CONVERSION AND REVERSION OF JCV ANTIBODY SEROSTATUS AND LONGITUDINAL EVALUATION IN A MEXICAN MULTIPLE SCLEROSIS POPULATION TREATED WITH NATALIZUMAB

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Introduction

Infection with the John Cunningham virus (JCV) among MS patients reported ranges from 50% to 70% and increases the risk of progressive multifocal leukoencephalopathy (PML) in patients undergoing treatment with some of these new drugs, particularly natalizumab. There are some other risk factors associated with the development of PML such as previous use of immunosuppressive agents and the total number of natalizumab infusions.

Objective

To establish factors associated with JCV index retro and seroconversion in Mexican patients with multiple sclerosis under Natalizumab treatment

Methods

Our study included 78 patients at the MS Clinic of the National Institute of Neurology and Neurosurgery Manuel Velasco Suárez (México), receiving natalizumab therapy and annual register of JCV AI in the period from January 2014 to march 2019. 57 patients meet criteria inclusion. Patient's sera were sent to Copenhagen, Denmark, where anti-JCV antibodies were tested by a two-step enzyme-linked immunosorbent assay. Qualitative (negative/positive) and quantitative results (anti-JCV antibody index) were used for statistical analyses. Then identified the rate of seroconversion and retro conversion, finally analyzed the factors associated with both outcomes.

Results

In our cohort, mean age at baseline was 36 ± 11,88 years. 19 patients (33,3%) were male and 38 (66,6%), female. Of the 57 patients, 16 (28,1%) were anti-JCV antibody negative, 28 (49,1%) positive at baseline, and 5 patients (8,8%) had indeterminate status. Median ARR was 0,6 and baseline EDSS 3,2 ± 2,2. During the study 8, of the patients converted or reverted between negative and positive serostatus, 5 (8,8%) reverted and 3 (5,3%) converted. **Figure 1**. Furthermore, 4 patients (7,6%) reverted from indeterminate to negative index and, 1 patient from negative to indeterminate index. In general, negative serostatus was associated with younger patients, mean 33,4 ± 7,7 years, while positive serostatus mean age was 39,8 ± 12,5 years. Positive VJC index but not seroconversion JCV status was correlated to NTZ infusions (P=< 0,001). The proportion of MS patients with JCV serostatus stability (positive or negative) was 86%. **Table 1.**

Table 1.

	JCV + N=28 (%) m; SD	JVC – N=16 (%) m; SD	SEROCONVERSION N= 3 (%) m; SD	RETROCONVERSION N = 5 (%) m; SD	INDETERMINATE N=5 (%) m; SD
Follow-up duration	18,8 ±4,5	19,2 ±7,4	18,3 ±4,4	19.4 ± 9,3	19,8 ± 7,9
Gender					
Female	18 (64,2%)	12 (75%)	1 (33,3%)	3 (60%)	4 (80%)
Male	10 (35,7%)	4 (25%)	2 (66,6%)	2 (40%)	1(20%)
Age	39,8 ±12,5	33,4 ± 7,7	28,3 ± 4,5	38.4 ± 19,9	29 ± 5,1
NTZ Infusions	14.4± 7,3	11.4± 5,7	12.0± 3,6	11,5 ± 4,3	13.2 ± 6,7

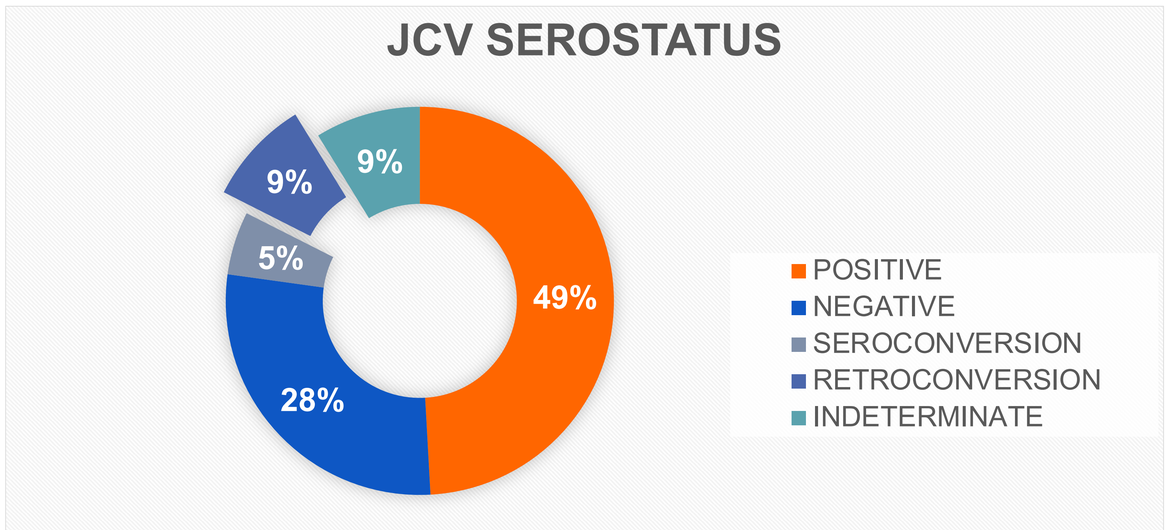
JCV: John Cunningham Virus; nN number; NTZ: nataliumab; m: mean; SD: standard deviation.

Discusion

Most subjects showed stable anti-JCV antibody status over time. We did not find any sign of a higher seroconversion rate in Natalizumab-treated patients as it was described in previous studies; conversely, we found a higher rate of retro conversion in our cohort. The lack of association between the risk of seroconversion and the number of natalizumab infusions in our study was consistent with previous reports

Age, gender, disease duration and number of natalizumab infusions did not influence JCV serostatus stability.

Table 1.



JCV serostatus in a Mexican cohort.

Conclusion

In our study, we were able to show that a longer-term serostatus is highly predictable by testing through time, biannual or annual; including identification of serostatus fluctuation due to assay variability without real seroconversion. Anti-JCV antibody index at baseline predicted stable negative as well as stable positive JCV serostatus over the observational period.

References

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