

# Journal of Nephropathology



## Lupus-associated collapsing glomerulopathy; a current data

Narges Ansari<sup>1</sup>, Mansour Salesi<sup>2\*</sup>

<sup>1</sup>Department of Internal Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

<sup>2</sup>Department of Rheumatology, Isfahan University of Medical Sciences, Isfahan, Iran

### ARTICLE INFO

*Article type:*  
Min-Review

*Article history:*  
Received: 11 Nov. 2023  
Accepted: 17 Dec. 2023  
Published online: 24 Jun. 2024

*Keywords:*  
Collapsing glomerulopathy, Lupus nephritis, Glomerular collapse, Interstitial infiltration, Tubular atrophy, Immunofluorescence, Proteinuria, Podocytes, Human immunodeficiency virus

### ABSTRACT

Collapsing glomerulopathy is a rare but severe form of glomerular injury that can be accompanying by SLE (systemic lupus erythematosus). The pathogenesis of collapsing glomerulopathy in lupus is not well understood, and the treatment options are limited. The treatment of collapsing glomerulopathy in lupus is challenging. Immunosuppressive therapy with corticosteroids and cytotoxic agents is the mainstay of treatment. However, the response to therapy is often poor, and many patients progress to end-stage renal disease despite treatment. The use of newer agents such as rituximab and belimumab may offer additional options for the treatment of collapsing glomerulopathy in lupus. Further studies are required to better detect the underlying mechanisms of collapsing glomerulopathy in lupus and to develop more effective therapies for this condition.

### *Implication for health policy/practice/research/medical education:*

Collapsing glomerulopathy in lupus nephritis is associated with poor prognosis and rapid progression to end-stage renal disease.

*Please cite this paper as:* Ansari N, Salesi M. Lupus-associated collapsing glomerulopathy; a current data. J Nephropathol. 2024;13(4):e21528. DOI: 10.34172/jnp.2024.21528.

### Introduction

Collapsing glomerulopathy is a rare and severe form of glomerular injury that can direct to rapid renal failure. It is characterized by the collapse of the glomerular tuft and proliferation of the overlying epithelial cells (1). Collapsing glomerulopathy can be associated with various underlying conditions, including HIV infection, autoimmune diseases, and drug toxicity. Systemic lupus erythematosus (SLE) is a chronic autoimmune disease that can affect multiple organs, including the kidneys (2,3). Lupus nephritis is a common complication of lupus and can lead to significant morbidity and mortality. Collapsing glomerulopathy is a rare but severe form of lupus nephritis that is associated with poor outcomes (4). This review paper will focus on collapsing glomerulopathy associated with SLE.

### Search strategy

For this review, we searched PubMed, Web of Science,

EBSCO, Scopus, Google Scholar, Directory of Open Access Journals (DOAJ), and Embase, using different keywords including collapsing glomerulopathy, lupus nephritis, glomerular collapse, interstitial infiltration, tubular atrophy, immunofluorescence, proteinuria, podocytes, human immunodeficiency virus, tubulointerstitial inflammation, renal biopsy, systemic lupus erythematosus and end-stage kidney disease.

### Lupus-associated collapsing glomerulopathy

Lupus-associated collapsing glomerulopathy is a severe form of kidney disease that occurs in individuals with SLE, an autoimmune disorder (4).

The pathogenesis of collapsing glomerulopathy in lupus is not well understood. It is thought to be related to immune system dysfunction, followed by immune complex deposition and activation of inflammatory pathways in the kidney. Genetic factors may also play a role in developing collapsing glomerulopathy in lupus (5,6).

\*Corresponding author: Mansour Salesi,  
Email: salesi@med.mui.ac.ir

Symptoms of lupus-associated collapsing glomerulopathy may include proteinuria, hematuria, edema, hypertension, and reduced renal function. If left untreated, it can progress rapidly to end-stage renal disease (4,7).

Diagnosis of lupus-associated collapsing glomerulopathy involves a combination of clinical evaluation, laboratory tests (such as urine analysis and blood tests), imaging studies, and kidney biopsy. A reduced biopsy is often indispensable to establish the diagnosis, showing the glomeruli's collapse and scarring. Renal biopsy can also determine the extent of kidney damage (6,8,9).

The characteristic features of collapsing glomerulopathy include segmental or global collapse of the glomerular tufts, proliferation of the overlying epithelial cells, and tubular injury. Immunofluorescence studies may show immune complex deposition in the glomeruli (9,10).

Treatment for lupus-associated collapsing glomerulopathy typically involves a combination of immunosuppressive medications, such as corticosteroids and other immunosuppressants, to suppress the overactive immune response. These treatments help reduce inflammation and slow down further kidney damage. Additionally, supportive measures such as controlling blood pressure and managing proteinuria are important (11,12). The prognosis for lupus-associated collapsing glomerulopathy varies depending on several factors, including the severity of kidney damage at diagnosis, response to treatment, and overall management of SLE. Early detection and prompt treatment can improve outcomes and prevent progression to end-stage renal disease (4,9). However, some cases may still progress despite treatment, leading to long-term kidney dysfunction or the need for dialysis or kidney transplantation. Regular monitoring and follow-up with a healthcare provider specializing in kidney diseases are essential for managing this condition (13,14).

## Conclusion

collapsing glomerulopathy in lupus nephritis is associated with poor prognosis and rapid progression to end-stage renal disease. Patients with collapsing glomerulopathy often present with severe proteinuria, hematuria, hypertension, and rapidly declining kidney function. Renal biopsy is mandatory to establish the diagnosis and assess the extent of glomerular damage. Despite treatment, the prognosis for collapsing glomerulopathy in lupus nephritis remains poor, with a high risk of progression to end-stage renal disease. Early detection and prompt initiation of therapy are crucial in managing this aggressive form of glomerulopathy. Close monitoring of kidney function and regular follow-up with a nephrologist is essential for optimal management and long-term outcomes.

## Authors' contribution

**Conceptualization:** Mansour Salehi.

**Data curation:** Narges Ansari, Mansour Salehi.

**Funding acquisition:** Mansour Salehi.

**Investigation:** Narges Ansari.

**Resources:** Mansour Salehi.

**Supervision:** Mansour Salehi.

**Validation:** Narges Ansari, Mansour Salehi.

**Visualization:** Narges Ansari, Mansour Salehi.

**Writing—original draft:** Narges Ansari.

**Writing—review and editing:** Narges Ansari.

## Conflicts of interest

The authors declare that they have no competing interests.

## Declaration of generative AI and AI-assisted tools in the writing process

During the preparation of this work, the authors utilized ChatGPT—a chatbot developed by OpenAI—to refine grammar points and language style in writing. Subsequently, the authors thoroughly reviewed and edited the content as necessary, assuming full responsibility for the publication's content.

## Ethical issues

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors.

## Funding/Support

None.

## References

1. Muehlig AK, Gies S, Huber TB, Braun F. Collapsing Focal Segmental Glomerulosclerosis in Viral Infections. *Front Immunol.* 2022;12:800074. doi: 10.3389/fimmu.2021.800074.
2. Lodi L, Mastrolia MV, Bello F, Rossi GM, Angelotti ML, Crow YJ, et al. Type I interferon-related kidney disorders. *Kidney Int.* 2022;101:1142-59.
3. Nicholas Cossey L, Larsen CP, Liapis H. Collapsing glomerulopathy: a 30-year perspective and single, large center experience. *Clin Kidney J.* 2017;10:443-9.
4. De La Cruz A, Ghazanfar H, Peña N, Nasr R. Lupus-Mediated Kidney Damage: Lupus Nephritis or Collapsing Glomerulopathy? *Cureus.* 2021;13:e14468. doi: 10.7759/cureus.14468.
5. Lech M, Anders HJ. The pathogenesis of lupus nephritis. *J Am Soc Nephrol.* 2013;24:1357-66. doi: 10.1681/ASN.2013010026.
6. Truong L, Seshan SV. Lupus Nephritis: The Significant Contribution of Electron Microscopy. *Glomerular Dis.* 2021;1:180-204. doi: 10.1159/000516790.
7. Musa R, Brent LH, Qurie A. Lupus Nephritis. [Updated

- 2023 May 25]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK499817/>.
8. Rovin BH, Parikh SV, Alvarado A. The kidney biopsy in lupus nephritis: is it still relevant? *Rheum Dis Clin North Am.* 2014;40:537-52. doi: 10.1016/j.rdc.2014.04.004.
  9. Salvatore SP, Barisoni LM, Herzenberg AM, Chander PN, Nickenleit V, Seshan SV. Collapsing glomerulopathy in 19 patients with systemic lupus erythematosus or lupus-like disease. *Clin J Am Soc Nephrol.* 2012;7:914-25. doi: 10.2215/CJN.11751111.
  10. Nicholas Cossey L, Larsen CP, Liapis H. Collapsing glomerulopathy: a 30-year perspective and single, large center experience. *Clin Kidney J.* 2017;10:443-449. doi: 10.1093/ckj/sfx029.
  11. McKeon KP, Jiang SH. Treatment of systemic lupus erythematosus. *Aust Prescr.* 2020;43:85-90. doi: 10.18773/austprescr.2020.022.
  12. Maidhof W, Hilas O. Lupus: an overview of the disease and management options. *P T.* 2012;37:240-9.
  13. Kiousi E, Grapsa E. The role of an out-patient renal clinic in renal disease management. *J Transl Int Med.* 2015;3:3-7. doi: 10.4103/2224-4018.154287.
  14. Chen TK, Knicely DH, Grams ME. Chronic Kidney Disease Diagnosis and Management: A Review. *JAMA.* 2019;322:1294-1304. doi: 10.1001/jama.2019.14745.

**Copyright** © 2024 The Author(s); Published by Society of Diabetic Nephropathy Prevention. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.