

**TREATMENT AND FOLLOW-UP OF PATIENTS  
WITH NMO AQP4 SEROPOSITIVE DIAGNOSED**

**IN THE NATIONAL INSTITUTE OF NEUROLOGY AND NEUROSURGERY MANUEL VELASCO SUAREZ**

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**ABSTRACT**

**Introduction**

Optic neuromyelitis (NMO) is an autoimmune "aquaporinopathy" of the central nervous system that causes inflammatory demyelinating lesions mainly in the spinal cord and optic nerve, leading to paralysis and blindness. NMO lesions suffered loss of aquaporin-4 (AQP4), GFAP and myelin, granulocyte infiltration, macrophages, and perivascular deposition of activated complement. The majority of patients with NMO are seropositive for immunoglobulin autoantibodies (AQP4-IgG) against AQP4, the main water channel of astrocytes. There is strong evidence that AQP4-IgG is pathogenic in NMO, probably by a mechanism that involves complement dependent on cytotoxicity of astrocytes, causing leukocyte infiltration, cytokine release and disruption of the blood brain barrier, which leads to the death of oligodendrocytes, myelin loss and neuronal death.

**Methods**

A prospective descriptive study of longitudinal section was carried out in Mexican patients, of both genders, older than 16 years, with the first diagnostic approach of seropositive Optical Neuromyelitis (NMO), at the National Institute of Neurology and Neurosurgery during the period between April- September 2019. Those patients who had a diagnostic approach assessment of seropositive AQP4 Optical Neuromyelitis (NMO) were included, by the Multiple Sclerosis and Demyelinating disorders Clinic, with a clinical file containing the registration of demographic variables, clinical communication of patient symptoms ), paraclinical (MRI, immunological), treatment and diagnostic conclusion by the Multiple Sclerosis and Demyelinating disorders Clinic service and finally completing the collection and reporting of serum AQP4 IGG control autoantibodies.

**Results**

Of a total of 43 patients with a diagnosis of positive AQP4 Optical Neuromyelitis treated in Multiple Sclerosis and Demyelinating disorders Clinic, only 26 patients met inclusion criteria for our study, of which 22 were women for 84.6% and 4 men for 15.4%. The average age range was 44.85 years (19-68 years, SD 13.540). 38.5% (10 patients) show a number of 3 outbreaks, the minimum outbreaks

have a fuel of 1 for 15.4%, and the maximum outbreaks a fuel of 7 for 7.7%. The EDSS was calculated at the time of diagnosis of each patient, where it was possible to show that in frequency 12 patients from 26 patients with onset EDSS between 2.5, 4.0, 5.0 for 15.4 for each group respectively. Only in 8 patients of the study group patients a current EDSS between 4.0 and 5.5 for 15.4% for both groups. The annualized relapse rate in the most frequent total population studied was 2 and 3 for 23.1% and 26.9% respectively. A review was made regarding the type of Disease Modifying Treatment (MSD) and the dose that patients received during the evolution and diagnosis of the disease, of which we noted that 30.8% received Rituximab, 19.2% received Cyclophosphamide and then Rituximab, 19.2% Cyclophosphamide, Azathioprine and subsequent Rituximab, 15.4% were treated with Azathioprine, only 1 patient was transplanted after being treated with Rituximab. It was evident that the patients who completed the study (N 19), 13 received Rituximab as a long-term modifying treatment, and of these 6 patients (46%) seronegativized the AQP4 IGG, regardless of what other drug was recently received, and the remaining 7 (54%) remained positive. It is because of this difference between the two groups that we could say that those who did not receive Rituximab are more likely not to be negative for AQP4 IGG (P value 0.047).

### **Conclusion**

Optic neuromyelitis is an autoimmune CNS demyelinating inflammatory disorder that affects the spinal cord and optic nerve, which causes severe disability. The discovery of circulating IgG1 antibodies against the water channel protein astrocyte aquaporin 4 (AQP4) and the evidence that AQP4-IgG is involved in the development of optic neuromyelitis has revolutionized our understanding of the disease, which is why monitoring Therapeutic treatment of seropositive NMO can be related to the subsequent seronegativity of the AQP4 antibody, resulting in statistical significance for treatment with Rituximab (without dose or time dependence), so it is worthwhile to perform serum control studies of AQP4 and see its behavior over time, coupled with clinical and imaging monitoring.