**Introduction**

Myelin oligodendrocyte glycoprotein antibodies (MOG-Ab) in adults are mainly associated to neuromyelitis optica spectrum disorders (NOMSO).1-2 However, the clinical phenotype could be broader than expected, and prognostic factors of poor outcome have not yet been identified.

**Methods and subjects**

**Inclusion criteria and recruitment**

This is a multicentric retrospective study from all the French referral centers within the scope of observatoire français de la sclérose en plaques (OFSEP) performed between January 2014-January 2017. Patients were included when fulfilling the following inclusion criteria: 1) diagnosis of Acute Demyelinating Syndrome (ADS), 2) presence of MOG-Ab in serum detected either at onset of disease or during follow-up, 3) age ≥18 years at onset of disease.

**Clinical information**

Information was prospectively collected in standardized evaluation forms dedicated to the present study: MOGADOR study. Additional epidemiological and clinical features were assessed when available (n=144) (figure1).

At last follow-up patients were classified as ADEM, NMOSD, or other NMO-like phenotypes (i.e; isolated monophasic or relapsing transverse myelitis (TM) or optic neuritis (ON)). Multiple Sclerosis (MS), and brainstem syndromes. Patients with short TM and ON who did not strictly fulfilled NMOSD criteria were classified as opticospinal phenotype.

**Radiological information**

Available brain magnetic resonance imaging (MRI) within three months from onset of symptoms were evaluated, and features known to be associated with NMOSD and MOG-Ab registered.3-4 As controls, we used the most recent available abnormal brain MRI from our cohort of AQPA-Ab-positive patients.3

**Autoantibody detection**

Within the period of the study, 16,181 serum samples were tested for AQP4-Ab and MOG-Ab by cell-based assay with live HEK293.

**Prognosis analysis**

For motor disability, we included all patients who presented with ON phenotypes, and for visual disability only those who presented with ON, at first ADS.

**Results**

**Epidemiological and clinical features**

We identified 197 MOG-Ab-positive patients. Among them, 50.8% were males and the median age of presentation was 36.5 years (interquartile range, 28.2-47.7). Patients were predominantly Caucasian (92.9%). The most frequent clinical phenotypes at onset were ON (60.9%), then myelitis (22.3%). The proportion of relapsing patients increased with time from 54/74 (73.0%) to 38/44 (89.0%) when considering only patients with a minimum follow-up of two and five years, respectively.

At last follow-up, 38 (19.3%) of patients fulfilled criteria for NMOSD, and 3 (1.5%) patients for MS (table 1).

**Radiological features**

Lesions in thalamus and periventricular areas were more frequently seen in the MOG-Ab group (p=0.031 and p=0.007, respectively), while lesions in medulla oblongata and area postrema were more frequently observed in AQPA-group (p=0.004 and p=0.001, respectively) (table 2). Other findings associated with MOG-Ab were cortical involvement in 8 (16.3%) and leptomeningeal enhancement in 3 patients (6.1%) (figure 2).

**Baseline factors related to outcome**

After performing a univariate and multivariate analysis, we found that age (Hazard Ratio (HR), 0.96; 95%Confidence interval [95%CI], 0.94-0.99; p<0.032) and higher disability at onset (HR, 0.80; 95%CI, 0.66-0.96; p=0.022) were protective baseline factors to reach a first relapse. A higher EDSS at onset of symptoms was related to time to reach DSS 3.0 (HR, 1.33; 95%CI, 1.04-1.70; p=0.022) and to time to reach VA 20/100 (HR, 1.73; 95%CI, 1.24-2.50; p=0.002).

**Discussion**

As previously reported, MOG-Ab had a predilection for optic nerve and spinal cord in 80% of patients;1-2 but only 19% of patients fulfilled the 2015 criteria for NMOSD. In the future, to avoid diagnostic overlapping between both groups, NMOSD would be better defined by the term AQPA-Ab or MOG-Ab-associated diseases, regardless of the clinical phenotype.

Interestingly, we observed that a not depreciable proportion of patients with abnormal MRI displayed cortical involvement (16%). Some of them fulfilled encephalitis criteria since they presented with encephalopathy, retrograde amnesia and seizures (data not shown).4 MOG-Ab-encephalitis has been recently characterized in patients with unilateral or bilateral cortical affection, epilepsy and good response to steroids.7,9 Finally, we observed that, overall, a higher disability at onset predicted a worse motor and visual outcome, with no other clear baseline prognostic factor.

**Conclusion**

In this MOG-Ab cohort of adult patients, most of patients presented either with ON or myelitis at onset, and a high proportion of them relapsed at long-term. We identified higher disability at onset as the only predictor of poor outcome.