MEDICO RESEARCH CHRONICLES
ISSN NO. 2394-3971
DOI No. 10.26838/MEDRECH.2021.8.4.536
Contents available at www.medrech.com

ANOMALIES OF THE GENETIC COMPLEMENT AND ITS ROLE IN C3 GLOMERULOPATHIES AND DEVELOPMENT OF HEMOLITHIC UREMIC SYNDROME

Juan Esteban Tafur Delgado[1], Carlos Andrés Pérez Lozano[2], Lina Marcela Ortiz Roncallo[3], Silvia Juliana Rodríguez Pérez[4], Amaury Gustavo López Agámez[5], María José Álvarez Gómez[6], Ricardo Javier Galván Zúñiga[7], Ana María Garcés Pérez[8]

1. *Second-year Pediatric Resident of the University of Sinú*
2. *General Medical University Foundation of Health Sciences, Bogotá*
3. *General Medical University of the Sabana, Bogotá*
4. *Intern at The University of Sinú, Montería*
5. *Intern at The University of Sinú, Montería*
6. *Intern at The University of Sinú, Montería*
7. *Intern at The University of Sinú, Montería*
8. *General Medical of The University of Magdalena*

ARTICLE INFO | **ABSTRACT** | **LETTER TO THE EDITOR**

Article History
Received: April 2021
Accepted: July 2021

Corresponding author
J. E. T. Delgado

2021, www.medrech.com

Let us remember that C3 glomerulopathy is the product of an abnormal activation in the alternative complement pathway, which leads to excessive production of active C3 and its degradation products [1].

Among the causes of this excessive activation of the alternative complement pathway, the mutations in the regulatory proteins of the alternative complement pathway stand out in the first place, on the other hand, with an even higher frequency are the presence of autoantibodies, among these antibodies, the most common is a nephritic factor, which is present in 80% of EDD cases and 50% of GC3 [2].

Many of the genetic mutations are found in the CFH and CFHR genes, but other complement gene mutations have also been described that would lead to the development of C3 glomerulopathy, although with a much lower frequency. On the other hand, family case studies have been carried out that have made it possible to know exactly at what specific level dysfunction occurs in the complement system. This can lay the foundations for the development of therapies that would be very beneficial for this disease, which, as mentioned in said research, the optimal treatment remains undefined [3].

In addition to the genetic bases already mentioned in this letter, it would be

convenient to mention the clinical manifestations to better understand these phenomena and their importance.

The main manifestations reported include urinary alterations, with proteinuria in non-nephrotic ranges and microhematuria in most cases, in the same way, renal function can be normal or present in the form of acute renal failure, however, the most common is the presence of a progressive deterioration of renal function, accompanied by a variable degree of arterial hypertension, a characteristic picture of the hemolytic uremic syndrome is also usually frequent, which is especially important because some defects in the regulation of the alternative complement pathway are not they end up in a C3 glomerulopathy, but instead develop the hemolytic uremic syndrome, however, there is literature that describes cases of the hemolytic uremic syndrome and C3 glomerulopathy in the same patient. The imbalance between the appearance of one condition or another would be explained by the generation of antibodies to the different domains of factor H, thus understanding that if the antibodies are directed against the C-terminal end they will favor the development of hemolytic uremic syndrome, while if Antibodies are directed against the N-terminal end would favor the development of C3 glomerulopathy, a fact that is of great importance when it comes to understanding the pathogenesis of this disease a little more [4].

To conclude, I will highlight the fact that the information available in the literature is scarce, therefore, such work on the identification of acquired or hereditary defects in C3 glomerulopathy, as well as in glomerular disease mediated by immune complexes, provides a great contribution to this field of research and brings us closer to the development of more effective identification methods and more timely treatments for a pathology in which renal survival at 10 years is 50% [5].

REFERENCES

1. Servais A, Noël L, Roumenina L, Le Quintrec M, Ngo S, Dragon-Durey M et al. Acquired and genetic complement abnormalities play a critical role in dense deposit disease and other C3 glomerulopathies. Kidney International. 2012;82(4):454-464.
2. Taborda-MurilloA, Arroyave-SuárezMJ, Arias-RestrepoLF. Glomerulonefritis C3: una nueva categoría de glomerulonefritis con implicaciones etiopatogénicas. Iatreia [Internet]. 29 de diciembre de 2015 [citado 10 de marzo de 2021];28(1): Pág. 24-34. Disponible en:https://revistas.udea.edu.co/index.php/iatreia/article/view/17580
3. Cook H, Pickering M. Histopathology of MPGN and C3 glomerulopathies. Nature Reviews Nephrology. 2015;11(1):14-22.
4. Iatropoulos P, Daina E, Curreri M, Piras R, Valoti E, Mele C et al. Cluster Analysis Identifies Distinct Pathogenetic Patterns in C3 Glomerulopathies/Immune Complex–Mediated Membranoproliferative GN. Journal of the American Society of Nephrology. 2017;29(1):283-294.
5. Häffner, K., Michelfelder, S. & Pohl, M. Tratamiento exitoso de la glomerulopatía C3 positiva para C3Nef con terapia de plasma immuno-suppression. Pediatr Nephrol 30, 1951-1959 (2015). https://doi.org/10.1007/s00467-015-3111-9