptoms appear<sup>1</sup>. It predominantly affects women and can impact multiple organ systems. One of the most significant and severe manifestations of systemic lupus erythematosus (SLE) is Lupus Nephritis (LN), a leading cause of morbidity and mortality among SLE patients is seen in 50% of patients with SLE<sup>2</sup>. Lupus nephritis involves inflammation of the kidneys, leading to varying degrees of kidney damage and, in severe cases, kidney failure. Very often lupus nephritis occurs within the first 5 years of the diagnosis of SLE<sup>3</sup>. A review found that a 5 and 10 year cumulative incidence of end stage kidney disease to be 11% and 19% respectively<sup>4</sup>.

The management and prognosis of lupus nephritis are influenced by a myriad of factors, including geographic location, which affects the availability of healthcare resources, the socioeconomic status of patients, and the presence of comorbidities. This is especially relevant in regions like North Eastern India, a diverse and geographically unique area characterised by its distinct ethnicities, cultures, and socioeconomic challenges. Understanding Lupus Nephritis in this context is crucial for developing effective strategies for diagnosis, treatment, and patient education.

The purpose of this review article is to explore the challenges and opportunities associated with Lupus Nephritis in North Eastern India. By examining the epidemiology, clinical presentation, diagnostic challenges, treatment modalities, and healthcare infrastructure specific to this region, the article seeks to highlight the unique aspects of managing LN in the region. The article also aims to explore the opportunities that exist in improving care and outcomes for patients suffering from this complex condition in a region that faces its own set of challenges.

The exploration of Lupus Nephritis in North Eastern India is not only crucial for the direct improvement of patient care in the region but also contributes to the broader understanding of the disease in a diverse population and settings.

## Epidemiology

The epidemiological landscape of Lupus Nephritis in North Eastern India is distinct and deserves special attention. While comprehensive data specific to this

region is limited, available studies indicate a notable prevalence of SLE and its renal involvement. In India, the reported prevalence of SLE is 3.2 per 100,000<sup>5</sup>. The prevalence of lupus nephritis (LN) is higher in Indo-Asians in comparison to the white population<sup>6</sup>. In a study done by Das J et al<sup>7</sup> in the north eastern India, the prevalence of paediatric and adolescent lupus nephritis was found to be 11.3%, which was slightly higher than the prevalence seen in other studies. The prevalence of Lupus Nephritis among SLE patients in North Eastern India appears to be higher than the national average. This could be attributed to genetic, environmental, or lifestyle factors unique to the population in the region.

A study by Manjuri Sharma<sup>8</sup> et al., conducted at Gauhati Medical College, Assam which was published in the Saudi Journal of Kidney Diseases and Transplantation in 2019, offers a detailed epidemiological profile of LN in North Eastern India. The study included 176 LN patients, revealing a predominant female demographic (89.8%) mainly in the age group of 20-40 years. This aligns with global LN trends but highlights a significant local demographic affected by the disease.

As per the western data study in a recent study done by Hocaoglu M et al<sup>9</sup> the mean age of diagnosis is around 38 years, but studies done in the North Eastern India reveal earlier age at diagnosis<sup>10,15</sup>. This disparity could be linked to genetic predispositions in the ethnically diverse population of the region<sup>11</sup>. Additionally, environmental factors like exposure to certain infections or lifestyle aspects unique to this region may play a role.

The demographic profile of Lupus Nephritis patients in North Eastern India also presents unique characteristics. The disease predominantly affects women, particularly those in their reproductive years, which is consistent with global trends. However, there appears to be a variation in age of onset and severity of the disease across different ethnic groups in the region. Furthermore, socioeconomic factors like access to healthcare, literacy levels, and awareness about the disease significantly influence the epidemiology of Lupus Nephritis in this area.

Comparing these findings with global and national data, the prevalence and demographic profile in North Eastern India reflect unique regional characteristics. The high prevalence among young females necessitates targeted healthcare strategies and awareness programs, considering the socioeconomic and cultural fabric of the region.

These epidemiological aspects set the stage for understanding the challenges in managing Lupus Nephritis in North Eastern India. They highlight the need for region-specific studies and healthcare strategies that take into account the unique demographic and socio-cultural context of this area.

## Unique Challenges in North Eastern India

The geography of North Eastern India, comprising eight states, is marked by difficult terrains, including hilly areas and remote locations. This poses a significant challenge in healthcare delivery, especially for chronic and complex conditions like Lupus Nephritis. Patients often face difficulties in accessing healthcare facilities due to long distances and inadequate transportation. This is compounded by frequent natural calamities like floods and landslides, which can disrupt access to healthcare services.

Moreover, the healthcare infrastructure in North Eastern India, while improving, remains underdeveloped compared to the rest of the country. There is a scarcity of specialised healthcare centres and professionals trained in rheumatology and nephrology, which are crucial for the management of Lupus Nephritis. This similar observation was also seen in a study done by Chatterjee R et al<sup>12</sup> in central India. This lack of specialised care means that many patients do not receive timely and appropriate treatment, leading to a poor outcome<sup>13</sup>.

Socioeconomic factors play a pivotal role in healthcare access in North Eastern India. A significant portion of the population lives in rural areas with limited financial resources. The cost of long-term management of Lupus Nephritis, including medications, laboratory tests, and hospital visits, can be prohibitive for many. Additionally, the lack of health insurance coverage and adequate government healthcare schemes further exacerbates the situation.

Cultural and educational barriers also impact the management of Lupus Nephritis. Low levels of literacy and awareness about the disease lead to delays in seeking medical help, misdiagnosis, or reliance on traditional healing practices that may worsen the course of Lupus Nephritis. This is compounded by cultural stigmas associated with chronic illnesses, which can lead to social isolation and mental health challenges for patients<sup>14</sup>.

The combination of these geographic, infrastructural, socioeconomic, and cultural factors

creates a complex environment for managing Lupus Nephritis in North Eastern India. Addressing these challenges requires a multifaceted approach, including the strengthening of healthcare infrastructure, enhancing awareness and education about the disease, and implementing culturally sensitive healthcare practices.

## Clinical Presentation and Diagnosis in the North Eastern Context

The clinical presentation of lupus nephritis are variable, can range from asymptomatic proteinuria, nephrotic syndrome, nephritic syndrome and end stage renal disease<sup>15</sup>. In North Eastern India, the clinical presentation of Lupus Nephritis aligns with the global pattern of the disease but also exhibits unique regional characteristics. Patients typically present with a range of symptoms, from mild to severe, including proteinuria, hematuria, and elevated serum creatinine levels. A higher percentage of patients presented with nephrotic syndrome (51%) and nephritic syndrome (48%) in a study done by Bhattacharya P et al<sup>10</sup> done in the region.

In a study by Manjuri Sharma and Shahzad Alam<sup>16</sup> et al. provides a comprehensive data on the clinical presentation of LN in the region. Common symptoms include pedal oedema, hypertension, and renal failure, with a notable incidence of class IV LN. The histopathological studies reveals a predominance of class IV LN<sup>9</sup>, indicative of a more aggressive disease. The study done highlights the peculiarity of lupus nephritis seen in the region which is earlier age of onset and a more aggressive presentation. This is crucial for guiding treatment strategies and prognostic assessments. It is also interesting to note the increased prevalence of Lupus nephritis observed among the male patients in the recent years, which have an earlier onset and a more aggressive disease course, observational studies are being done in the author's own institution, the results of which is yet to be published.

Additionally, the coexistence of other endemic diseases, such as malaria and tuberculosis, can complicate the clinical picture of Lupus Nephritis. A major diagnostic dilemma that is frequently encountered is distinguishing between infection and disease flare. A study done by Pattanaik et al<sup>17</sup> two major causes of in-hospital mortality in SLE are infection and disease activity. These comorbidities not only impact the severity of the disease but also challenge the diagnostic process, as some symptoms may overlap or mask the underlying autoimmune pathology.

Diagnosing Lupus Nephritis in North Eastern India is met with challenges. The primary issue is the lack of diagnostic facilities and specialised healthcare professionals. Kidney biopsies are indicated in lupus nephritis to establish the diagnosis as well as for prognostication<sup>18</sup>. Advanced diagnostic tools such as serological, renal biopsies, which are crucial for confirming a diagnosis of Lupus and determine the severity, are not readily available in many parts of the region. This leads to a reliance on less specific tests, which can result in delayed or inaccurate diagnoses.

Moreover, the awareness of Lupus Nephritis among healthcare providers in the region is not uniform. This can lead to misinterpretation of symptoms and a failure to recognise the disease at an early stage. The situation is further complicated by the diverse linguistic and cultural background of the population, which can lead to communication barriers between patients and healthcare providers<sup>19</sup>.

Comparing the clinical presentation and diagnostic challenges in North Eastern India with other regions highlights significant disparities. While metropolitan areas, northern and southern states of India have better access to specialised care and advanced diagnostic facilities, North Eastern India lags in these aspects. This disparity not only affects the quality of care for patients with Lupus Nephritis but also impacts the overall understanding of the disease's progression and outcomes in different Indian populations.

Addressing these diagnostic challenges requires targeted efforts to improve healthcare infrastructure, enhance professional training, and increase awareness about Lupus Nephritis among healthcare providers and the general population in North Eastern India.

## Treatment Modalities and Healthcare Infrastructure

Therapy used for lupus nephritis (LN), is induction phase followed by maintenance phase to maintain disease remission. The treatment of Lupus Nephritis in North Eastern India, though aligned with global standard of care, faces unique challenges due to regional limitations. The standard treatment protocol typically involves a combination of corticosteroids, immunosuppressants, and, in some cases, biologic agents. However, the availability of these medications can be inconsistent in the region, particularly in remote and rural areas. Furthermore, the cost of long-term treatment and the need for regular monitoring pose financial burdens on

patients, given the socioeconomic constraints prevalent in the region.

Healthcare facilities in North Eastern India vary widely in terms of quality and availability. While there are centres of excellence in major cities in the region, rural and remote areas still suffer from a severe lack of medical infrastructure. This disparity is particularly pronounced in the availability of specialists, essential for the effective management of Lupus Nephritis. The shortage of skilled healthcare professionals is a critical barrier to providing timely and appropriate treatment to patients across the region.

Moreover, the facilities for advanced treatment modalities, such as kidney transplantation and dialysis, are concentrated in urban centres, making them inaccessible to a large portion of the patient population. This geographical limitation not only delays treatment but can also lead to poorer outcomes for patients with advanced stages of the disease.

A study by Manjuri Sharma<sup>20</sup> et al. on the effectiveness of cyclophosphamide versus mycophenolate mofetil in LN treatment provides valuable insights. Both treatment regimens showed similar efficacy, but the regional response to these medications could vary due to genetic factors. Another study by the P Mahanta et al<sup>21</sup> focused on the use of Rituximab for refractory LN cases. The findings suggest potential benefits of this treatment in the local patient population, especially for those not responding to conventional therapies. These studies highlight the complexity of LN treatment in North Eastern India. The varied responses to different regimens underscore the need for personalised treatment approaches, considering the local demographic and healthcare infrastructure.

In response to these challenges, there is a need for the adaptation of treatment protocols that aligns with the local context of region. This involves developing treatment protocols that consider the availability of resources, patient affordability, and the regional disease pattern. It also necessitates a focus on building local capacities, such as training healthcare professionals in the management of Lupus Nephritis and establishing more specialised care centres across the region. Collaborative efforts between government bodies, healthcare organisations, and international agencies are crucial in this context. Initiatives aimed at improving the supply chain for essential medications, subsidising treatment costs, and enhancing healthcare infrastructure can play a significant role

in improving the management of Lupus Nephritis in North Eastern India.

## Opportunities and Developments

Despite the challenges, there are significant opportunities and positive developments in the management of Lupus Nephritis in North Eastern India. Innovations in healthcare, particularly those tailored to the unique needs of the region, are beginning to make an impact. Telemedicine and mobile health initiatives are emerging as vital tools in bridging the geographical and infrastructural gaps. These technologies will enable remote consultations, monitoring, and follow-ups, which are crucial for patients in distant or rural areas.

Local healthcare workers and community health programs are increasingly being trained in the basics of autoimmune diseases like Lupus Nephritis. This grassroots-level education and awareness are vital for early identification of symptoms and prompt referral to specialized care.

Governmental initiatives have started to focus more on improving healthcare access in North Eastern India. Programs aimed at subsidizing healthcare costs, healthcare schemes, improving the availability of medications, and investing in healthcare infrastructure are gradually being implemented. Additionally, non-governmental organizations (NGOs) play a crucial role in supplementing these efforts, particularly in remote areas. They are involved in patient education, awareness campaigns, and providing financial assistance for treatment. International collaborations and research partnerships could also contribute to a better understanding of Lupus Nephritis in the region. These collaborations are crucial for conducting region-specific research, which is essential for developing effective management strategies tailored to the local populace.

There are emerging success stories in the region, indicating improvement in patient outcome. Increased awareness among healthcare providers and the community has led to earlier diagnosis and

treatment initiation, which are key to improving prognosis in Lupus Nephritis. Case studies demonstrate improved patient management through integrated care approaches, combining modern medicine with supportive community and family-based care. These positive developments highlight the potential for significant improvements in the management and outcomes of Lupus Nephritis in North Eastern India. They underscore the importance of continued investment in healthcare, education, and research to further enhance the quality of life for patients suffering from this challenging condition.

## Conclusion

In conclusion, the challenges of managing Lupus Nephritis in North Eastern India are substantial, ranging from geographical and infrastructural limitations to socioeconomic and cultural barriers. However, the opportunities for improvement are equally significant. Innovations in healthcare delivery, targeted governmental and non-governmental initiatives, and the adaptation of treatment guidelines to the local context are key strategies that hold promise.

The future prospects for the management of Lupus Nephritis in North Eastern India depend on sustained efforts to enhance healthcare infrastructure, increase awareness and education about the disease, and foster collaborative research and development. It is crucial to continue building on the positive developments seen in recent years, ensuring that patients across the region have access to the best possible care.

As the global medical community gains a deeper understanding of Lupus Nephritis, it is imperative to ensure that this knowledge translates into improved outcomes for patients in all parts of the world, including the unique and diverse region of North Eastern India. Continued focus and investment in this area will not only benefit patients with Lupus Nephritis but also assists in the broader picture of achieving health equity.



## References

1. Jameson JL. *Harrison's Manual of Medicine*. Vol 2. 20th ed. McGraw-Hill; 2020:2515.
2. Bastian HM, Roseman JM, Mcgwin G, et al. Systemic lupus erythematosus in three ethnic groups. XII. Risk factors for lupus nephritis after diagnosis. *Lupus*. 2002;11(3):152-160. doi:<https://doi.org/10.1191/0961203302lu158oa>
3. Hanly JG, O Keffe AG, Su L, Urowitz MB, Romero-Diaz J, Gordon C, et al. The frequency and outcome of lupus nephritis: results from an international inception cohort study. *Rheumatology (Oxford)* 2016;55:252–62.
4. Mahajan A, Amelio J, Gairy K, et al. Systemic lupus erythematosus, lupus nephritis and end-stage renal disease: a pragmatic review mapping disease severity and progression. *Lupus*. 2020;29(9):1011-1020. doi:<https://doi.org/10.1177/0961203320932219>
5. Malaviya AN, Singh RR, Singh YN, Kapoor SK, Kumar A. Prevalence of Systemic Lupus Erythematosus in India. *Lupus*. 1993;2(2):115-118. doi:<https://doi.org/10.1177/096120339300200209>
6. Seligman VA, Lum RF, Olson JL, Li H, Criswell LA. Demographic differences in the development of lupus nephritis: a retrospective analysis. *The American Journal of Medicine*. 2002;112(9):726-729. doi:[https://doi.org/10.1016/S0002-9343\(02\)01118-X](https://doi.org/10.1016/S0002-9343(02)01118-X)
7. Das J, Kalita P, Dey B, et al. Clinicopathological, Immunological, and Laboratory Parameters of Childhood Lupus Nephritis: A Study from Northeast India. *Journal of laboratory physicians*. 2023;15(03):361-364. doi:<https://doi.org/10.1055/s-0043-1768168>
8. Sharma M, Das H, Doley P, Mahanta P. Clinical and histopathological profile of lupus nephritis and response to treatment with cyclophosphamide: A single center study. *Saudi Journal of Kidney Diseases and Transplantation*. 2019;30(2):501. doi:<https://doi.org/10.4103/1319-2442.256857>
9. Hocaoglu M, Valenzuela-Almada MO, Dabit JY, et al. Incidence, Prevalence, and Mortality of Lupus Nephritis: A Population-Based Study Over Four Decades—The Lupus Midwest Network (LUMEN). *Arthritis & Rheumatology*. Published online October 13, 2022. doi:<https://doi.org/10.1002/art.42375>
10. Bhattacharya PK, Barman AK, Shinde SA. A clinical study of lupus nephritis in a tertiary care hospital in northeast India. *Indian Journal of Medical Specialities*. 2015;6(4):136-140. doi:<https://doi.org/10.1016/j.injms.2015.07.005>
11. Murphy G, Isenberg D. Effect of gender on clinical presentation in systemic lupus erythematosus. *Rheumatology*. 2013;52(12):2108-2115. doi:<https://doi.org/10.1093/rheumatology/ke1160>
12. Chatterjee R, Aggarwal A. Challenges in the diagnosis and management of SLE in India. *Clinical Immunology Communications*. 2023;4:65-69. doi:<https://doi.org/10.1016/j.clicom.2023.10.001>
13. Kernder, J.G. Richter, R. Fischer-Betz, B. Winkler-Rohlfing, R. Brinks, M. Aringer, et al. *Lupus*, 30 (3) (2021), pp. 431-438
14. Raj P, Gupta N. A Review of the National Family Health Survey Data in Addressing India's Maternal Health Situation. *Public Health Reviews*. 2022;43. doi:<https://doi.org/10.3389/phrs.2022.1604825>
15. Wada Y, Ito S, Ueno M, Nakano M, Arakawa M, Gejyo F. Renal outcome and predictors of clinical renal involvement in patients with silent lupus nephritis. *Nephron Clinical Practice* 2004;98:c105–11.
16. Alam S, Parry M, Sharma M, Jeelani H, Mazumder M. Clinicopathological Features of Lupus Nephritis Patients in North-East India; A Single Center Retrospective Observational Study. *Journal of Renal and Hepatic Disorders*. 2021;6(1):1-6. doi:<https://doi.org/10.15586/jrenhep.v6i1.130>
17. Pattanaik SS, Muhammed H, Chatterjee R, et al. In-hospital mortality and its predictors in a cohort of SLE from Northern India. *Lupus*. 2020;29(14):1971-1977. doi:<https://doi.org/10.1177/0961203320961474>
18. Malvar A, Pirruccio P, Alberton V, et al. Histologic versus clinical remission in proliferative lupus nephritis. *Nephrology Dialysis Transplantation*. 2017;32(8):1338-1344. doi:<https://doi.org/10.1093/ndt/gfv296>
19. Blomjous BS, Johanna I P de V, Zijlstra E, Cramer K, Voskuyl AE, Bultink and IEM. Desire to have children and preferences regarding to pre-pregnancy counselling in women with SLE. *Rheumatology*. 2020;60(6):2706-2713.

doi:<https://doi.org/10.1093/rheumatology/keaa684>

20. Sharma M, Bora F, Gayatri Pegu, Prodip Kumar Doley. #3507 Iv cyclophosphamide versus mycophenolate mofetil as induction regimen in proliferative lupus nephritis: a study from north-east india. *Nephrology Dialysis Transplantation*. 2023;38(Supplement\_1).

doi:[https://doi.org/10.1093/ndt/gfad063c\\_3507](https://doi.org/10.1093/ndt/gfad063c_3507)

21. Mahanta PJ, Sharma M, Alam S, Doley PK, Pegu G, Mazumder MA. P0342A Study of treatment with rituximab in refractory lupus nephritis. *Nephrology Dialysis Transplantation*. 2020;35(Supplement\_3). doi:  
[https://doi.org/10.1093/ndt / gfaa142.p0342](https://doi.org/10.1093/ndt/142.p0342)