

# International Journal of Health Science

ISSN 2764-0159

vol. 6, n. 2, 2026

## ●●● ARTICLE 12

Acceptance date: 18/02/2026

# NEUROMYELITIS OPTICA IN PREGNANCY: NARRATIVE REVIEW

**Stefhani Sampaio da Silva**

Catholic University of Pelotas (UCPel)

**Marthina Souza Gutheil**

Catholic University of Pelotas (UCPel)

**Lucas Ademir de Borba**

Catholic University of Pelotas (UCPel)

**Paula de Vasconcellos Vargas**

Catholic University of Pelotas (UCPel)

**Bruna Aparecida Fontana Costa**

University of Santa Cruz do Sul (UNISC)



All content published in this journal is licensed under the Creative Commons Attribution 4.0 International License (CC BY 4.0).



**Giovana Funghetti Zanatta**

Catholic University of Pelotas (UCPel)

**Gabriel Alves Barbosa**

Federal University of Grande Dourados (UFGD)

**Amanda Schwonke Zanatta**

Catholic University of Pelotas (UCPel)

**Natalia Kohl**

Catholic University of Pelotas (UCPel)

**Victória Vargas Castagno**

Catholic University of Pelotas (UCPel)

**Verônica Kologeski Costa**

Catholic University of Pelotas (UCPel)

**Natalye da Silva Ulguim**

Catholic University of Pelotas (UCPel)

**Jaqueline Yonara da Silva Galhardo**

Catholic University of Pelotas (UCPel)

**Abstract:** Neuromyelitis optica (NMO), currently recognized within the spectrum of neuromyelitis optica spectrum disorders (NMOSD), is an inflammatory autoimmune disease of the central nervous system characterized mainly by optic neuritis and longitudinally extensive myelitis. Its predominance in women of reproductive age makes pregnancy a period of particular clinical relevance, due to the increased risk of outbreaks and the therapeutic limitations imposed by pregnancy and lactation. The objective of this narrative review is to synthesize the main evidence on the pathophysiology, clinical manifestations, diagnosis, therapeutic management, and maternal and fetal outcomes of NMOSD during pregnancy and the postpartum period. The available data suggest increased disease activity, especially in the postpartum period, highlighting the importance of reproductive planning and multidisciplinary follow-up.

**Keywords:** neuromyelitis optica; pregnancy; autoimmune diseases; high-risk pregnancy.

## Introduction

Neuromyelitis optica has historically been considered a variant of multiple sclerosis; however, advances in immunopathological knowledge have allowed its differentiation as a distinct clinical entity. The identification of immunoglobulin G antibody against aquaporin-4 (AQP4-IgG) consolidated the current concept of neuromyelitis optica spectrum disorders. The disease has a clear female predominance, with peak incidence between the third and fourth decades of life, coinciding with the reproductive period.

Pregnancy represents a challenge in the management of NMOSD, as immunological changes specific to pregnancy can influence disease activity, while immunosuppressive treatment can impact fetal development. Thus, understanding the interaction between NMOSD and pregnancy is essential to reduce maternal neurological morbidity and optimize obstetric outcomes.

## Methodology

This is a narrative review of the literature, based on articles published in scientific databases such as PubMed, Scopus, and SciELO. Observational studies, case series, systematic reviews, and clinical guidelines addressing NMOSD in pregnant women or in the postpartum period were included. No strict time or language criteria were applied, with priority given to publications relevant to clinical practice.

## Pathophysiological Aspects and Impact of Pregnancy

NMOSD is mainly mediated by AQP4-IgG autoantibodies, which promote astroglial injury, complement activation, and secondary inflammation. During pregnancy, there is a predominance of the Th2 immune response, which theoretically could reduce the activity of Th1-mediated autoimmune diseases. However, in NMOSD, this protective effect is not clearly observed.

Studies suggest that disease activity may remain stable or even increase during pregnancy, with a significantly elevated risk of relapses in the postpartum period, especially in the first six months after delivery. This phenomenon may be related to the reactivation of the immune system after the end of pregnancy.

## Clinical Manifestations in Pregnancy

The clinical manifestations of NMOSD in pregnant women do not differ substantially from those observed outside of pregnancy, including optic neuritis, extensive myelitis, and, in some cases, area postrema syndrome. However, relapses during pregnancy or the postpartum period can result in permanent neurological deficits, with a significant impact on maternal quality of life and the ability to care for the newborn.

## Diagnosis

The diagnosis of NMOSD during pregnancy is based on clinical, serological, and imaging criteria. The detection of AQP4-IgG remains one of the main diagnostic pillars. Magnetic resonance imaging without gadolinium contrast is the preferred imaging method during pregnancy and is considered safe when clinically indicated. Differential diagnosis with multiple sclerosis and other inflammatory myelopathies is essential, as therapeutic management differs substantially.

## Therapeutic Management During Pregnancy

The treatment of NMOSD during pregnancy must balance disease activity control and fetal safety. Systemic corticosteroids are often used to treat acute flare-ups and are considered relatively safe when used for short periods.

To prevent relapses, immunosuppressants such as azathioprine and low-dose corticosteroids have been used, with data suggesting relative safety during pregnancy. In contrast, drugs such as mycophenolate mo-

fetil and methotrexate are contraindicated due to teratogenic risk. Biological therapies, such as rituximab, have limited data, but are being considered in selected cases, especially when administered before conception.

## Obstetric and Fetal Outcomes

Most studies indicate that NMOSD is not associated with a significant increase in congenital malformations. However, some studies report an increased risk of preterm birth, low birth weight, and preeclampsia, especially in patients with active disease or undergoing intense immunosuppression.

Prenatal care should be classified as high risk, with strict obstetric surveillance and integration between neurology, obstetrics, and, when necessary, neonatology.

## Postpartum and Lactation

The postpartum period is recognized as the period of greatest risk for NMOSD flare-ups. Preventive strategies, including early resumption of immunosuppressive therapy, should be considered. Breastfeeding, although beneficial, should be discussed individually, taking into account the risk of relapse and the compatibility of medications with lactation.

## Final Considerations

Neuromyelitis optica during pregnancy represents a complex clinical scenario, requiring careful reproductive planning and a multidisciplinary approach. Although pregnancy is not formally contraindicated, the increased risk of relapses, especially in the postpartum period, necessitates preventive strategies and rigorous follow-up. Prospective studies are still scarce, reinforcing the

need for additional research to guide evidence-based practices.

## References

JARIUS, S.; WILDEMANN, B. The history of neuromyelitis optica. *Journal of Neuroinflammation*, v. 10, p. 8, 2013. DOI: 10.1186/1742-2094-10-8. Disponível em: <https://jneuroinflammation.biomedcentral.com/articles/10.1186/1742-2094-10-8>.

KIM, S. H.; HUH, S. Y.; JANG, H.; PARK, N. Y.; KIM, Y.; JUNG, J. Y.; LEE, M. Y.; HYUN, J. W.; KIM, H. J. Outcome of pregnancies after onset of the neuromyelitis optica spectrum disorder. *European Journal of Neurology*, v. 27, n. 8, p. 1546–1555, 2020. DOI: 10.1111/ene.14274. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/32320109/>.

D'SOUZA, R.; WUEBBOLT, D.; ANDREJEVIC, K.; ASHRAF, R.; NGUYEN, V.; ZAFAR, N.; ROTSTEIN, D.; WYNE, A. Pregnancy and neuromyelitis optica spectrum disorder – reciprocal effects and practical recommendations: a systematic review. *Frontiers in Neurology*, v. 11, e544434, 2020. DOI: 10.3389/fneur.2020.544434. Disponível em: <https://www.frontiersin.org/articles/10.3389/fneur.2020.544434>.

TREBST, C.; AYZENBERG, I.; KLEITER, I. Neuromyelitis Optica Spectrum Disorders. In: *NEUROINFLAMMATION*. Cambridge, MA: Academic Press, 2018, p. 313–335.

WINGERCHUK, D. M.; BANWELL, B.; BENNETT, J. L.; et al. International consensus diagnostic criteria for neuromyelitis optica spectrum disorders. *Neurology*, v. 85, n. 2, p. 177–189, 2015. DOI: 10.1212/WNL.0000000000001729. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/26092914/>. Acesso em: